

**3R Research Foundation Switzerland**

*Annual Report* | **2008**

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**The Administrative Board**

The Administrative Board of the Foundation is made up of nine members, three representing the Parliamentary Group for Animal Experimentation Questions (1 seat vacant), two representing animal protection, two from Interpharma and two from the Federal Veterinary Office. Current members are:

- Christine Egerszegi-Obrist  
member of the Council of States, Mellingen  
Chairwoman
- Dr. Peter Bossard  
Animalfree Research Foundation, Zurich  
Vice-Chairman
- Chantal Galladé  
National Councillor, Winterthur
- Dr. Franz P. Gruber  
Doerenkamp-Zbinden Foundation,  
Küsnacht
- Prof. Paul Herrling  
Head of Research, Novartis International,  
Basle
- Silvia Matile-Steiner  
lawyer, F. Hoffmann-La Roche Ltd., Basle
- Ursula Moser, B.Sc.,  
Federal Veterinary Office, Berne-Liebefeld
- Dr. Hans Wyss  
Director of the Federal Veterinary Office,  
Berne-Liebefeld

**The Evaluation Committee**

- Prof. Peter Maier  
University of Zurich  
Chairman
- Dr. Franziska Boess  
F. Hoffmann-La Roche Ltd, Basle
- Prof. Kurt Bürki  
Institute of Laboratory Animal Science,  
University of Zurich
- Prof. Clemens A. Dahinden  
Institute of Immunology and Allergology,  
University Hospital, Berne
- Prof. Marianne Geiser Kamber  
Institute of Anatomy, University of Berne

Prof. Andrew Hemphill  
Institute of Parasitology, University of Berne  
(as from 5.5.2008)

Dr. Kurt Lingenhöhl  
Novartis Pharma Ltd, Basle

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

Ursula Moser, B.Sc.  
Federal Veterinary Office, Berne-Liebefeld

Susanne Scheiwiller, B.Sc.  
Animalfree Research, Zurich  
(until 19.09.2008)

Dr. Stefanie Schindler  
Animalfree Research, Zurich  
(as from 11.12.2008)

#### Scientific advisor

Prof. Peter Maier, Uster

#### Secretary

Ernst P. Diener, lawyer, Münsingen

#### Auditors

KPMG AG, Gümligen-Berne

#### Supervisory body

Federal Department of Home Affairs

#### Origin 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: Actelion Ltd, Merck Serono Ltd, Novartis Pharma Ltd, F. Hoffmann-La Roche Ltd, and the associated members Bayer (Switzerland) Ltd, Cilag Ltd and Vifor Ltd) and the Foundation for Animalfree Research (animal protection). It was entered in the commercial register on 18<sup>th</sup> August, 1987.

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

#### Purpose of the Foundation

The purpose of the 3R Research Foundation Switzerland is to promote alternative research methods which avoid the use of animals, through grants for research projects. The organisation supports first and foremost projects aimed at developing new methods or refining accepted methods (validation) which offer practical improvements vis-à-vis standard animal experimentation in line with the 3R motto Reduce, Refine, Replace.

A broad range of projects is sponsored on the condition that they are likely to reduce the number of animals used or the stress and/or pain suffered. Projects considered must be based on the Foundation's three principles and are mainly in the bio-medical multidisciplinary field.

#### Articles and statutes of the Foundation

- Deed of foundation dated 13 February, 1987
- Regulations dated 15 May, 1987/11 December, 2008
- Guidelines for awarding research grants dated 15 May, 1987/11 December, 2008

## 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](http://www.forschung3r.ch). We are happy to report that a large number of people visit the website.

### 18 projects subsidised

A total amount of CHF 553,359.85 was paid out for 16 ongoing projects and 2 that were completed during 2008

### Six new projects

Six new projects were approved in 2008 for which a total of CHF 690,500 was earmarked. These new projects are described in detail in the list of funded projects on the Foundation's website ([www.forschung3r.ch/en/projects/index.html](http://www.forschung3r.ch/en/projects/index.html)).

*Evaluation of lipid fractions for the substitution of serum in cell culture media* (109/08) Prof. Paul Honegger and Dr. Marie-Gabrielle Zurich, University of Lausanne. Replacing fetal calf serum by specific additives in culture media for tissue and cell cultures would result in two important improvements, namely no fetuses would be required to obtain the serum and the results from the tissue and cell cultures could be more easily replicated. Lipid fractions would be a possible replacement. Cell cultures are to be used for determining which fraction(s) are most suitable for replacing the serum.

*Development of an in-vitro assay for the screening of antischistosomal drugs* (110/08) Prof. Jennifer Keiser, Swiss Institute of Tropical Medicine, University of Basle. Schistosomiasis is caused by various trematodes that are harmful to humans. Substances for treating this disease are normally sought using juvenile or adult Schistosomae obtained from infected mice or hamsters. The aim of this project is to determine whether it is possible to screen substances using Schisto-

somae isolated from the initial host (snails), thus eliminating the need for testing in Schistosomae and the deliberate infection of animals to obtain them.

*Establishment of an organ ex-vivo slice model for cardiovascular research in particular for therapeutic atherosclerosis targeting* (111/08) Prof. Patrick Hunziker and Dr. Rahel Bänziger Keel, University Hospital, Basle. Many laboratory animals are required for research into atherosclerosis (causes of the disease, possible treatments, nanomedicine). Prof. Hunziker's research team at the University Hospital in Basle isolate arteries from mice (that lack the ApoE gene) and human material. The arteries are then further examined in a culture medium. In this way, it is possible not only to reduce the number of laboratory animals required but also to identify any differences in the pattern of development of the disease in mice and humans.

*A novel in vitro model for the holistic assessment and optimisation of engineered tissue for functional cartilage repair* (112/08) Dr. Zhijie Luo and Prof. Jennifer Kirkham, Leeds Dental Institute, University of Leeds (UK). The aims of the project are, on the one hand, to examine engineered cartilage from the point of view of function and characteristics, and on the other to determine whether the cartilage tissue binds well with the existing, healthy cartilage in the joint. Such testing is often carried out using laboratory animals. Through the cell culture methods developed in this project it should be possible to carry out such tests largely in vitro. A further aim is to develop these alternative methods for use in routine testing.

*Generic in-vitro evaluation assay for immunological correlates of protection to replace animal challenge infections* (113/08) Dr. Kenneth McCullough and Dr. Artur Summerfield, Institute of Virology and Immunoprophylaxis (IVI), Mittelhäusern. A broad variation in antigens has developed in relation to foot and mouth disease (FMD). In order to ensure that vaccination is successful, the vaccine has to be tailored to the current virus sub-type and tested in animals

(challenge infection experiments). The aim of this project is to develop a new, reliable and rapid in-vitro test to replace the use of laboratory animals. It will be carried out as part of an EU consortium that has access to sera from vaccinated animals, reagents and mAbs. This also means that the results of the in-vitro tests can obtain international validation without implicating additional animals.

*Reduction in the number of fish used in the fish acute toxicity test* (OECD protocol no. 203) (114/08). Dr. Hans Rufli, ecotoxsolutions, Basle. Fish acute toxicity testing often includes extremely high and extremely low doses of the substance in question. By analysing historical data concerning hundreds of agricultural and industrial chemicals, establishing retrospective statistics and simulating earlier testing procedures, it should be possible to reduce the range of doses tested while at the same time obtaining an equally valid evaluation of the toxicity of potential environmentally harmful products. The end result would be a reduction of between 10 and 30% in the number of fish required for acute toxicity testing.

### Two projects successfully completed

*In vitro replica of the inner surface of the lungs to study particle-cell interaction* (89/03) Prof. Marianne Geiser Kamber, Institute of Anatomy, University of Berne. In this project methods were developed for culturing tracheal epithelial explants and macrophages from pig lung. It was thus possible to determine in vitro the harmful or therapeutic effects of nanoparticles in the lung. Consequently, inhalation studies in laboratory animals (mostly rodents) become superfluous, or at least the number of such tests could be radically reduced. In order to characterise the effects of aerosols, morphological and physiological changes in the cells, including cilium activity, cytokine release and the extent of cell necrosis (LDH release), were measured. These experiments are being continued as part of the international POLYOSA project.

*Development of an in-vitro system for modelling bioaccumulation of neutral, ionizable, and metabolically active organic pollutants in fish* (110/06) Dr. Beate Escher, EAWAG, Dübendorf. The potential bioconcentration of chemicals in fish is determined in order to estimate environmental risks (OECD test no. 305). This involves the use of a large number of fish. The PAMPA (parallel artificial membrane permeability assay) in-vitro system was further developed as part of this project. Through the use of a specific synthetic membrane (polydimethylsiloxan), a refined stirring technique (provision of oxygen) and appropriate calculation methods it was possible to simulate the diffusion conditions in fish gills. The permeability of 14 reference substances correlated well with the rate of elimination measured in living fish. Exceptions were substances that are metabolised in fish.

### 3R-Info-Bulletins

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

*Host pathogen interactions can be studied in amoebae instead of animals* (no. 36, January 2008). Prof. Pierre Cosson and his research team at the University of Geneva have succeeded in determining the virulence of bacteria in single-cell amoebae (*Dictyostelium*). They observed a similar level of virulence of selected bacteria in amoebae and rodents. Experiments to examine the virulence of bacteria in mice and rats are extremely stressful for the animals. Bulletin no. 36 includes a summary of how many such experiments can be carried out just as effectively in amoebae (*Dictyostelium*) as well as flies (*Drosophila melanogaster*) or worms (*Caenorhabditis elegans*). The amoeba system is simple to use and can be adapted for the special requirements of bacteria (e.g. also fish pathogens).

*Bioconcentration of chemicals in fish can be determined in vitro* (no. 37, June 2008) Dr. Beate Escher and her research group at EAWAG (Swiss Federal Institute of Aquatic Science and Technology) used the in-vitro PAMPA (parallel artificial membrane permeability assay) system and developed it to the point that diffusion conditions largely corresponded to the situation in fish gills. The use of this new testing procedure means that far fewer fish are required today for evaluating the environmental risk posed by chemicals (OECD test no. 305).

*Development of an in-vitro system using lung cells to determine the harmful effects of particles and gaseous substances* (no. 38, October 2008). Prof. Marianne Geiser Kamber and her team at the University of Berne have isolated cells from the lungs of pigs sent to slaughter and developed organ-typical cultures, where conditions in the lung could be closely replicated. It was possible to retain not only epithelial cells but also macrophages and even the epithelial secretion, the latter two being important for the removal of particles from the lungs. The use of this test should make it possible not only to replace tests that require many animals but also to obtain information about the processes involved in the potentially harmful impact of a given substance.

#### Experts Meeting as part of the EU START-UP Project in Basle

On behalf of the 3R Research Foundation, Prof. Peter Maier organised the second Experts Meeting as part of the EU START-UP project (Scientific and technological issues in 3R-alternatives research in the process of drug development and union politics) initiated by ecopa, which was held at the Novartis campus in Basle on 5 September 2008. Invitations were sent to researchers who are familiar with the issue “disease models in laboratory animals” through their daily work. Prof. Maier chaired the meeting, which was attended by 30 experts from Europe and the USA, from seven pharmaceutical companies, who produced proposals for ways of further developing and implementing the 3R principles in disease models involving laboratory animals. The aim of the proposals is to help define future focal points in 3R-relevant EU projects. An analysis of this highly successful meeting is currently being drawn up and will be the subject of a report to be distributed by ecopa to all the participants.

## Activities during 2008

In its twenty-second year of existence the Administrative Board met twice, namely in May and December, for a half-day meeting. Apart from the statutory business concerning the end of the business year 2007, the Board addressed the following issues.

Research funds for 2008 were allotted to 16 projects already underway. In addition, 6 new projects were approved, while 22 applications were rejected. The Board also took note of the final assessment by the Evaluation Committee of 2 projects which had been completed in the previous years. Moreover, guidelines for the awarding of research grants concerning the submission of applications were set out and the areas of research were redefined. Finally, the rules and regulations concerning appeals against decisions were revised on the basis of experience gained. In view of the fact that the Foundation's secretariat has moved to new premises, the agreement concerning how it is run was rewritten. A working group was set up to examine the Foundation's operational strategy.

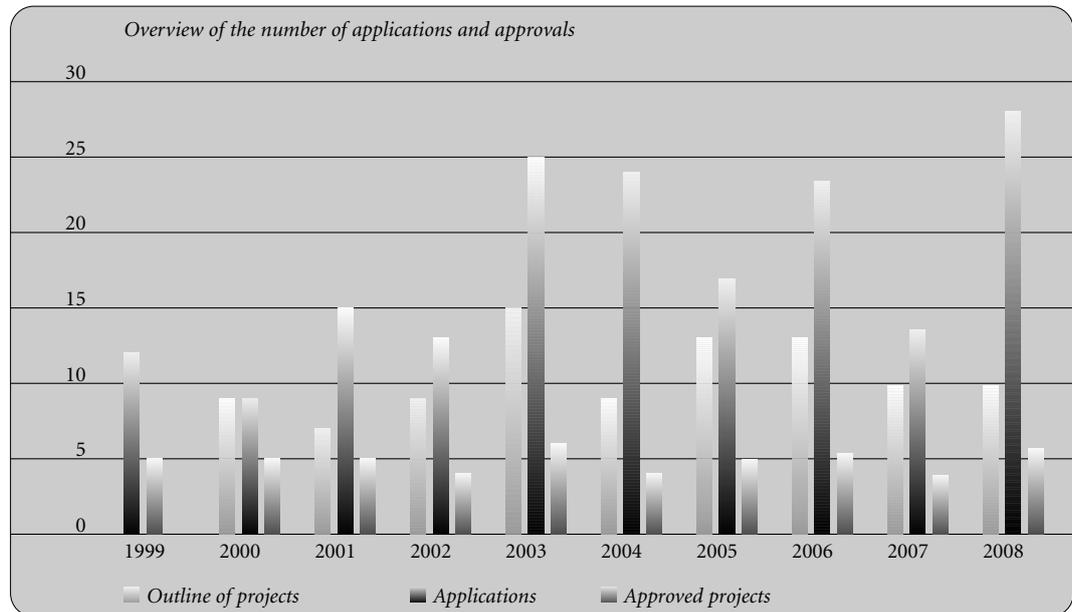
At the meeting in May, apart from the financial statements for 2007 and the approval of new projects as well as completed projects, discussions covered strategic questions concerning the improvement of the Foundation's networking, and an internal working group was set up.

At the December Board meeting, Dr. Peter Bossard was elected to fill the position of Vice-Chairman of the Board for the remaining period of office. Apart from the approval of new projects, discussions also focused in particular on changes in the guidelines for awarding research grants and the appeal process. The Board took note of the Scientific Adviser's report on his representing the organisation at various events during 2008 and thanked him warmly. Moreover, Prof. Maier reported on the successful experts Meeting in Basle as part of the ecopa Project START-UP (Scientific and technological issues in 3Rs-alternatives research in the process of drug development and union politics). Finally, the internal working group presented its inter-

mediate report on how the 3R principles can be further broadcast. The Board decided to follow the recommendation to follow successfully completed 3R projects more closely to help ensure that newly devised methods are put into practice. Encouragement should be given for suitable methods to be validated. In addition, the Board mandated the working group to continue examining the question of whether and how the Foundation can commit itself as the central office for promoting the 3R principles.

Under the chairmanship of the Scientific Adviser, the Evaluation Committee held two meetings during the year, where in particular they assessed new applications and evaluated completed projects. The voluntary work of the members of the Evaluation Committee in this connection is much appreciated.

The Scientific Adviser's tasks included publishing the 3R-Info-Bulletin (as a brochure and on the Foundation's website at [www.forschung3r.ch](http://www.forschung3r.ch)), writing brief scientific reports in English which present the projects receiving funding, regularly updating the Foundation's website and managing the "3R Training Course" on the internet. He was also kept busy – as always – advising applicants and project managers, obtaining intermediate reports, evaluating project outlines, dealing with enquiries and explaining why projects had been rejected. Finally, he represented the Foundation at several scientific meetings in Switzerland and abroad, namely as a member of the board of the European Consensus Platform for 3R Alternatives to Animal Experimentation (<http://www.ecopa.eu>) in Brussels. The Scientific Adviser also put a lot of work into helping to organise the Experts Meeting in Basle under the auspices of ecopa's START-UP project.



### Projects subsidised

During the year 2 projects were completed (89/03, 100/06). Together with those projects completed earlier, this brings the total of finished projects to 91 out of 114.

The bar-chart shows a reversal in the downward trend in the number of applications received, while the proportion approved varies only slightly. The long-term approval rate for applications is around 30%, giving an average of approximately 5 projects approved each year.

### 3R Training Course

The Foundation has set up the 3R Training Course internet learning programme to offer individual, specialised further training for people who carry out or supervise animal experiments. This course is available in German and English at <http://3R-training.tierversuch.ch>. Texts, images, links and documents provide visitors to the site with information on alternatives to animal experimentation. This course has been officially recognised as a further training course under the terms of the Federal Veterinary Office's Ordinance of 12 October 1998 on the basic and fur-

ther training of persons involved in animal experimentation (SR 455.171.2). Over the past year, 23 certificates were issued to people who passed the on-line examination.

### Personnel

Dr. Peter Bossard was elected as Vice-Chairman of the Board for the remaining part of the period of office 2007/2010. Otherwise there were no changes in the Administrative Board. No replacement has yet been found for Dr. Hugo Wick from among parliamentarians. Having taken up a new position, Mrs Susanne Scheiwiller resigned from the Evaluation Committee. New additions to the Committee are Prof. Andrew Hemphill from the Institute for Parasitology at the University of Berne and Dr. Stefanie Schindler from Animalfree Research in Zurich.

## Financial business

A total of some CHF 555,300 was paid out for research in 2008 (CHF 553,360 for grants to research projects and CHF 1,899 for participation in conferences). Expenditure on current projects (CHF 553,360) was some CHF 73,000 under budget (CHF 626,300); this was principally due to the fact that approximately CHF 75,000 was paid out for two new projects, while some CHF 109,000 earmarked for 4 projects was not used because the amounts budgeted for were not required in full. Of the 5% reserve (budgeted at CHF 51,600) CHF 17,500 was paid out upon the completion of 2 projects.

Operational expenditure for 2008 amounted to CHF 228,536.60 (project monitoring and information CHF 116,800, administrative costs including office infrastructure CHF 111,730). The total exceeded the budget of CHF 216,200 by around CHF 12,300 (5.7%). Administrative costs (CHF 111,730) were approximately 10% over budget (CHF 100,000), which can be largely explained by the rise in payment for secretarial services and the cost of increased deliberation concerning strategy issues, changes in the rules and regulations, the high number of applications received (28), the reorganisation of the database and website management. Total expenditure therefore amounted to around CHF 783,800.

The foundation did not incur any expenditure in connection with the organisation of the Experts Meeting in Basle under the auspices of the ecopa START-UP project since the contribution from ecopa covered all outgoings.

On the income side, the equal financial commitment of the federal authorities and Interpharma represented the basic funding for the Foundation's activities. In 2008 the federal authorities and Interpharma each granted the Foundation CHF 425,000. At the end of the year the Federal Veterinary Office promised an additional contribution of CHF 24,000, which was received at the beginning of 2009. Funds not required immediately were invested in several time

deposits of up to 12 months. This produced interest on capital of CHF 10,300. In addition, income from the 3R Training Course provided CHF 2,300 and Interpharma's contribution towards the cost of organising the Experts Meeting in Basle accounted for a further CHF 8,000.

Total income was therefore around CHF 870,700 while total expenditure amounted to CHF 783,800, giving an excess of income over expenditure of around CHF 86,900. The unused contributions item therefore rose from approximately CHF 472,300 at the end of 2007 to CHF 559,200 at the end of 2008.

At the end of 2008 the total earmarked for projects approved by the Board but not yet paid out amounted to CHF 1,087,295.70. This future liability is covered by Interpharma's new promise of funding. The Foundation's credit with this institution amounted to CHF 2,316,000 at the end of 2008.

The budget for 2009 includes around CHF 633,000 for current projects and a maximum amount of CHF 500,000 for new projects.

## Auditors' report to the Administrative Board

As 3R Research Foundation's auditors, KPMG AG in Gümliigen-Berne has examined the books and the annual financial statements on the basis of current financial reporting standards and recommends that they be approved.

**Financial statements**

<i>Profit and loss account 2008</i>	<i>Expenditure</i>	<i>Income</i>
<i>Income</i>		
Federal contribution		425,000.00
Contribution from Interpharma		425,000.00
Total contributions		850,000.00
Interest on bank account		10,300.03
Reimbursement of research grants		0.00
Other income		10,460.99
Total income		870,761.02
<i>Expenditure</i>		
Research grants	555,258.84	
Project supervision and information	116,806.60	
Administrative expenses	111,730.00	
Total expenditure	793,795.44	
Excess income over expenditure	86,965.58	
	870,761.02	
<i>Balance as per 31<sup>st</sup> December 2008</i>	<i>Assets</i>	<i>Liabilities</i>
<i>Liquid Assets</i>		
Bank	577,443.28	
Accounts payable	2,311.16	
Accounting apportionment assets	10,598.58	
<i>Liabilities</i>		
Accounting apportionment liabilities		30,102.20
Unused research funds		
– Carried forward 1. 1. 2008	472,285.24	
– Excess income over expenditure	86,965.58	559,250.82
Capital of the Foundation		1,000.00
	590,353.02	590,353.02

**Contingent liabilities**

Approved research grants not yet paid out CHF 1,087,295.71.

Münsingen, 28 April 2009

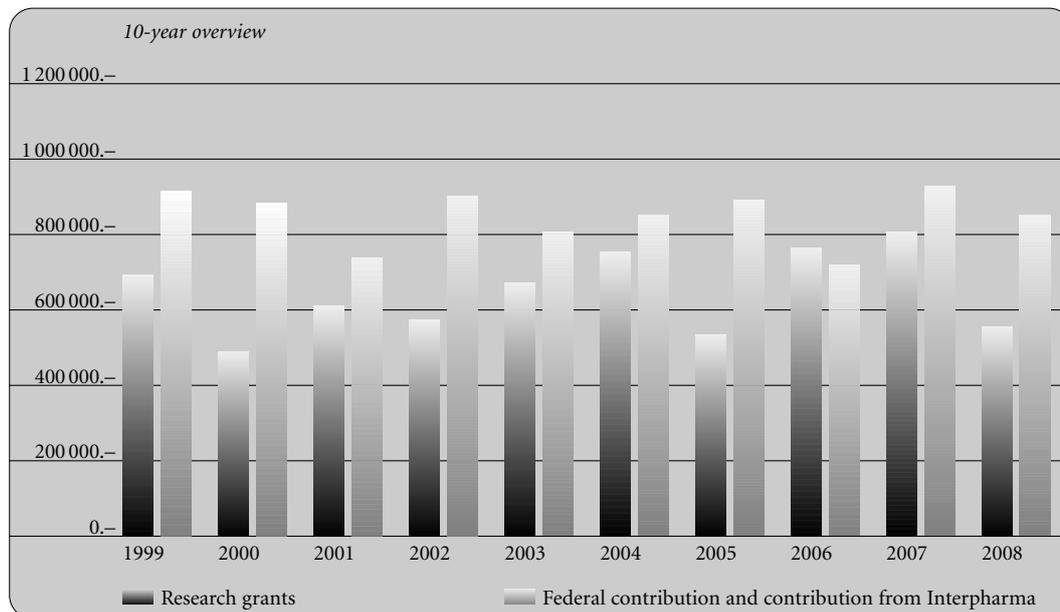
3R RESEARCH FOUNDATION

*Chairwoman*

signed C. Egerszegi

*Secretary*

signed E. Diener



### Overview of grants awarded between 1987 and 2008 3R-Info-Bulletin

At the end of 2008 a total of CHF 15,852,536.30 had been granted for projects and other subsidies, of which CHF 14,765,240.59 has been paid out so far. Together the federal authorities and Interpharma have contributed CHF 17,668,000 to the Foundation since 1987.

In 2008 three more new 3R-Info-Bulletins (ISSN 1421-6590) were published in English and distributed to some 1,000 interested parties. The information bulletins are also published on the Foundation's website ([www.forschung3r.ch/en/publications/index.html](http://www.forschung3r.ch/en/publications/index.html)), as well as in pdf format.

#### The latest 3R-INFO-BULLETINS are:

##### N<sup>o</sup> 38, October 08

Development of an in-vitro system using lung cells to determine the harmful effects of particles and gaseous substances

##### N<sup>o</sup> 37, June 08

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

##### N<sup>o</sup> 36, January 08

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

## List of the other 3R-INFO BULLETINS

- N° 1, June 1994*  
Foundation Research 3R
- N° 2, September 1994*  
mAbs without mice?
- N° 3, December 1994*  
Prof. Gerhard Zbinden and 3R
- N° 4, April 1995*  
Predicting human drug metabolism
- N° 5, August 1995*  
Human recombinant antibodies
- N° 6, September 1995*  
Call for 3R research proposals
- N° 7, March 1996*  
The three 'R's of Russell and Burch, 1959
- N° 8, August 1996*  
Regulation of digestion in cell culture
- N° 9, October 1996*  
Permanent fish cell cultures as novel tools in environmental toxicology
- N° 10, August 1997*  
10 years 3R Research Foundation
- N° 11, March 1999*  
Immunization of laboratory animals
- N° 12, September 1999*  
Leishmaniasis: development of an in vitro assay for drug screening
- N° 13, January 2000*  
Identification of neurotoxic chemicals in cell cultures
- N° 14, May 2000*  
Transgenic protozoa as an alternative to transgenic animals
- N° 15, September 2000*  
Aggregating brain cell cultures: Investigation of stroke related brain damage
- N° 16, January 2001*  
Housing and husbandry conditions affect stereotypic behaviour in laboratory gerbils
- N° 17, May 2001*  
Fever in the test tube – towards a human(e) pyrogen test
- N° 18, September 2001*  
Prevention of adverse effects in pigs after vaccination
- N° 19, January 2002*  
Phenotype characterisation and welfare assessment of transgenic mice
- N° 20, May 2002*  
Animal-free screening of biological materials for contamination by rodent viruses
- N° 21, September 2002*  
Identification of new human skin irritation markers for tests with human skin recon-structs
- N° 22, January 2003*  
Environmental enrichment does not affect the variability of animal experimentation data in the Light/Dark test
- N° 23, May 2003*  
Simulation of stroke related damage in cul-tured human nerve cells
- N° 24, September 2003*  
Generation of parasite cysts in cultured cells instead of living animals
- N° 25, January 2004*  
Formation of new blood vessels in the heart can be studied in cell cultures
- N° 26, May 2004*  
Immune cells in the liver: The generation and use of a mouse Kupffer cell line
- N° 27, September 2005*  
The tick blood meal: From a living animal or from a silicone membrane?
- N° 28, January 2005*  
Bone metabolism and bone-biomaterial in-teractions can be studied ex vivo
- N° 29, May 2005*  
Computer-based quantification of (adverse) effects triggered by drugs and chemicals
- N° 30, September 2005*  
Environmental enrichment does not disrupt standardization
- N° 31, January 2006*  
Improvement of Pain Therapy in Laboratory Mice
- N° 32, May 06*  
Non-Invasive Methods: Investigation of Air-ways Diseases by MRI in Rats
- N° 33, September 06*  
Predicting drug hypersensitivity by in vitro tests
- N° 34, January 07*  
Exploring natural anticoagulation by en-dothelial cells: A novel in vitro model
- N° 35, May 07*  
From blood to brain and vice versa: Trans-Port Processes in Choroid Plexus can be studied in vitro

## List of Projects

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

The brief scientific project reports in English on the website, which are updated once a year, indicate that almost all projects have progressed well. These reports published on the internet are much appreciated by those involved in the research projects as a platform for presenting their work. From the opposite point of view, this system also enables other researchers all over the world to discover new 3R methods without delay.

## List of new projects approved in 2008

- 114/08 Dr. Hans Rufli  
ecotoxsolutions, Basle  
*Reduction in the number of fish used in the acute fish toxicity test*
- 113/08 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*
- 112/08 Dr. Zhijie Luo and Prof. Jennifer Kirkham  
Leeds Dental Institute, University of Leeds, UK  
*A novel in vitro model for holistic assessment and optimisation of engineered tissue for functional cartilage repair*
- 111/08 Prof. Patrick Hunziker  
University Hospital, Basle  
*Establishment of an organ ex-vivo tissue slice model for cardiovascular research in particular for therapeutic atherosclerosis targeting*
- 110/08 Prof. Jennifer Keiser  
Swiss Institute of Tropic Medicine, University of Basle  
*Development of an in vitro assay for the screening of antischistosomal drugs*
- 109/08 Prof. Paul Honegger and Dr. Marie-Gabrielle Zurich  
University of Lausanne  
*Evaluation of lipid fractions for the substitution of serum in cell culture media*

## List of current projects and those completed in 2007 and 2008

- 82/02 Dr. Nicolau Beckmann  
Novartis Institute of Biomedical Research, Basle  
*Magnetic resonance imaging (MRI) for the non-invasive assessment of lung inflammation and pulmonary function in the rat*
- 84/02 Dr. Urs Wirthmüller / Prof. Clemens A Dahinden  
Institute of Immunology, Berne University Hospital  
*Direct cloning of human monoclonal antibodies from purified specific B-cells*
- 89/03 Prof. Marianne Geiser Kamber  
Institute of Anatomy, University of Berne  
*In vitro replica of the inner surface of the lungs to study particle-cell interaction*  
Completed in 2008
- 90/03 Prof. Pierre Cosson  
Medical Faculty, University Medical Centre, Geneva  
*A non-mammalian system to study bacterial infections*  
Completed in 2007
- 91/04 Prof. Gert Fricker  
Ruprecht-Karls-Universität, Heidelberg  
*Transport of active substances in the choroid plexus*  
Completed in 2007
- 92/04 Prof. Elisabetta Padovan  
Gulbenkian Institute of Science, Oeiras, Portugal  
*Adjuvanticity of microbial-derived particles and synthetic analogs in vitro*
- 93/04 Dr. Omolara Ogunshola  
Institute of Animal Physiology, University of Zurich  
*Development of a novel multicellular 3-dimensional blood brain barrier in vitro model*
- 94/04 Dr. Stephan Vorburger  
Department of Clinical Research, Clinic for Visceral and Transplant Surgery, Inselspital, University of Berne  
*Tumor targeted reporter gene expression to improve and refine traditional models of tumor growth and metastasis*
- 95/05 Dr. Beate Escher  
Swiss Federal Institute of Aquatic Science and Technology (EAWAG), Dübendorf  
*Development of QSAR-Models for Classification and Prediction of Baseline Toxicity and of Uncoupling of Energy Transduction*  
Completed in 2007
- 96/05 Dr. sc. nat. Paolo Cinelli  
Institute for Laboratory Animal Science  
*Assessment of pain and stress in mice by monitoring gene expression changes*
- 97/05 Prof. ETH Alexander Mathis  
Institute of Parasitology, University of Zurich  
*Development of a three-dimensional enteric cell culture model for in vitro studies of the intestinal eukaryotic parasites Cryptosporidium spp.*
- 98/05 Prof. Christoph Müller  
Institute of Pathology, University of Berne  
*Establishment of a murine syngeneic coculture system of intestinal epithelial cells with intraepithelial T-lymphocyte subsets*
- 99/05 Prof. Pierre Cosson  
Medical Faculty, University Medical Centre, Geneva  
*Non-mammalian Experimental Models for the study of bacterial infections (NEMO network)*
- 100/06 Dr. Beate Escher  
Swiss Federal Institute of Aquatic Science and Technology (EAWAG), Dübendorf  
*Development of an in-vitro system for modelling bioaccumulation of neutral, ionizable, and metabolically active organic pollutants in fish*  
Completed in 2008
- 101/06 Prof. Norbert Goebels  
Dept. of Neurology and Neuroimmunology, University Hospital Zurich  
*Organotypic CNS slice cultures as an in-vitro model for immune mediated tissue damage and repair in multiple sclerosis*

- 102/06 Dr. Anna Bogdanova  
Institute of Veterinary Physiology,  
University of Zurich  
*Isolated, autologous blood-perfused heart:  
Replacement of heterotopic heart trans-  
plantation*
- 103/06 Prof. Stephen Leib  
Institute of Infectious Diseases,  
University of Berne  
*An in vitro Model of Central Nervous Sys-  
tem Infection and Regeneration: Neuronal  
Stem Cells as Targets of Brain Damage and  
Regenerative Therapies in Bacterial Me-  
ningitis*
- 104/06 Prof. Regina Hofmann-Lehmann  
Clinical Laboratory, Vetsuisse Faculty,  
University of Zurich  
*Development of in vitro strategies to prop-  
agate and characterize hemotrophic my-  
coplasmas*
- 105/06 Dr. Nicolas Ruggli  
Institute of Virology and Immunopro-  
phylaxis (IVI), Middelhäusern  
*Establishment of an in vitro system for the  
prediction of the degree of virulence of clas-  
sical swine fever virus isolates*
- 106/07 Dr. Song Huang  
Epithelix Sàrl, Plan-les-Ouates  
*Standardization and Pre-validation of  
MucilAir: A novel in vitro cell model of the  
human airway epithelium for testing acute  
and chronic effects of chemical compounds*
- 107/07 Dr. Sushila D'Souza  
Pasteur Institute of Brussels  
*Evaluation of an in vitro model to identify  
host parameters associated with virulence  
of Toxoplasma gondii strains*
- 108/07 Prof. Helmut Segner  
Center for Fish and Wildlife Health,  
University of Berne  
*In vitro fish hepatocytes as source of meta-  
bolic clearance data in alternative ap-  
proaches for the reduction or replacement  
of in vivo bioaccumulation testing with fish*



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