3R Research Foundation Switzerland

Annual Report 2009

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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. 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. The third "R" requires that animals used for laboratory experiments be made to suffer an absolute minimum of pain and/or stress. 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 2009

In 2009 the Foundation provided a total of CHF 634,000 for 17 research projects. The Confederation and Interpharma each made a contribution of CHF 389,000. The Administrative Board approved 3 new projects, while 6 projects were successfully completed; 18 applications were rejected. The 3R-Info-Bulletins 39-41, which were circulated to around 1,000 readers, included the results of three of the completed projects. The aim of the 3R Internet Training Programme, which was started in 2005, was to provide individual specialised training, but for technical and financial reasons, and because it has not attracted so many users as hoped, it has been decided to abandon this project. The Administrative Board has decided to try to network with other institutions and organisations in the future, in order to achieve greater awareness of the 3R principles.

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
Dr. Ingrid Kohler
Federal Veterinary Office, Berne-Liebefeld
(as from 1.6.2010)
Silvia Matile-Steiner
lawyer, F. Hoffmann-La Roche Ltd., Basle
Ursula Moser, B.Sc.,
Federal Veterinary Office, Berne-Liebefeld
(until 1.6.2010)
Prof. 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
Dr. Ingrid Kohler
Federal Veterinary Office, Berne-Liebefeld
(as from 1.6.2010)
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
(until 1.6.2010)
Dr. Martin Reist
Veterinary Public Health Institute, University of Berne
(as from 9.12.2009)
Dr. Stefanie Schindler
Animalfree Research, Zurich

Scientific advisor

Prof. Peter Maier, University of Zurich

Secretary

Ernst P. Diener, lawyer, Münsingen

Auditors

Die Wirtschaftsprüfer.ch AG, Thun

Supervisory body

Federal Department of Home Affairs

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.

17 projects subsidised

A total amount of CHF 634,308.20 was paid out for 11 ongoing projects and 6 that were completed during 2009.

Three new projects

Three new projects were approved in 2009 for which a total of CHF 578,500 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).

Engineering of a human brain tumour model to replace animal experimentation (115/09) Dr. Olivier Preynat, Faculty of Medicine, University of Geneva. Brain-like tissue obtained from human stem cells (engineered neural tissue = ENT) will be combined with a glioblastoma-like tumour tissue (engineered glial tumours = EGT) to produce an in vitro model that can be used for examining interactions between human brain and tumour cells as well as for testing potential organ-specific cytostats. The researchers expect to be able to reduce the number of animals required for experiments, which involve considerable suffering.

Organotypic slice cultures derived from brains obtained from slaughterhouses as an in vitro alternative for the investigation of neuroinfectious diseases in ruminants (116/09) Dr. Anna Oevermann and Dr. Torsten Seuberlich, Vetsuisse Faculty, University of Berne. Until now it has only been possible to examine the causes of spongiform encephalitis (e.g. prions) or listeria in ruminants using infected animals. This project involves obtaining tissue samples from various parts of the brain of regularly slaughtered animals (calves and sheep) and culturing them in vitro. If it is possible to maintain structures and functions in the brain tissue samples that are similar to those in vivo it will be possible to better understand the causes (mechanisms) of these diseases as well as to obtain infected tissue for examination without using live animals.

Development of an in vitro model from embryonic stem cells for identifying tissue inflammation as a reaction to implanted material (INFPLANT) (117/09) Prof. Maria Wartenberg, Friedrich-Schiller-University, Jena, and Prof. Heinrich Sauer, Justus-Liebig-University, Giessen, Germany. In the case of artificial implants (teeth, blood vessels, heart valves) it is important to ensure that they are not rejected by the body's immune system. This issue is currently being studied in animals. In order to replace these animal experiments the research team intends to develop an immune-competent cell culture system from murine embryonic stem cells. Unlike with existing, simple in vitro procedures, the team expect to be able to recognise inflammation and formation of vessels.

Six projects successfully completed

Adjuvanticity of microbial-derived particles and synthetic analogs in vitro (92/04) Prof. Elisabetta Padovan, Gulbenkian Institute of Science, Oeiras, Portugal. Certain adjuvants that stimulate the immune response may also produce toxic side-effects. In order to reduce animal experimentation to test for these unwanted side-effects a three-level cell-culture system using human blood cells (monocytes, dendritic cells and T-cells) has been developed. This system enables researchers to identify possible unwanted toxic characteristics as well as desirable stimulation of the immune system. Consequently, it is possible to largely avoid using laboratory animals through in vivo testing.

Assessment of pain and stress in mice by monitoring gene expression changes (96/05) Dr. Paolo Cinelli, Institute for Laboratory Animal Science, University of Zurich. The aim of this project was to identify pain in animals (rodents) using modified genetic expression. This would provide a basis for developing new methods of recognising pain. Micro-array technology was used to examine two hundred genes while 27 genes were examined using the sensitive RT-PCR (real-time polymerase chain reaction) method. No significant differences were found between the genetic expression in selected areas of the brain of animals following surgical intervention in comparison with earlier.

Establishment of a murine syngeneic co-culture system of intestinal epithelial cells with intraepithelial T-lymphocyte subsets (98/05) Prof. Christoph Müller, Institute of Pathology, University of Berne. A co-culture system of human and murine cells was developed in this project. This enabled the research team to examine the interaction between intestinal epithelial cells and intraepithelial lymphocytes, which differ from other T-lymphocytes. The results can be used direct for clinical application in humans. This system results in a marked reduction in the number of laboratory animals that will be required for mechanistic testing in the future.

Isolated, autologous blood-perfused heart: Replacement of heterotopic heart transplantation (102/06) Dr. Anna Bogdanova, Institute of Veterinary Physiology, University of Zurich. In this project the researchers successfully developed an ex vivo model of a rat heart that was perfused with the animal's own blood. This method will enable researchers to carry out ex vivo studies that until now have only been possible using the heterotopic heart transplant method which causes considerable suffering to the laboratory animals used.

Development of in vitro strategies to propagate and characterize hemotrophic mycoplasmas (104/06) Prof. Regina Hofmann-Lehmann, Clinical Laboratory, Vetsuisse Faculty, University of Zurich. The aim of this study was to replace the ethically questionable propagation of hemoplasmas in host animals (e.g. pigs) by an in vitro culture system for M. suis. Using a mycoplasma-specific medium with added fetal calf serum, porcine embryo extract and transferrin the team succeeded in maintaining the continuous growth of M. suis. With this method it is possible to study the characteristics of M. suis without prior propagation in a host animal.

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 (106/07) Dr. Song Huang, Epithelix Ltd, Plan-les-Ouates. The MucilAir culture system, which consists of a human ciliated lung epithelium, was tested successfully. Procedures were further standardised and one dose-effect ratio was established for each of 9 reference substances (from the EU Acute-Tox Project). The cultured cells showed a stable phenotype and retained their organ-specific characteristics.

3R-Info-Bulletins

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

Detection of pain in laboratory animals via gene expression? (No. 39, February 2009) In this project, Dr. Paolo Cinelli, University of Zurich attempted to identify pain in animals (rodents) using modified genetic expression. This would provide a basis for developing new methods of recognising pain. Micro-array technology was used to examine two hundred genes while 27 genes were examined using the sensitive RT-PCR (real-time polymerase chain reaction) method. No significant differences were found between the genetic expression in selected areas of the brain of animals following surgical intervention in comparison with earlier.

Refined ex-vivo rodent heart model reduces in vivo experimentation (No. 40, June 2009) Dr. Anna Bogdanova from the University of Zurich and her research team successfully developed an ex vivo model of a rat heart that was perfused with the animal's own blood. This method will enable researchers to carry out ex vivo studies that until now have only been possible using the heterotopic heart transplant method which causes considerable suffering to the laboratory animals used.

A novel in-vitro cell model of the human airway epithelium (No. 41, October 2009) Dr. Song Huan, Epithelix Ltd, established the optimum culture conditions and defined standard test procedures (duration of exposure, length of testing) for the use of the in vitro lung epithelium model (MucilAir) developed by his company from primary human cells that can be cultured over a period of several months. The tissue showed similar structural and functional characteristics in vivo and makes it possible to elucidate the toxicity of substances and particles that may enter the human airway.

The 3R Internet Training Programme

In 2005 the Foundation set up the 3R Training Course internet training learning programme to offer individual, specialised further training for people who carry out or supervise animal experiments. This course was available in German and English at http://3R-training.tierversuch.ch. For technical and financial reasons, and because it has not attracted so many useres as hoped, it has been decided to abandon this project. Over the past year, 17 certificates were issued to people who passed the online examination. Over the past 5 years a total of 81 people have used this internet opportunity to test their knowledge in various fields.

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 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 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, Replace, Reduce, Refine.

A broad range of projects is sponsored on the condition that they are likely to replace animal experimentation, 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 2009

In its twenty-third year of existence the Administrative Board met three times, namely in May, August and December, for a half-day meeting. Apart from the statutory business concerning the end of the business year 2008, the Board addressed the following issues.

Research funds for 2009 were allotted to 11 projects already underway. In addition, 3 new projects were approved, while 18 applications were rejected. The Board also took note of the final assessment by the Evaluation Committee of 6 projects which had been completed in the previous year. An internal working group was set up to review the scope of the Foundation's activities. Successfully completed 3R projects are to be monitored more closely by the Foundation in order to encourage the adoption of new methods in practice. On the same principle, more support should be given for verifying newly developed 3R methods. In this connection, the Administrative Board has decided to try to network with other institutions and organisations in the future, in order to achieve greater awareness of the 3R principles.

At its meeting in May, the Board focused on the financial statements for 2008 and the approval of new projects, as well as those projects that had been completed. The question of whether the internet training programme should be continued remained unanswered owing to uncertainty as to its use and necessity. Following the report by the internal working group on the Foundation's strategic direction, the Board decided to hold a special meeting to discuss this issue.

At the meeting held in August the Board concentrated on the future activities of the Foundation. In the future, apart from its core activity of granting funds for research projects, the 3R Foundation would like to play a more active role as a national platform for spreading awareness of its 3R principles among the Swiss research community. It was decided to ask the members of the Evaluation Committee for their opinion at the next Board meeting.

At the December Board meeting, the focus was on hearing the opinion of the members of the Evaluation Committee, as well as approving new projects. The meeting was rounded off with a dinner. Moreover, the Administrative Board have left the question of the possibility of a new version of the internet training programme open until such time as the level of future interest can be determined.

The Secretary is responsible for the day-to-day running of the Foundation; he deals with all matters 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. The Secretary also deals with payments, book-keeping, closing the books at the end of the financial year and the budget. In addition, he prepares the text of the Annual Report as well as texts for the Foundation's website. During 2009, a good deal of his load concerned the internal working group on the future scope of the Foundation's activities.

Under the chairmanship of the Scientific Adviser, the Evaluation Committee held two meetings during the year, where in particular they examined 21 new applications for funding and evaluated the 6 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-Bulletins (as a brochure and on the Foundation's website at www.forschung3r.ch), writing brief scientific reports in English which present the projects receiving funding on the Foundation's website and regularly updating these reports. As a co-organiser of the EU START-UP project he helped to prepare and ensure the smooth running of the three meetings of experts that took place during the year, as well as taking the minutes that would be included in the final report in 2010. 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 and as a member of the EPAA Initiative (http://ec.europa.eu/enterprise/epaa/index_en.htm) also in Brussels.

During the year 6 projects were completed (92/04, 96/05, 98/05, 102/06, 104/06, 106/07). Together with those projects completed earlier, this brings the total of finished projects to 97 out of 117.

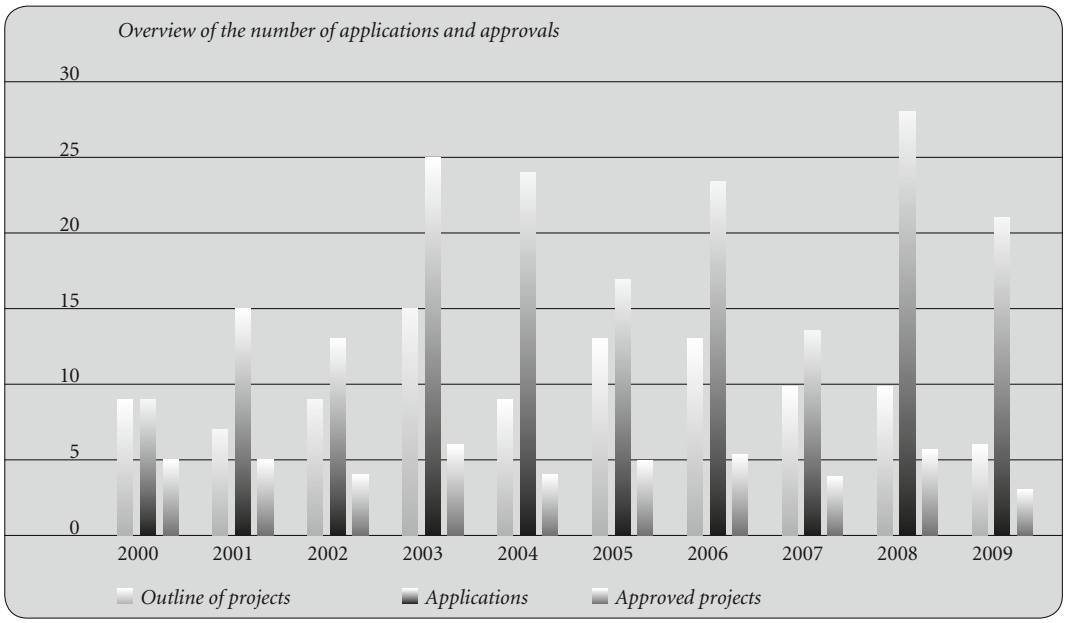
The bar-chart on page 9 shows that the proportion of applications approved varies only slightly from year to year. The long-term approval rate for applications is around 30%. This figure is dependent on the limited funds available and reflects the great care that is taken to examine applications in the light of their relevance to the 3R principles. Consequently, it often happens that projects that are well structured and of considerable scientific interest are not approved for funding because their relevance to the 3R principles is not sufficiently great. Since the inception of the Foundation, an average of approximately 5 projects have been approved each year.

Personnel

Dr. Martin Reist, Group Head at the Veterinary Public Health Institute at the University of Berne, was elected to the Evaluation Committee for the remaining part of the period of office 2007/2010.

Auditors' report to the Administrative Board

Die Wirtschaftsprüfer.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.



Financial business

A total of some CHF 635,551 was paid out for research in 2009 (CHF 634,308.20 for grants to research projects and CHF 1,242,85 for participation in conferences). Expenditure on current projects was some CHF 11,000 over budget (CHF 623,351.40). On the other hand, relatively little of the Fr. 10,000 budgeted for attendance at conferences was used, so that the overall expenditure for research exceeded budget only by CHF 2,000.

Operational expenditure for 2009 amounted to CHF 242,531.85 (project monitoring and information CHF 128,538.20, administrative costs including office infrastructure CHF 113,993.65). The total exceeded the budget of CHF 229,700 by around CHF 12,831 (5.5%). This was principally due to an invoice for CHF 17,216 for past maintenance of the 3R Training Programme that had not been budgeted for. Administrative costs were approximately CHF 2,000 over budget. Total expenditure therefore amounted to CHF 878,082.90.

On the income side, the equal financial commitment of the federal authorities and Interpharma represented the basic funding for the Foundation's activities. In 2009 the federal authorities and Interpharma each granted the Foundation CHF 389,000. As a result of low interest rates, interest on capital was only CHF 3,949. In addition, income from the 3R Training Course yielded CHF 1,600, while accumulated contributions for unfavourable age structure from the BVG Insurance Fund resulted in an extraordinary income item of CHF 7,402.85.

Total income was therefore around CHF 790,952 while total expenditure amounted to CHF 878,083, giving an excess of expenditure over income of around CHF 87,131. The unused contributions item therefore fell from approximately CHF 559,250 at the end of 2008 to CHF 472,120 at the end of 2009.

Financial statements

Profit and loss account 2009	*Expenditure*	*Income*
Income		
Federal contribution		389,000.00
Contribution from Interpharma		389,000.00
Total contributions		778,000.00
Interest on bank account		3,949.02
Other income		9,002.85
Total income		790,951.87
Expenditure		
Research grants	635,551.05	
Project supervision and information	128,538.20	
Administrative expenses	113,993.65	
Total expenditure	878,082.90	
Excess expenditure over income	-87,131.03	
	790,951.87	

Balance as per 31st December 2009		*Assets*	*Liabilities*
Liquid Assets			
Bank		551,067.89	
Accounts payable		2,675.95	
Accounting apportionment assets		2,318.00	
Liabilities			
Accounting apportionment liabilities			82,942.05
Unused research funds			
– Carried forward 1. 1. 2009	559,250.82		
– Excess expenditure over income	-87,131.03		472,119.79
Capital of the Foundation			1,000.00
		556,061.84	556,061.84

Contingent liabilities

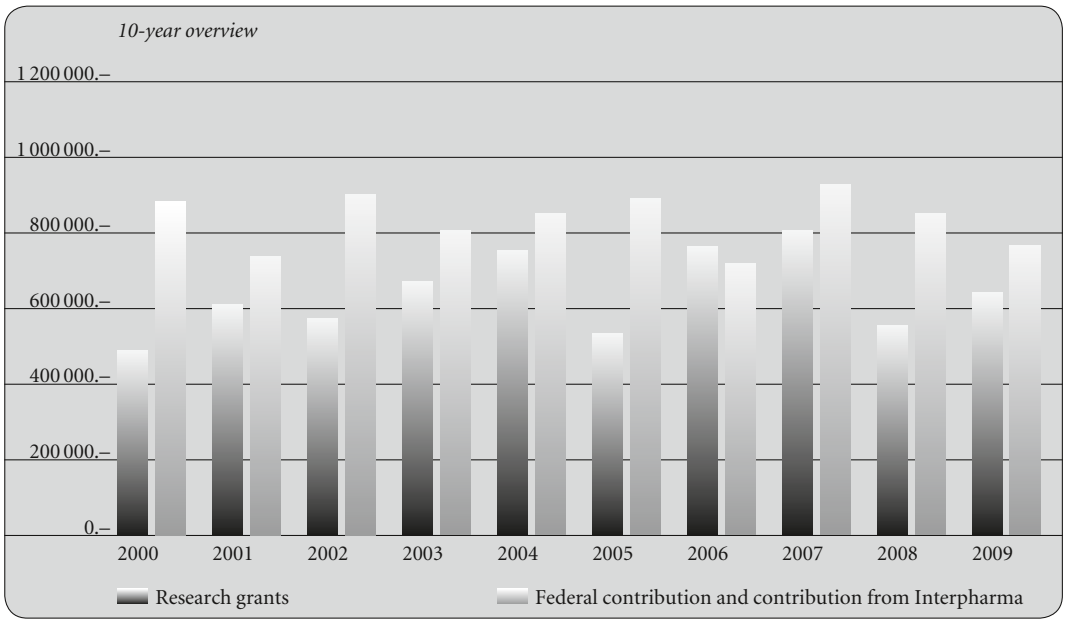
Approved research grants not yet paid out CHF 1,092,487.51.

Münsingen, 30 April 2010

3R RESEARCH FOUNDATION

Chairwoman signed C. Egerszegi

Secretary signed E. Diener



Overview of grants awarded between 1987 and 2008

At the end of 2009 a total of CHF 16,493,279.15 had been granted for projects and other subsidies, of which CHF 15,400,791.64 has been paid out so far. Together the federal authorities and Interpharma have contributed CHF 18,446,000 to the Foundation since 1987.

Contingent liabilities

At the end of 2009 the total earmarked for projects approved by the Board but not yet paid out amounted to CHF 1,092,487.51. This future liability is covered by Interpharma's new promise of funding. The Foundation's credit with this institution amounted to CHF 1,927,000 at the end of 2009.

The budget for 2010 includes around CHF 685,770 for current projects and a maximum amount of CHF 500,000 for new projects.

3R-Info-Bulletin

In 2009 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), as well as in pdf format.

The latest 3R-INFO-BULLETINS are:

№ 41, October 2009
A novel in-vitro cell model of the human airway epithelium

№ 40, June 2009
Refined ex-vivo rodent heart model reduces in vivo experimentation

№ 39, February 2009
Detection of Pain in Laboratory Animals via Gene Expression?

List of the other 3R-INFO-BULLETINS

№ 1, June 1994
Foundation Research 3R

№ 2, September 1994
mAbs without mice?

№ 3, December 1994
Prof. Gerhard Zbinden and 3R

№ 4, April 1995
Predicting human drug metabolism

№ 5, August 1995
Human recombinant antibodies

№ 6, September 1995
Call for 3R research proposals

№ 7, March 1996
The three 'R's of Russell and Burch, 1959

№ 8, August 1996
Regulation of digestion in cell culture

№ 9, October 1996
Permanent fish cell cultures as novel tools in environmental toxicology

№ 10, August 1997
10 years 3R Research Foundation

№ 11, March 1999
Immunization of laboratory animals

№ 12, September 1999
Leishmaniasis: development of an in vitro assay for drug screening

№ 13, January 2000
Identification of neurotoxic chemicals in cell cultures

№ 14, May 2000
Transgenic protozoa as an alternative to transgenic animals

№ 15, September 2000
Aggregating brain cell cultures: Investigation of stroke related brain damage

№ 16, January 2001
Housing and husbandry conditions affect stereotypic behaviour in laboratory gerbils

№ 17, May 2001
Fever in the test tube – towards a human(e) pyrogen test

№ 18, September 2001
Prevention of adverse effects in pigs after vaccination

№ 19, January 2002
Phenotype characterisation and welfare assessment of transgenic mice

№ 20, May 2002
Animal-free screening of biological materials for contamination by rodent viruses

№ 21, September 2002
Identification of new human skin irritation markers for tests with human skin reconstructs

№ 22, January 2003
Environmental enrichment does not affect the variability of animal experimentation data in the Light/Dark test

№ 23, May 2003
Simulation of stroke related damage in cultured human nerve cells

№ 24, September 2003
Generation of parasite cysts in cultured cells instead of living animals

№ 25, January 2004
Formation of new blood vessels in the heart can be studied in cell cultures

№ 26, May 2004
Immune cells in the liver: The generation and use of a mouse Kupffer cell line

№ 27, September 2005
The tick blood meal: From a living animal or from a silicone membrane?

№ 28, January 2005
Bone metabolism and bone-biomaterial interactions can be studied ex vivo

№ 29, May 2005
Computer-based quantification of (adverse) effects triggered by drugs and chemicals

№ 30, September 2005
Environmental enrichment does not disrupt standardization

№ 31, January 2006
Improvement of Pain Therapy in Laboratory Mice

№ 32, May 06
Non-Invasive Methods: Investigation of Airways Diseases by MRI in Rats

№ 33, September 06
Predicting drug hypersensitivity by in vitro tests

№ 34, January 07
Exploring natural anticoagulation by endothelial cells: A novel in vitro model

№ 35, May 07
From blood to brain and vice versa: Transport Processes in Choroid Plexus can be studied in vitro

№ 36, January 08
Host pathogen interactions can be studied in amoebae instead of laboratory animals

№ 37, June 08
The bioconcentration of chemical substances in fish can be determined in vitro

№ 38, October 08
Development of an in-vitro system using lung cells to determine the harmful effects of particles and gaseous substances

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). The brief scientific project reports in English, 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 2009

117/09 Prof. Maria Wartenberg
AG Molekulare Kardiologie, 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)

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

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

List of current projects and those completed in 2008 and 2009

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

92/04 Prof. Elisabetta Padovan
Gulbenkian Institute of Science, Oeiras, Portugal
Adjuvanticity of microbial-derived particles and synthetic analogs in vitro
Completed in 2009

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
Completed in 2008

96/05 Dr. Paolo Cinelli
Institute for Laboratory Animal Science
Assessment of pain and stress in mice by monitoring gene expression changes
Completed in 2009

97/05 Prof. 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
Completed in 2009

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 pullutants 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 transplantation
Completed in 2009

103/06 Prof. Stephen Leib
Institute of Infectious Diseases, University of Berne
An in vitro Model of Central Nervous System Infection and Regeneration: Neuronal Stem Cells as Targets of Brain Damage and Regenerative Therapies in Bacterial Meningitis

104/06 Prof. Regina Hofmann-Lehmann
Clinical Laboratory, Vetsuisse Faculty, University of Zurich
Development of in vitro strategies to propagate and characterize hemotrophic mycoplasmas
Completed in 2009

105/06 Dr. Nicolas Ruggli
Institute of Virology and Immunoprophylaxis (IVI), Mittelhäusern
Establishment of an in vitro system for the prediction of the degree of virulence of classical 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
Completed in 2009

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 metabolic clearance data in alternative approaches for the reduction or replacement of in vivo bioaccumulation testing with fish

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

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

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

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

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

114/08 Dr. Hans Rufli
ecotoxsolutions, Basle
Reduction in the number of fish used in the acute fish toxicity test

Office | Dorfplatz 5 | 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