



2011





TABLE OF CONTENTS

PAGES

004	01	FOREWORD
006	02	FACTS & FIGURES
010	03	HIGHLIGHTS
014	04	MULTI-ANNUAL RESEARCH PROGRAMMES
014		CORE Programme
019		INTER Programme
022		ATTRACT Programme
023		PEARL Programme
025		OTHER MULTI-ANNUAL Programmes
026	05	AFR PHD & POSTDOC GRANT SCHEME – AIDES À LA FORMATION-RECHERCHE
028	06	ACCOMPANYING MEASURES
030	07	PROMOTION OF SCIENTIFIC CULTURE
032	08	FNR AWARDS
033	09	PROMOTION OF THE FNR'S ACTIVITIES
034	10	OUTLOOK
036	11	ORGANISATION
039	12	ANNUAL ACCOUNTS

01 FOREWORD

Dear Reader,

We are pleased to present the Annual Report 2011 of the Fonds National de la Recherche Luxembourg, with the aim to provide an outline of the FNR's main activities during the past year.

A NEW SECRETARY GENERAL AND A NEW PERFORMANCE CONTRACT

In January 2011, the FNR has welcomed its new Secretary General Dr Marc Schiltz, a Professor of Physics and former Head of Laboratory at the Swiss Federal Institute of Technology in Lausanne (EPFL). Together with his team, he is committed to supporting the Luxembourg researchers and to turning research and innovation into one of the pillars of tomorrow's society and economy. The new performance contract signed in early 2011 and covering 2011-2013, underlines the continuity and stability of the FNR's priority actions and will contribute to realising this vision. In line with the 2009-2014 governmental programme, the FNR will put an emphasis on the socio-economic valorisation of research results via the implementation of "proof-of-concept" studies in order to validate the exploitation potential of research results. On the basis of a "Best Practice"-Study at an international level, the FNR has already evaluated two pilot pre-proposals. The FNR will assess the opportunity of implementing both a priority programme to strengthen the economic valorisation of research findings related to specific domains, as well as a thematically open programme to provide funding for outstanding research projects outside the CORE programme's priorities. With a view to further developing a critical mass, the FNR will proceed with the identification of potential research niches, based upon existing assets as well as scientific competencies. The Government will provide a financial contribution of EUR 132.24 million to the FNR for the period 2011-2013.

NATIONAL AND INTERNATIONAL COLLABORATION

In accordance with its performance contract, the FNR has further developed its national and international collaborations.

At the beginning of the year, the FNR and Luxinnovation have signed a collaboration agreement. The subsequent exchanges focused on socio-economic valorisation of research results, communication strategies and public-private partnerships within the framework of the AFR Scheme. A joint brochure, which gives an overview of funding opportunities for public-private partnerships, has also been published and widely distributed.

At the international level, the FNR has signed bilateral collaboration agreements with the Lorraine region in France in the field of Water Management and Quality (*launch of the Fonds Interrégional de la Recherche*), with the Polish funding agency NCBR in the field of Innovation in Services and with the Austrian funding agency FWF. By now, we count seven bilateral as well as six multilateral funding agreements. By the end of 2012, other agreements, for example with the French ANR, will be signed.

EVALUATIONS

At the request of the Ministry of Research (MESR), the FNR has undergone an external evaluation. The result, published in July 2011, has been very positive for the FNR. The evaluators concluded that, overall, the FNR greatly contributes to improving the scientific quality of Luxembourg's public research projects. Special praise was given to the development of a selection process that meets the international standards in terms of transparency and independency and to the portfolio of programmes and activities that strongly contribute to the international scientific attractiveness of Luxembourg. Furthermore, the FNR proved highly successful in promoting scientific culture in Luxembourg. Some recommendations concerning the strategy, the governance and the operations were made. In particular, the FNR was encouraged to simplify the management of its programmes, to establish an institutional platform of dialogue with the public research institutions and to communicate the added value and impact of its activities more clearly. The evaluators recommended to modify the composition of the Scientific Council and to exclude the representatives of the FNR's major beneficiaries in order to avoid potential conflicts. The ongoing legislative project which foresees to modify the law of 31 May 1999 on the creation of the FNR respects this proposal.

With a view to developing a new strategy, the FNR's Accompanying Measures have been evaluated in 2011/2012 by an external expert. On the basis of the evaluation recommendations, the FNR will strategically reorient its Accompanying Measures in order to adapt the funding instruments to new national and international developments.

FNR FUNDING SCHEMES

In 2011, the FNR has evaluated 897 project proposals submitted within the framework of its funding instruments. After evaluation, the FNR has decided to provide funding for 47 projects submitted in its CORE, INTER, ATTRACT and PEARL programmes, for 101 AFR PhD candidates and 40 AFR postdoc candidates as well as for 340 Accompanying Measures. The number of funded projects appears to be stabilising.

Concerning the CORE programme, the four past calls indicated considerable overlap of the research topics for the priorities "Labour Market, Educational Requirements and Social Protection" and "Identities, Diversity and Integration", leading to the organisation of a reflection workshop with the major national research actors as well as renowned foreign experts. Subsequently, the thematic priorities of the CORE programme's social sciences and humanities field have been rearranged and redefined: the new domain "Societal Challenges" has since been implemented into CORE 2012.

1. Yves Elsen
2. Jacques Lanners
3. François Meyer
4. Marc Schiltz



We are glad to see that the Measure AM1 – Promotion of Scientific Culture, has undergone a 36% increase compared to last year. It is important to note that over 50% of the demands have been submitted by schools.

In addition to the activities related to the AFR Calls and the follow-up of the AFR beneficiaries (as of 31 December 2011, the FNR supported 548 AFR projects), one of the AFR team's main occupations in 2011 was the implementation of the priority actions identified in the AFR Roadmap 2011-2013: the simplification and adaptation of the AFR Scheme, the national AFR PhD-postdoc training strategy, AFR public-private partnerships and the follow-up of the researchers' careers beyond the end of the AFR funding.

RESEARCH INTEGRITY

In the field of research ethics, the FNR has set up an international commission for scientific integrity and has set down a procedure to follow in case of alleged scientific misconduct committed by researchers applying for or benefitting from FNR funding. Our commission has discussed six cases in 2011. There was a wide variety of penalties, ranging from rejection of the submitted project to a 12-month ban from submitting proposals to the FNR.

PROMOTION OF SCIENTIFIC CULTURE

With regards to the promotion of scientific culture, many activities have yet again been realised successfully in 2011, allowing further sensitisation of a great number of people. Amongst them were the Science Festival with its 11,000 visitors, the 2nd edition of Fourer Science, several activities in Luxembourg's schools and communication workshops for researchers and scientific animators. Furthermore, the FNR consolidated its media partnerships and signed a PSC convention with the *CRP-Santé*.

In June 2011, the FNR has also conducted a national telephone survey on the public perception of science and research in Luxembourg. The encouraging results reflect the sensitisation efforts made over the last years. Nevertheless, several challenges remain and confirm the necessity to further reinforce activities in the field of promotion of scientific culture.

PROMOTION OF THE FNR'S ACTIVITIES

Besides routine communication work, the FNR launched a weekly "FNR Infoletter" for its subscribers, whilst also addressing the socio-economic players and political stakeholders twice a year through the new "FNR Newsletter", a publication on research challenges and opportunities. The FNR's 2011 media campaigns were focused on public-private partnerships within the AFR framework as well as on the Accompanying Measure AM1 for activities in the field of the promotion of scientific culture.

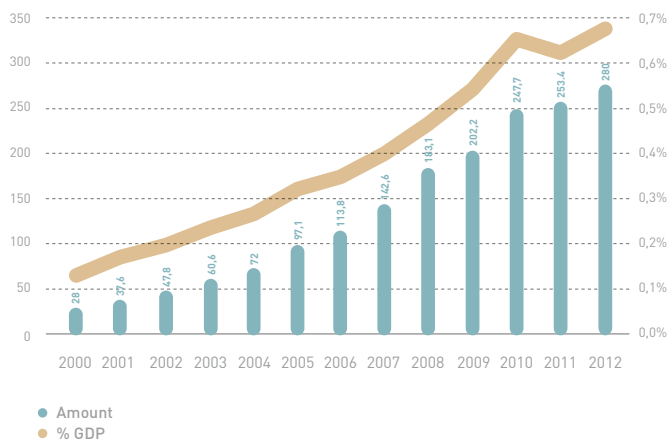
Wishing you a pleasant reading!

Yves Elsen, President of the Board
Jacques Lanners, Vice-President of the Board
François Meyer, President of the Scientific Council
Marc Schiltz, Secretary General

02 FACTS & FIGURES

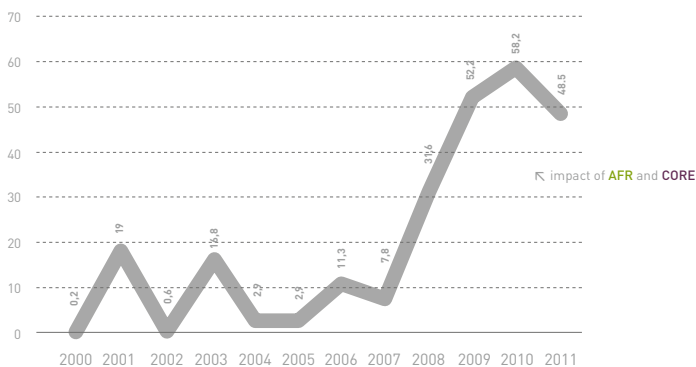
LUXEMBOURG INVESTMENTS

LUXEMBOURG PUBLIC INVESTMENTS IN PUBLIC AND PRIVATE R&D (MIO EUR)



FNR FUNDING

FNR: ANNUAL FUNDING COMMITMENTS (MIO EUR)







FNR COMMITTED 2011

47 FNR-FUNDED PROJECTS		31.65 (MEUR)
● 28 CORE Projects		16.18
● 1 ATTRACT Project		1.49
● 2 PEARL Projects		8.9
● 16 INTER Projects		5.08



340 ACCOMPANYING MEASURES		1.42 (MEUR)
● 73 AM1		0.41
● 103 AM2a		0.20
● 36 AM2b		0.08
● 21 AM2c		0.24
● 37 AM3		0.31
● 70 AM4		0.17

141 AFR GRANTS		16.9 (MEUR)
● 101 AFR PhD Grants		13.2
● 108 4 th year extensions		
● 40 AFR Postdoc Grants		3.7

MULTI-ANNUAL RESEARCH PROGRAMMES

LAUNCH DATE	CLOSING DATE	PROGRAMME TITLE	NUMBER OF FNR FOUNDED PROJETS	NUMBER OF FNR FINISHED PROJETS
● 2009	Ongoing	 Excellence Award for Research in Luxembourg (PEARL)	4	0
● 2008	Ongoing	 CORE Thematic Programme	135	22
● 2006	Ongoing	 Attract Researchers to Luxembourg - Opportunities for Outstanding Young Researchers in Luxembourg (ATTRACT)	6	0
● 2006	Ongoing	 Promotion of International Cooperation (INTER)	44	10
● 2003	2010	Food Safety (SECAL)	11	11
● 2003	2009	Surface Treatment (TRASU)	1	1
● 2002	2011	Living Tomorrow in Luxembourg (VIVRE)	35	35
● 2000	2008	Security and Efficiency of New Practices in E-Commerce for All Socio-economic Actors (SECOM)	11	11
● 2000	2008	New Materials and Nanotechnology (NANO)	6	6
● 2000	2007	Sustainable Management of Water Resources (EAU)	9	9
● 2000	2011	Health and Biotechnology & Extension Medical Aspects of Ageing (BIOSAN-PROVIE)	20	20

AFR GRANT SCHEME

LAUNCH DATE	CLOSING DATE	PROGRAMME TITLE	NUMBER OF FNR FOUNDED PROJETS	NUMBER OF FNR FINISHED PROJETS
● 2008	Ongoing	 AFR PhD Grants	399	29
● 2008	Ongoing	 AFR Postdoc Grants	147	46
● 2008	Ongoing	Transitions PhD	247	192
● 2008	Ongoing	Transitions Postdoc	42	42

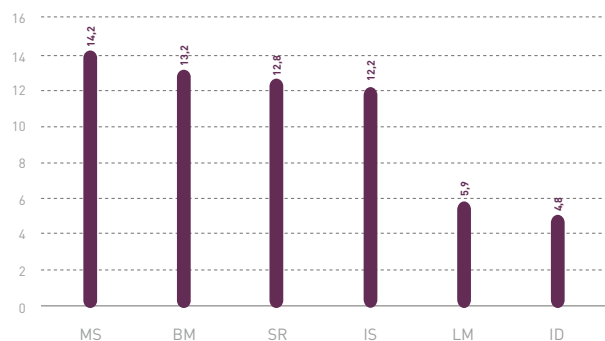


CORE

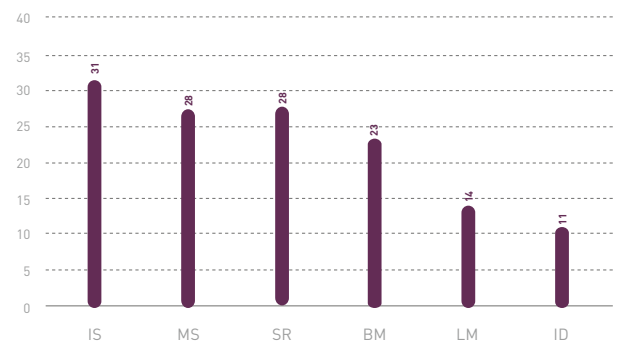
SUM OF COMMITTED FUNDING (IN MEUR)/DOMAIN

DOMAIN	2008	2009	2010	2011
● IS_Innovation in Services	2.44	3.32	2.72	3.79
● SR_Sustainable Resource Management in Luxembourg	2.47	4.70	2.97	3.05
● MS_New Functional and Intelligent Materials and Surfaces and New Sensing Applications	3.36	3.27	4.50	2.85
● BM_Biomedical Sciences/Regulation of Chronic, Degenerative and Infectious Diseases	3.17	1.94	5.37	2.82
● LM_Labour Market, Educational Requirements and Social Protection	1.03	0.84	2.28	1.75
● ID_Identities, Diversity and Integration	1.57	0.66	1.51	1.09

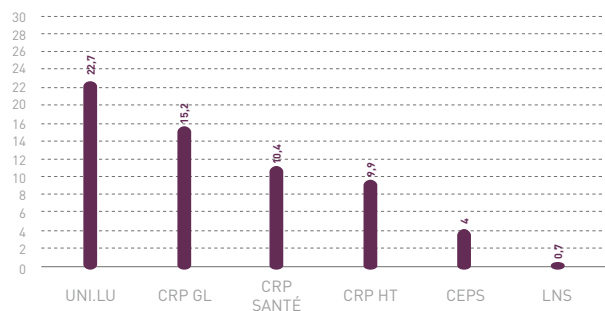
CORE: FUNDING BY DOMAIN, BETWEEN 2008 AND 2011 (MIO EUR)



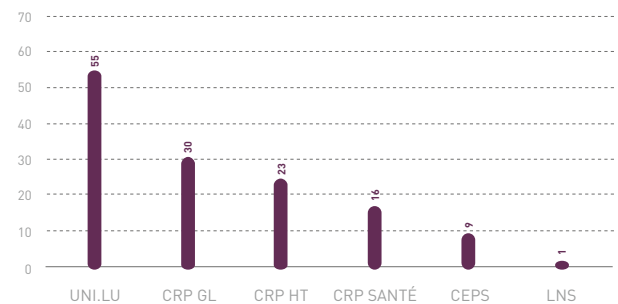
CORE: PROJECTS BY DOMAIN, BETWEEN 2008 AND 2011



CORE: FUNDING BY INSTITUTION, BETWEEN 2008 AND 2011 (MIO EUR)



CORE: PROJECTS BY INSTITUTION, BETWEEN 2008 AND 2011



PUBLIC-PRIVATE PARTNERSHIPS

CORE-PPP

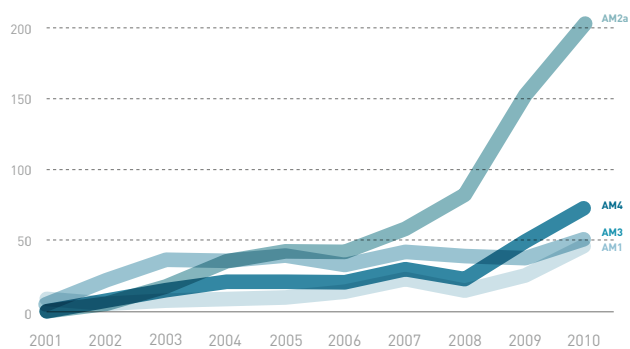
	2008	2009	2010	2011	TOTAL
● National non-contracting partners: private	5	4	4	3	16
● International non-contracting partners: private	5	4	2	1	12
TOTAL	10	8	6	4	28

AFR-PPP

	2008	2009	2010	2011	TOTAL
● PhD	1	12	1	5	19
● Postdoc	1	1	0	2	4
TOTAL	2	13	1	7	23

ACCOMPANYING MEASURES

AM ACCOMPANYING MEASURES (FUNDED APPLICATIONS)



AM1: Promotion of Scientific Culture

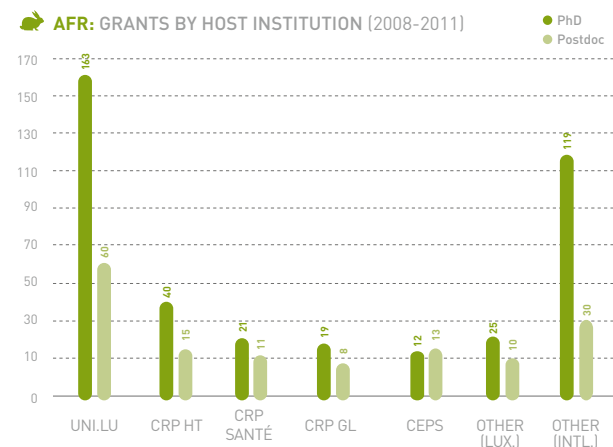
AM2a: Active Participation of Scientific Conferences Abroad

AM3: Organisation of Scientific Conferences in Luxembourg

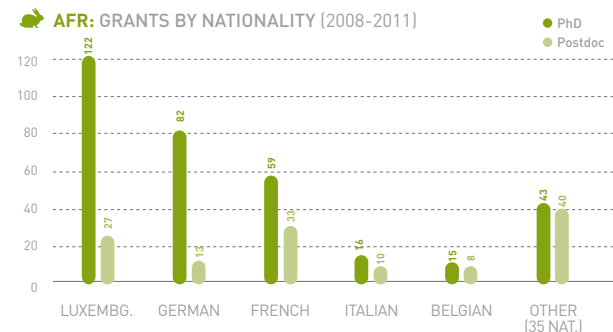
AM4: Scientific Publications Including PhD Theses

AFR PHD & POSTDOC GRANTS

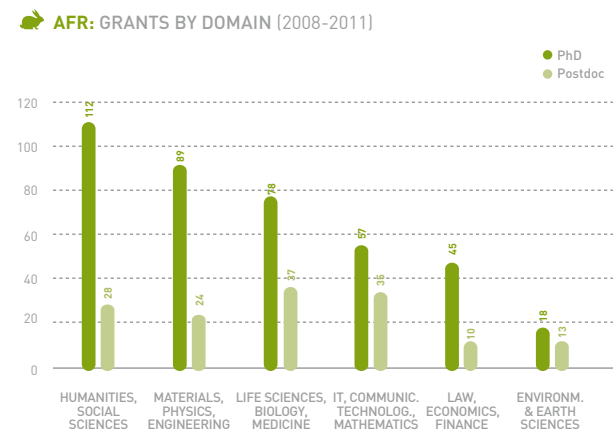
AFR: GRANTS BY HOST INSTITUTION (2008-2011)



AFR: GRANTS BY NATIONALITY (2008-2011)



AFR: GRANTS BY DOMAIN (2008-2011)



03 HIGHLIGHTS



RESEARCH HIGHLIGHT PEARL

LUXEMBOURG CLINICAL PROTEOMICS A FURTHER STEP TOWARDS ESTABLISHING THE COUNTRY AT THE FOREFRONT OF BIOMEDICAL RESEARCH

"We officially started in January 2010, but it was just an office downstairs and a blank sheet, really," remembers Prof. Bruno Domon, head of the Luxembourg Clinical Proteomics laboratory (LCP) based in the *CRP-Santé*. A recognized leader in his field, Domon has been granted an *Excellence Award for Research in Luxembourg* (PEARL) worth EUR 5 million by the FNR to build this lab. His team of currently 15 researchers, post-doctoral fellows and graduate students focuses on both the discovery and the clinical validation of new biomarkers and works closely with the Integrated BioBank (IBBL), nearby hospitals and the University as well as being part of the *Partnership for Personalized Medicine* (PPM) that regroups labs in Luxembourg and the US.

The field of proteomics concerns itself with the study of proteins, their structures, their amounts and their functions. The LCP's speciality, namely biomarkers – proteins whose presence or absence in the blood or urine can be diagnostic of specific diseases –, is bound to become one of the pillars of modern medicine. Biomarkers theoretically allow earlier, more accurate and less invasive diagnosis of a variety of diseases: bladder cancer, the subject of a European FP7 project the LCP are currently involved in, is just one of them. "Bladder cancer can be treated", explains Domon, "but it also has a recurrence rate of over 50-60% within two years." The necessary check-ups are presently done by cystoscopy, an invasive procedure – knowing the right biomarker would make a simple blood or urine sample suffice. The LCP team does not only focus on biomarkers linked to specific diseases though, but also on improving the technology itself. Their partnership with ThermoFisher Scientific, a leading manufacturer in life sciences, means they are the first lab to test some of the new instruments.



For Domon, setting up from scratch is a challenge as well as a fantastic opportunity. The lack of previous history grants him more freedom to operate, while the FNR funds provide modern equipment and allow him to hire people on the spot, with no need to go through lengthy procedures. "This kind of project could not work in a different way. Entrepreneurship is important and we need to be fast. We have less than one year from the idea to the paper. If you start talking about a project and you have not done it, somebody else will do it faster."

The other factor that is obviously critical to the successful functioning of the LCP is the proximity of clinical premises – after all the aim of the lab is to validate discovery findings and translate them into high-throughput, routine clinical assays. Valorisation of research is an important factor in Domon's vision. "At the end of the day science for the sake of science is a nice thing, but if it just remains a paper or a book it does not really move things forward very much. The idea is to translate it into clinical practice."

A win-win situation, further down the line: science will create a valuable product, which will in turn help finance further science. The LCP, for such a young lab, is already developing an astonishing reputation: "I guess in that relatively short time we have still managed to put our foot into the community. We have already gained recognition in developing new technologies, and are a player in the field of quantitative proteomics using new approaches. I think that per se is already an achievement."

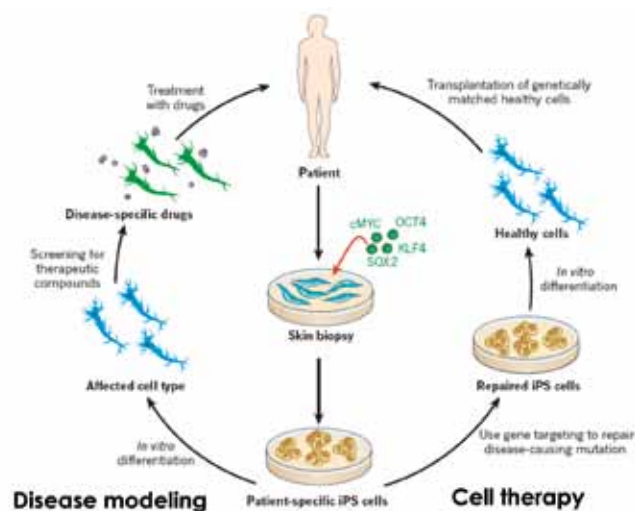


RESEARCH HIGHLIGHT AFR

PATIENT SPECIFIC INDUCED PLURIPOTENT STEM-CELL MODELS OF CARDIAC DISEASE

In 2006, Shinya Yamanaka and his team from Tokyo University made a brilliant discovery: induced pluripotent stem cell (iPSC) technology manages to re-program adult somatic cells to a pluripotent state. Just like embryonic stem cells, they can give rise to other, specialized tissues. However, generation of iPSCs does not require the destruction of an embryo and hence presents less ethical issues – and they hold a further, major advantage: generated from an ill patient with a genetically caused disease, they will naturally contain the mutation in question – a technological revolution. Christian Jung, who only recently received his PhD *summa cum laude* at the *Technische Universität München*, successfully used iPSC technology to study genetically caused cardiac diseases and managed to demonstrate the usability of a novel treatment alongside [*Dantrolene* – so far only used to treat malignant hyperthermia].

In a first step, Jung collected skin cells from several patients, isolated the fibroblasts, re-programmed these into stem cells and then into heart cells. The process sounds simple, but takes about seven months and had never been done before for patient-specific human cardiac cells. “It was a big question: what will happen when we differentiate the iPS cells into heart cells? Can we actually reproduce the disease at all?” Jung and his colleagues from the Laboratory for Molecular Cardiology (*Klinikum rechts der Isar*) could – and that is the exact reason why they were published so highly [New England Journal of Medicine & EMBO Molecular Medicine] and why Jung, “merely” a PhD student, was given the chance to present his project at the “Cell” stem cell conference in Lisbon last year. “It was fantastic! Other teams had tried the same, but we were the first that were successful,” says Jung.



Until the advent of iPSC, many human cardiovascular disorders were extremely hard to study. Significant differences in the organ structure make animal models unsatisfactory, whereas human cardiovascular cells themselves are dangerous to obtain and cannot be maintained in culture for more than a couple of days. Embryonic stem cells would have allowed differentiation into cardiovascular lines, but the issue of having to induce specific mutations presented a further, almost insurmountable hurdle. Then came Dr Yamanaka and his discovery. “He first developed a murine line and then a human line, and we thought ‘Fantastic! That would be a superb technique for the study of heart cells – finally we should be able to produce heart cells with the necessary mutation,’” says Jung.

Although growing the initial iPS cell lines was hard enough, this was only half the work. Jung then generated patient-specific cardiac cells and was “able to prove for the first time that human iPSCs can be used to model the specific pathology seen in two different genetically inherited cardiac diseases, LQT1 syndrome and CPVT1, and to investigate the therapeutic action of medications, illustrating the promise of iPSC technology for gaining new insights into human cardiac disease pathogenesis and patient-specific treatment”.

The technology is indeed promising: in the near future iPSC will allow *in vitro* drug screening for all kinds of diseases and treatments. Further along the line the technology may become an essential component of personalized medicine, e.g. allowing for individual cell line screenings or immunocompatible implants – in essence, what embryonic stem cells promised, but more sophisticated and less controversial.

RESEARCH HIGHLIGHT AM3

ORGANISATION OF SCIENTIFIC CONFERENCES IN LUXEMBOURG

BENELUX BIOINFORMATICS CONFERENCE 2011 ENABLING TRANSLATIONAL BIOMEDICAL RESEARCH

"Bioinformatics is helping to translate huge amounts of information and knowledge generated by fundamental biological research into solutions that can be applied in the clinical setting – that is, applications that can help doctors improve the way they detect, treat or manage disease," explains Dr. Francisco Azuaje from the *CRP-Santé*, one of the organizers of last year's BeNeLux Bioinformatics Conference (BBC11, www.bbc11.lu) that was held in Luxembourg and funded to a great part by the FNR.

The sequencing of the human genome was the start of a major change in biological science: the necessity to be able to analyse and interpret massive amounts of data brought in bioinformatics, the application of computer science to biological and medical research. According to Azuaje, the field of bioinformatics does not yet receive the praise it deserves. "Traditionally," he says, "bioinformatics has been seen as a support or service area. This kind of conference allows us to promote, recognize and celebrate the achievements of bioinformatics in biomedical research and show how bioinformatics not only support research, but actually, in many cases, drive it."

Even though the name of this annual event may suggest otherwise, 2011 was the first time the BeNeLux Bioinformatics Conference was ever held in Luxembourg. For Azuaje, having it in our country was important in many respects: not only was it a way to promote the profession and to create an event for networking, but it was also a chance to make people in Europe – and Luxembourg itself – aware of the opportunities and on-going research happening right here, right now. "We wanted to put the Lux in BeNeLux," says Azuaje, but in fact, he and his fellow organizers from the *CRP-Santé*, the University of Luxembourg and the Integrated BioBank did a lot more: BBC11 was truly international, with submission of abstracts from fourteen different countries and three continents, and covering areas as diverse as human health, food, the environment and drug development.



The two-day programme (12-13 December) was split into talks, poster presentations, debates and – interestingly – research speed dating. "The idea was to create a space to allow junior and senior researchers to come together in an informal setting and briefly explain their research interests," explains Azuaje. Applying the known concept in a slightly different set-up might have been a bit too unconventional for some, but has received good feedback overall by those who tried it. Generally, conference participants agreed that networking and discussion activities should be preserved and expanded in future editions.

Another novelty introduced by the Luxembourgish team – a web management system developed largely by Daniel Struck, a fellow researcher at the *CRP-Santé* – will most definitely return to the next conference as well. Overall, the organizers can be very proud of their achievement: statistically, the event that drew over 190 participants was rated by many as the best BBC conference to date, despite the fact that the team only had a very limited amount of time and a full-time research job to handle alongside. "Our team was small," says Azuaje, "but had a great advantage: We really, really wanted to achieve the result that, in the end, we accomplished." Would they do it again? "Yes, definitely," affirms Azuaje. "Hopefully, the conference will come back to Luxembourg in a few years." The team is certainly prepared for it now.

RESEARCH HIGHLIGHT VIVRE

TIVIPOL INFORMATION TECHNOLOGIES FOR THE ELDERLY

Mobile phones, touchpads, computers... many of us take information technology (IT) and its uses for granted. Yet for a host of elderly people such tools and gadgets often remain unfamiliar and sometimes even daunting – no matter how useful. Are there ways to facilitate acceptance of the “new” technologies? Can you hide IT from people that might be willing to use its functionalities, but not the machine itself? Could the innovative use of IT help elderly people in their day-to-day life? Those were the main questions investigated by TIVIPOL, a multi-disciplinary project initiated on FNR funding from 2007-2009.

TIVIPOL regrouped scientists from the *CRP Gabriel Lippmann* and the universities of Luxembourg, Namur and Fribourg (the latter two acting as external scientific advisors), as well as partners from the *RBS-Center fir Altersfroën* and the *Résidence Grande-Duchesse Charlotte (Konviktsgaard)*. The project was initiated by Dr Benoît Otjacques, a computer scientist at the *CRP-GL*, and Prof. Dieter Ferring (University of Luxembourg), a psychologist with expertise in gerontology. “We thought that the mix of our two domains could provide very interesting results – and it did,” says Otjacques.

The group chose to focus on aspects of everyday social life; their target group were of a certain age, but healthy, had family and other social contacts in Luxembourg, yet lived in a retirement home (*Konviktsgaard*). In a first step, the IT system was only going to allow users to book their lunch menu in the canteen; new functionalities would be added regularly. “We started simple and then continuously changed the system according to feedback; either simplifying or complexifying it.” An interesting and unusual approach: longitudinal studies of this kind are indeed rare.



After developing and testing software for various applications such as a Nintendo Wii remote, phidgets or electronic paper, *Sammy*, a system based on a touch-screen terminal and RFID tags automatically identifying the different users, was retained. “You should not see the computer behind,” explains Otjacques, “most notably in order to avoid any reticence elderly people could have towards the technology.”

The original system kept being refined based on the discoveries of Ferring’s team: what was causing acceptance or rejection and could those factors be changed? Over time, the team managed to convince quite a few of the residents to use the system, and, according to Otjacques, to even derive a certain satisfaction out of this use - especially if they were previously unfamiliar with information technology. In this respect, TIVIPOL raised an important ethical point: when you change someone’s life for research, you take on a certain responsibility. In this case it meant that *Sammy* could not simply be taken away again. “Ideally, we would like to continue the entire project, but we do need funding”, says Otjacques. Meanwhile, the system is kept in place, stagnant but functioning.

For Otjacques, the project that provided the basis for a very fruitful multidisciplinary collaboration, helped strengthen international collaborations and resulted in several prototypes and publications has been a success. Besides the scientific results, he is particularly proud of the applied nature of TIVIPOL: “It is an example of research based on real life and necessitating real life.”



04 MULTI-ANNUAL RESEARCH PROGRAMMES



CORE PROGRAMME

TOTAL BUDGET 2008-2010: EUR 73,000,000

TOTAL BUDGET 2011-2013: EUR 69,000,000

1ST CALL IN 2008: 34 PROJECTS SELECTED

2ND CALL IN 2009: 37 PROJECTS SELECTED

3RD CALL IN 2010: 36 PROJECTS SELECTED

4TH CALL IN 2011: 28 PROJECTS SELECTED

5TH CALL IN 2012: DEADLINE FOR SUBMISSION OF PRE-PROPOSALS: 1 MARCH 2012/ DEADLINE FOR SUBMISSION OF FULL PROPOSALS: 22, 23, 24 MAY 2012 / FUNDING DECISION: 19 OCTOBER 2012

Based on the Foresight exercise and following the experience of its first multi-annual programmes, the FNR implemented a single framework programme in 2008, the so-called CORE Thematic Programme. The main objective of the CORE programme is to raise the scientific quality of Luxembourg research in the priority domains identified through the Foresight process and retained by the Government.

The FNR has processed four CORE calls so far (2008, 2009, 2010 and 2011). The submitted research projects were evaluated by international peers and, based on the scientific quality of the proposals, the FNR decision bodies have granted funding to 135 out of 385 submitted projects. In total, EUR 65.3 million out of the EUR 95 million available have been allocated to date.

CORE PRIORITY DOMAINS

DOMAINS	THEMATIC RESEARCH PRIORITIES
<ul style="list-style-type: none"> ● Innovation in Services (IS) ● ● ● ● ● 	<ul style="list-style-type: none"> Development and Performance of the Financial Systems Business Service Design Information Security and Trust Management Telecommunication and Multimedia
<ul style="list-style-type: none"> ● Sustainable Resource Management in Luxembourg (SR) ● ● ● ● ● 	<ul style="list-style-type: none"> Sustainable Management of Water Resources Sustainable Uses and Sources of Energy Understanding Ecosystems and Biodiversity Sustainable Agro-Systems Management Spatial and Urban Development
<ul style="list-style-type: none"> ● New Functional and Intelligent Materials and Surfaces and New Sensing Applications (MS) 	<ul style="list-style-type: none"> New Functional and Intelligent Materials and Surfaces
<ul style="list-style-type: none"> ● Biomedical Sciences/Regulation of Chronic, Degenerative and Infectious Diseases (BM) ● ● 	<ul style="list-style-type: none"> Regenerative Medicine in Age-related Diseases Translational Biomedical Research Public Health
<ul style="list-style-type: none"> ● Societal Challenges (SC)* ● ● ● 	<ul style="list-style-type: none"> Social and Economic Cohesion Education and Learning Identities, Diversity and Interaction

□ The new domain Societal Changes (SC) is a merger of the former domains "Labour Market, Educational Requirements and Social Protection" and "Identities, Diversity and Integration".

2011 RESULTS

In 2011, the FNR launched its 4th CORE Call, resulting in 126 pre-proposals. 113 Principal Investigators (PIs) were invited to submit a full proposal, and a total of 99 PIs had submitted their full proposal by the beginning of June 2011.

In the first stage of the evaluation process, each project proposal was usually sent to three reviewers who were asked to complete a written evaluation. In the second stage, after the return of the initial evaluations, a thematic expert panel chaired by a rapporteur assessed both the project proposals and the written evaluations. There are a total of 6 expert panels, each covering one of the priority domains; the panels' role is to make funding recommendations to the FNR decision bodies. The selection criteria are identical for all the scientific domains, scientific quality being the principal criterion. In the third stage, based on the evaluation resulting from the first two steps, the FNR decision bodies selected 28 proposals to be awarded a total of EUR 16.18 million in funding. The panels judged that the selected projects were of high scientific quality and therefore competitive on an international level.

In 2011, the FNR decided to fund only 3 out of the 20 projects submitted under CORE Junior Track, the FNR's funding instrument for researchers at an early research career stage. Junior track projects should help PIs to establish own independent research lines and thus to bolster their CV.

The projects of the 2011 CORE Call are due to start between December 2011 and September 2012.

In order to further increase the success rate during the next calls, the FNR will continue to organise information and training sessions for the researchers.

For more details on the priority domains as well as for a detailed summary of the ongoing CORE projects (2008, 2009, 2010 and 2011 calls) as well as other information, please refer to www.fnr.lu/core.



www.fnr.lu/core

CORE PROJECTS 2011

CORE 2011 - INNOVATION IN SERVICES (IS):

PROJECT ACRONYM	PROJECT TITLE	PRINCIPAL INVESTIGATOR	ORGANISATION	FNR CONTRIB. IN EUR
● STAST	Socio-Technical Analysis of Security and Trust	Peter Y. A. Ryan	SnT (University of Luxembourg)	765,000
● FAVE	Fusion Approaches for Visual Systems Enhancement – Security Applications	Bjorn Ottersten	SnT (University of Luxembourg)	693,000
● IPaD	I Play and Drive	Thomas Engel	SnT (University of Luxembourg)	596,000
● ESCAPE	Efficiency, Spreading of Crisis and Algorithmic Policy Evolution	Theoharry Grammatikos	University of Luxembourg	475,000
● SeSaNet	Integrated Security and Safety Engineering for Networked Control Systems	Holger Voos	SnT (University of Luxembourg)	551,000
● CoPAInS	Conviviality and Privacy in Ambient Intelligence Systems	Yves Le Traon	SnT (University of Luxembourg)	486,000
● CAPACITI	Change Analysis in Luxembourg Public Administration Relative to Continuous Improvement Tools' Implementation	Karen Rossignol	CRP Henri Tudor	221,000
TOTAL:				3,787,000

CORE 2011 - SUSTAINABLE RESOURCE MANAGEMENT IN LUXEMBOURG (SR):

PROJECT ACRONYM	PROJECT TITLE	PRINCIPAL INVESTIGATOR	ORGANISATION	FNR CONTRIB. IN EUR
● BEDLOAD	Investigation of Bedload Transport with Seismometers and with Hydrophones	Andreas Krein	CRP Gabriel Lippmann	387,000
● BIOCAR	Bioavailability of Carotenoids – Impact of High Mineral Concentrations	Torsten Bohn	CRP Gabriel Lippmann	607,000
● PAPAARAZZI	Towards a Global and near Real-time Service of Flood Parameters from Radar Satellites	Patrick Matgen	CRP Gabriel Lippmann	542,000
● REDESG	Reliable and Efficient Distributed Electricity Generation in Smart Grids	Juergen Sachau	SnT (University of Luxembourg)	638,000
● GASPOP	Influence of the Reactor Design and the Operational Parameters on the Dynamics of the Microbial Consortia Involved in the Biomethanation Process	Philippe Delfosse	CRP Gabriel Lippmann	872,000
TOTAL:				3.046.000

CORE 2011 - NEW FUNCTIONAL AND INTELLIGENT MATERIALS AND SURFACES AND NEW SENSING APPLICATIONS (MS):

PROJECT ACRONYM	PROJECT TITLE	PRINCIPAL INVESTIGATOR	ORGANISATION	FNR CONTRIB. IN EUR
● KITS2 ● ●	Kesterite in Thin Film Solar Cells - 2	Susanne Siebentritt	University of Luxembourg	729,000
● CURI ● ●	Cu Rich Absorbers for Highly Efficient CIGS Solar Cells	Susanne Siebentritt	University of Luxembourg	589,000
● CEDIL ● ●	Chalcogenide Semiconductors via Electrodeposition from Ionic Liquids	Marc Steichen	University of Luxembourg	281,000
● OPTIPIEZO ● ●	Shape Optimal Design of Piezoelectric Transducers Based on Advanced Modeling for Adaptive Structure Applications	Houssein Nasser	CRP Henri Tudor	567,000
● MagWIRE ● ●	Duplex PECVD - HIPIMS High-throughput In-line Wire Coater: Development of the Prototype Instrument and Application to Magnetic Wires	Tom Wirtz	CRP Gabriel Lippmann	682,000
TOTAL:				2,848,000

CORE 2011 - BIOMEDICAL SCIENCES / REGULATION OF CHRONIC, DEGENERATIVE AND INFECTIOUS DISEASES (BM):

PROJECT ACRONYM	PROJECT TITLE	PRINCIPAL INVESTIGATOR	ORGANISATION	FNR CONTRIB. IN EUR
● HuMiX ● ● ●	A Microfluidics-based Human-microbial Cell Co-culture Device for Resolving the Molecular Dynamics of Syntrophy and Antagonism in Health and Disease States	Paul Wilmes	University of Luxembourg	500,000
● ParkInflam ● ●	Inflammasome Function in Neuroinflammation: a Role for Microglia in Parkinson's Disease	Catherine Dostert	University of Luxembourg	320,000
● PROMETA VIR ● ● ● ●	Development of Novel Protein Therapeutics Against Host- and Virus Associated Targets that Block Efficiently HIV-1 Entry and Cancer Metastasis	Andy Chevigne	CRP-Santé	720,000
● PORT-HPP ● ●	Towards Standardized Proteomics Methods: A Portal for the Human Proteome Project HPP	Bruno Domon	CRP-Santé	770,000
● MetNet ● ● ●	"Combing Computational and Experimental Approaches to Dissect Molecular Switches Involved in Epithelial Cell Plasticity and Metastasis"	Evelyne Friederich	University of Luxembourg	510,000
TOTAL:				2.820.000

CORE 2011 - LABOUR MARKET, EDUCATIONAL REQUIREMENTS AND SOCIAL PROTECTION (LM):

PROJECT ACRONYM	PROJECT TITLE	PRINCIPAL INVESTIGATOR	ORGANISATION	FNR CONTRIB. IN EUR
● PELEDU ●	Personality in Learning and Education	Martin Brunner	University of Luxembourg	251,000
● IMPALA ●	International Migration Policy and Law Analysis Database Project	Michel Beine	University of Luxembourg	549,000
● TWAIN ● ●	Technology Use at Work And Innovative Work Practices: Assessing the Impact on Work Environment, Employees' Motivations and Effort in Luxembourg	Ludivine Martin	CEPS/INSTEAD	525,000
● PREVAL ● ●	Predictive Validity of School Placement Decisions of Primary School Teachers in Luxembourg	Florian Klapproth	University of Luxembourg	420,000
TOTAL:				1.745.000

CORE 2011 - IDENTITIES, DIVERSITY AND INTEGRATION (ID):

PROJECT ACRONYM	PROJECT TITLE	PRINCIPAL INVESTIGATOR	ORGANISATION	FNR CONTRIB. IN EUR
● PARTIZIP2 ● ● ●	Gesellschaftliche Partizipation und Identitätsbildung: Der Kampf um politische, wirtschaftliche und kulturelle Teilhabe in Luxemburg im europäischen Zusammenhang von den 1930er Jahren bis heute	Jean-Paul Lehnens	University of Luxembourg	725,000
● CB-RES ● ●	Cross Border Residence. Identity Experience and Integration Processes in the Greater Region	Sonja Kmec	Universite du Luxembourg	367,000
TOTAL:				1,092,000

 For a detailed summary of each project as well as other information, please refer to www.fnr.lu/core



INTER PROGRAMME

Promotion of International Cooperation

TOTAL BUDGET 2011-2013: EUR 12,000,000

CALLS: ONGOING (FOR FURTHER DETAILS, VISIT WWW.FNR.LU/INTER)

Researchers recognise the need for International Cooperation, particularly with a view to giving research in Luxembourg a more visible profile. International collaborations are also important to achieve a critical mass within research that cannot be sought if the research context is limited to Luxembourg.

42 project proposals were submitted in the INTER programme in 2011. 16 proposals have been retained for funding by the FNR, amounting to EUR 5.08 million awarded in grants. These projects cover subjects as varied as earth observation, biomedical research, materials or ICT.

In October, the FNR and the Polish funding agency NCBR have signed a cooperation agreement, thus allowing both agencies to launch a joint call for project proposals in the field "Innovation in Services". Furthermore, a lead-agency agreement allowing the funding of bilateral projects has been signed with the Austrian funding agency FWF in January 2012. Within the framework of Lorraine's

presidency of the 13th Summit of the *Grande Région*, the Lorraine region and the FNR have announced the official launch of the *Fonds Interrégional de la Recherche* in October 2011. A first call for project proposals in the field of "Water Management and Quality" has already been issued.

Since the start of the INTER programme in 2006, the FNR has allocated grants summing up to EUR 15.72 million.

Within the framework of the Accompanying Measure AM2c – Mobility of Researchers –, the FNR has funded research visits (in Luxembourg and abroad) for 21 researchers in 2011. Furthermore, 27% of the AFR grantees have been welcomed in foreign institutions (16 different countries).

INTERNATIONAL COLLABORATIONS

In the globalised world of R&D, it is more than crucial to know the "state of the art" in terms of international research policy. Therefore, the FNR takes its responsibility as an agency that relies on close collaboration with foreign experts on the subject. Hence, apart from the INTER programme, the FNR is a member of various international networks:

- the association of European Research Funding Organisations and Research Performing Organisations (Science Europe),
- the European Heads of Research Councils (EUROHORCs),
- the European Science Foundation (ESF),
- the International Council for Science (ICSU)

Funding for networking activities is provided through participation in several international schemes:

- the European Cooperation in Science and Technology (COST)
- the European Research Consortium for Informatics and Mathematics (ERCIM)
- the ESF Research Networking Programme

Within the Seventh Framework Programme (FP7), the

FNR does also participate in 11 European Research Area Networks: ERA-Age 2, ERASysBio, MATERA, MNT, HERA, NEURON, MANUNET, CORE ORGANIC, TRANSCAN, CHIST-ERA, ECO-INNOVERA and MERANET.

In order to improve INTER's impact, the FNR has signed bilateral agreements with Belgium (BELSPO-Belgian Science Policy and FWO-Fonds Wetenschappelijk Onderzoek Flandern), France (CNRS-National Centre for Scientific Research), Germany (DFG-Deutsche Forschungsgemeinschaft), Switzerland (SNF-Schweizer Nationalfonds), Poland (NCBR) and Austria (FWF-Austrian Science Fund).

The FNR does also facilitate Luxembourg participation in several international multilateral funding schemes: Ambient Assisted Living (AAL) Joint Programme, European & Developing Countries Clinical Trials Partnership (EDCTP), EUROCORES Scheme of the European Science Foundation (ESF), European Collaborative Research Projects ERCP (ESF), Materials World Network (MWN) - NSF MATERIALS, Joint Programming of Neuro-degenerative Diseases (JPND) and ICC Chemistry NSF.

INTER PROJECTS 2011:

PROGRAMME / FOREIGN FUNDING AGENCY	PROJECTS FUNDED						
	ACRONYM	TITLE	PROJECT LEADER	INSTITUTION	PROJECT START	PROJECT END	FNR CONTRIB. IN EUR
● DFG (Deutsche Forschungsgemeinschaft)	NUTRIVIN	To a Better Understanding of the Stuck Fermentation during Spontaneous Fermentation Due to Microbial Interactions and the Chemical Composition of the Must	Danièle Evers	CRP Gabriel Lippmann	01.09.11	31.08.14	321,000
● DFG (Deutsche Forschungsgemeinschaft)	GRACE	The Global Continental Water Balance Using GRACE Spaceborne Gravimetry and High-resolution Consistent Geodetic-hydrometeorological Data Analysis	Tonie Van Dam	University of Luxembourg	will start in 2012		76,539
● DFG (Deutsche Forschungsgemeinschaft)	PASCOM	Pain and Suffering: from Philosophical Concepts to Psychobiological Mechanisms	Fernand Anton	University of Luxembourg	15.09.11	14.09.14	473,000
● SNF (Swiss National Science Foundation)	CLOVIS	Cloud Computing Improvement through Risk and SLA Management	Benjamin Gâteau	CRP Henri Tudor	01.10.11	30.09.13	223,000
● SNF (Swiss National Science Foundation)	ACET	A Design Theory for Architectural Coordination of Enterprise Transformations	Erik Proper	CRP Henri Tudor	01.01.12	31.12.14	946,000
● ERA-NET MATERA	BIOADBD	Elaboration of Bioactive Surfaces by Combining Dielectric Barrier Discharge and Site-specific Attachment of Biomolecules	Patrick Choquet	CRP Gabriel Lippmann	will start in 2012		459,000
● ERA-NET MATERA	PNOXIDES	Semiconducting Transparent Oxide Thin Films for the Elaboration of p-n Junctions	Damien Lenoble	CRP Gabriel Lippmann	will start in 2012		527,000
● ERA-NET CORE ORGANIC	TILMAN-ORG	Reduced Tillage and Green Manures for Sustainable Organic Cropping Systems	Lucien Hoffmann	CRP Gabriel Lippmann	01.09.11	31.08.14	400,000
● ERA-NET CORE ORGANIC	Authentic Food	Fast Methods for Authentication of Organic Plant-based Foods	Cédric Guignard	CRP Gabriel Lippmann	01.10.11	30.09.14	100,000

PROGRAMME / FOREIGN FUNDING AGENCY	PROJECTS FUNDED						
	ACRONYM	TITLE	PROJECT LEADER	INSTITUTION	PROJECT START	PROJECT END	FNR CONTRIB. IN EUR
● FLARE 2 (Future Leaders of Ageing Research in Europe)	FLARE 2 Euro-EPINOMICS	Health in Old Age: A Study on the Interplay of Economic and Individual Influences	Anja Leist	University of Luxembourg	09.01.11	31.03.14	250,810
● DFG (Deutsche Forschungsgemeinschaft)	CAOS	From Catchments as Dynamic Systems to Models based on Dynamic Functional Units	Laurent Pfister	CRP Gabriel Lippmann	01.09.11	31.08.14	539,390
● CNRS (Centre National de la Recherche, France)	AlgoDec	Algorithmic Decision Theory	Raymond Bisdorff	University of Luxembourg	01.01.12	31.12.14	10,000
● DFG (Deutsche Forschungsgemeinschaft)	OEKOVALID 2	Diagnostische Kompetenz von Grundschullehrkräften bei der Erstellung der Übergangsempfehlung	Sabine Krolak-Schwerdt	University of Luxembourg	will start in 2012		103,000
● DFG (Deutsche Forschungsgemeinschaft)	Crystallization	Interfacial Growth Mechanisms in Simple Systems Providing a Density Functional Theory and Computer Simulation Basis for Coarse Grained Models of Crystallization of Phase Field and Phase Field Crystal Type	Tanja Schilling	University of Luxembourg	will start in 2012		154,000
● STEREO II, recherche en observation de la terre, Service fédéral public de programmation scientifique, Belgium	Tandem-X	Study and Monitoring of Virunga Volcanoes Using Tandem-X	Nicolas d'Oreye	MNHN	will start in 2012		42,500
● FWO (Fonds Wetenschappelijk Onderzoek, Flanders)	SIEP	Specification Logics and Inference Tools for Verification and Enforcement of Policies	Leon Van der Torre	University of Luxembourg	will start in 2012		450,000
Total							5,075,239

For a detailed summary of each project as well as other information, please refer to www.fnr.lu/inter



www.fnr.lu/inter



ATTRACT PROGRAMME

Attract Researchers to Luxembourg: Opportunities for Outstanding Young Researchers in Luxembourg

TOTAL BUDGET 2006-2010: EUR 6,000,000

TOTAL BUDGET 2011-2013: EUR 9,100,000

1ST CALL IN 2007: 1 CANDIDATE SELECTED (FNR CONTRIBUTION: EUR 800,000)

2ND CALL IN 2008: THE FNR DECIDED NOT TO SELECT ANY OF THE CANDIDATES.

3RD CALL IN 2009: 2 CANDIDATES SELECTED (FNR CONTRIBUTION: EUR 2,557,685)

4TH CALL IN 2010: 2 CANDIDATES SELECTED (FNR CONTRIBUTION: EUR 2,675,000)

5TH CALL IN 2011: 1 CANDIDATE SELECTED (FNR CONTRIBUTION: EUR 1,490,000)

6TH CALL IN 2012: DEADLINE FOR SUBMISSION OF PRE-PROPOSALS: 6 FEBRUARY 2012 / FUNDING DECISION: 25 JUNE 2012

The ATTRACT programme aims to build on the excellence, dynamism and creativity of research in Luxembourg by attracting young researchers with a high level of ability in science or technology and proven experience in a professional research context.

In 2011, the FNR received 3 excellent project proposals within the ATTRACT call. Of these, one candidate/project has been selected. Dr Esposito is highly regarded by his peers. He has an excellent track record as shown by his publication list (over 30 publications in high impact journals) and shows great potential to become a leader in his field. The evaluation panel felt confident that Dr Esposito will strengthen Luxembourg research in the field of Physics and Material Sciences.

In order to ensure the sustainability of its ATTRACT funding, the FNR will carry out an analysis of its ATTRACT fellows' careers in their host institutions. Furthermore, the FNR will proactively mobilize its ATTRACT fellows to draw additional high potential candidates.

NEWTHERMO – A NEW THERMODYNAMIC THEORY FOR SMALL FLUCTUATING SYSTEMS: FROM NANODEVICES TO CELLULAR BIOLOGY

Project Leader: Dr Massimiliano Esposito

Host Institution: University of Luxembourg

Starting Date: 01.01.2012

Closing Date: 31.12.2016

FNR Contribution: EUR 1,490,000

PROJECT DESCRIPTION

The research programme NewThermo falls into one of the hottest areas of theoretical/statistical physics. It tries to understand and model systems at the nanoscale and to improve current strategies to design new nanodevices or enhance their current performance which remain largely system-specific and often empirical. The lack of general guiding principles largely results from the inability of traditional thermodynamics to deal with the effects of strong fluctuations, ubiquitous in nanodevices, and from the fact that these systems often operate far from equilibrium. The goal of this project is to develop a new thermodynamic theory, called stochastic thermodynamics, which incorporates these characteristic features of nanodevices and intends to further develop this theory along three main directions: incorporation of notions of information, computation, feedback and control; description of quantum effects arising in low temperatures and small system sizes; study of the properties of the natural "nanodevices" fuelling the activity of biological cells.

Although the work is largely theoretical, several concrete applications demonstrating that the project will bring great value to Luxembourg research, both to physical sciences and biomedical systems biology, have been traced out.

For more information on ATTRACT, please refer to www.fnr.lu/attract



www.fnr.lu/attract





PEARL PROGRAMME

Excellence Award for Research in Luxembourg

TOTAL BUDGET 2011-2013: EUR 22,500,000

CALLS: OPEN ALL YEAR

2009: 1 CANDIDATE SELECTED (FNR CONTRIBUTION: EUR 5,000,000)

2010: 1 CANDIDATE SELECTED (FNR CONTRIBUTION: EUR 3,370,000)

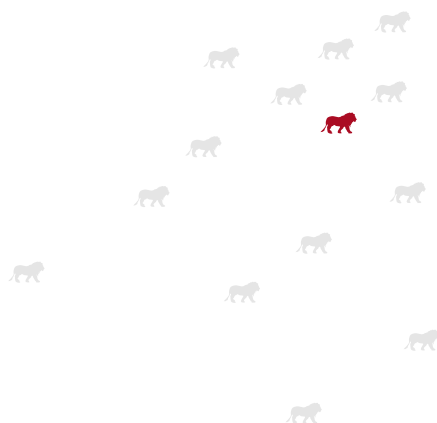
2011: 2 CANDIDATES SELECTED (FNR CONTRIBUTION: EUR 8,900,000)

With the PEARL programme launched in 2009, the FNR seeks to complement its funding schemes and to further build up the research priorities in Luxembourg. The FNR wishes to provide the institutions with a proactive means to attract additional internationally recognised senior researchers who will transfer and establish their research programme in Luxembourg in order to accelerate the development and strengthening of the national research priorities.

In 2011, the FNR received 3 project proposals within the PEARL call. Of these, two candidates/projects have been selected.

Professor Lionel Briand is an outstanding researcher who can be given credit for a number of groundbreaking results that have shaped his field. He has an excellent scientific track record and a proven ability to build highly successful research teams. He has an impact well beyond the research community and holds a global network of contacts within academia and industry. It is because of his extraordinary high-quality productivity that Prof. Briand has been voted one of the top 5 international researchers in software engineering several times already. His work is not only published at the best conferences, but also highly quoted and thus of high academic impact. Being a very ambitious researcher, Lionel Briand is one of only a few candidates in the world who can run a centre like the Validation and Verification Laboratory proposed within the PEARL application.

Professor Louis Chauvel is an outstanding expert in his field and his writings testify a brilliant intellectual capacity as well as a wide horizon of interests, knowledge and competence. He is one of the well-known French sociologists in the area of inequality research and is highly visible in the international research community. With his excellent track record and his impressive intellectual energy, Prof. Chauvel is arguably the best conceivable candidate for establishing the ProSocial programme in Luxembourg and thus creating the basis for an International Research Centre of Excellence on social inequality. Together with a professor of economics, to be recruited under the chair of Sir Tony Atkinson, and in cooperation with the LIS-group, a critical mass and international visibility can be achieved.





VALIDATION AND VERIFICATION LABORATORY

Project Leader: Prof. Lionel Briand
Host Institution: SnT, University of Luxembourg
Starting Date: 01.01.2012
Closing Date: 31.12.2016
FNR Contribution: EUR 4,600,000

PROJECT DESCRIPTION

The overall aim of the Interdisciplinary Centre for Security, Reliability and Trust (SnT) at the University of Luxembourg is to become an internationally leading research centre capable of establishing Luxembourg as a European Centre of Excellence and Innovation for secure, reliable and trustworthy ICT systems and services and thereby contribute to the development and diversification of the regional economy. The granted proposal outlines a research programme for a validation and verification (V&V) laboratory for software intensive systems and services at the SnT. V&V is instrumental in the development and design of reliable and secure software systems and is thereby a critical research expertise required at the SnT. The programme addresses both technical and managerial aspects of software V&V. On the technical side, the focus will be on both upstream and downstream V&V activities, such as requirements in quality assurance and architecture analysis, or software testing. The successful application of new and improved V&V technologies requires that activities be well-managed. In particular, project managers need to be able to identify and evaluate the trade-offs between dependability, cost, and timeline.

The SnT V&V Laboratory is well aligned with the SnT's impact-oriented strategy of bringing value not only to the University, but more importantly also to Luxembourg and the University's partners. The establishment of this SnT V&V Laboratory headed by Prof. Briand will create synergies with existing research activities, adding long-term value and raising the competitiveness of the University and partners supporting the centre.



www.fnr.lu/pearl

PROSOCIAL: A RESEARCH PROGRAMME ON SOCIAL INEQUALITY WITHIN THE NATIONAL, EUROPEAN AND INTERNATIONAL CONTEXT

Project Leader: Prof. Louis Chauvel
Host Institution: University of Luxembourg
Starting Date: 01.06.2012
Closing Date: 30.06.2017
FNR Contribution: EUR 4,300,000

PROJECT DESCRIPTION

The aim of this proposal is to build up research on social inequality. Its vision is to place Luxembourg on the international map of research on social welfare, income and wealth and social change. The 'business case' presented here puts forward an integrative interdisciplinary model, building on the existing foundations of local research already conducted in this field, notably at the University of Luxembourg (UL), at the Luxembourg Income Study (LIS) and at the CEPS/ INSTEAD.

The Business Case proposes to establish a research team of 10 people at the UL directed by two complementary professors: a professor of sociology (Chauvel) as well as a professor of economics who will, together, coordinate the work on the subject of social inequality. The research team at the UL will also work hand in hand with the LIS. The group will be built up in 2 phases; the first one starting immediately with the appointment of Prof. Louis Chauvel (Sciences Po, Paris), an internationally recognised scholar of sociology. The second phase would follow shortly after, with the appointment of a professor of economics through the usual recruitment process of the UL.

Prof. Chauvel suggests to focus his research programme on social stratification and inequality in Luxembourg, as well as within the European and the global context.

The ProSocial programme is structured around 3 main research lines: a cohort analysis of inequality based on new and sophisticated models, the identification of the social stratification system in the early 21st century and the study of the representations of actual cohort and stratification systems.

For more information on PEARL, please refer to www.fnr.lu/pearl

□ OTHER MULTI-ANNUAL RESEARCH PROGRAMMES

In 2000, the FNR launched its first set of multi-annual programmes, which have now all come to an end. Nevertheless, the continuation of research activities relevant to these old programmes continues to be guaranteed within both the CORE and the INTER schemes.

□ EAU PROGRAMME SUSTAINABLE MANAGEMENT OF WATER RESOURCES

DURATION: 2000-2007
TOTAL BUDGET: EUR 5,000,000
TOTAL EXPENSES: EUR 4,634,205
TOTAL PROJECTS SELECTED: 9

□ TRASU PROGRAMME SURFACE TREATMENT

DURATION: 2003-2009
TOTAL BUDGET: EUR 6,000,000
TOTAL EXPENSES: EUR 5,862,046
PROJECTS SELECTED: 1

□ SECOM PROGRAMME SECURITY AND EFFICIENCY OF NEW PRACTICES IN E-COMMERCE FOR ALL SOCIO-ECONOMIC ACTORS

DURATION: 2000-2008
TOTAL BUDGET: EUR 7,500,000
TOTAL EXPENSES: EUR 6,738,003
TOTAL PROJECTS SELECTED: 11

□ VIVRE PROGRAMME LIVING TOMORROW IN LUXEMBOURG

DURATION: 2002-2011
TOTAL BUDGET: EUR 12,000,000
TOTAL EXPENSES: EUR 11,646,952
TOTAL PROJECTS SELECTED: 35

□ NANO PROGRAMME NEW MATERIALS AND NANOTECHNOLOGY

DURATION: 2000-2008
TOTAL BUDGET: EUR 6,700,000
TOTAL EXPENSES: EUR 6,521,578
TOTAL PROJECTS SELECTED: 6

□ BIOSAN-PROVIE PROGRAMME BIOTECHNOLOGY AND HEALTH & EXTENSION MEDICAL ASPECTS OF AGEING

DURATION: 2000-2011
TOTAL BUDGET: EUR 10,500,000
TOTAL EXPENSES: EUR 9,768,808
TOTAL PROJECTS SELECTED: 20

□ SECAL PROGRAMME FOOD SAFETY

DURATION: 2003-2010
TOTAL BUDGET: EUR 7,500,000
TOTAL EXPENSES: EUR 7,218,807
TOTAL PROJECTS SELECTED: 11

□ For a detailed summary of each project as well as other information, please refer to www.fnr.lu/closed



www.fnr.lu/closed

05 AFR PHD & POSTDOC GRANT SCHEME – AIDES À LA FORMATION-RECHERCHE



AFR PHD 2011	N° OF ELIGIBLE PROPOSALS	N° OF PROPOSALS FUNDED	SUCCESS RATE	COMMITTED BUDGETS IN MEUR
● Call 2011-1	107	56	52%	
● Call 2011-2	95	45	47%	
Total PHD Calls (2011)	202	101	50%	
● 4 th year PhD extensions		108		
Total PhD Calls and PhD Extension		209		13.2
AFR POSTDOC (PDR) 2011	N° OF ELIGIBLE PROPOSALS	N° OF PROPOSALS FUNDED	SUCCESS RATE	COMMITTED BUDGETS IN MEUR
● Call 2011-1	39	17	44%	
● Call 2011-2	55	23	41%	
Total PDR CALLS (2011)	94	40	43%	3.7
Total PhD et PDR (2011)	296	141 (+108 PhD ext.)		16.9

The AFR Grant Scheme for PhD and postdoctoral researchers is the main national instrument to support early stage researchers' training and working conditions.

Within the framework of the 2011 calls, 101 out of 202 submitted PhD proposals and 40 out of 94 submitted postdoc proposals have been selected for funding. In order to guarantee the quality of its selection process, the FNR was assisted by an expert panel composed of some 40 members and received additional written reviews from 250 external experts in 2011.

As of 31 December 2011, the FNR finances a total of 442 PhDs and 106 postdocs, i.e. 548 AFR projects. The **budgetary commitments** for the new AFR grants selected in 2011 as well as for the 4th-year-extension of the ongoing PhDs awarded in 2011, plus the AFR specific Accompanying Measures – in particular the newly introduced Training Allowance – amount to a total of approximately **EUR 19 million**.

AFR postdoc grants co-funded by the Marie-Curie Actions of the European Commission amount to a total of EUR 7 million for the period 2009-2015, following successful submission of two proposals in 2008 and 2010 under the European Commission's 7th Framework Programme (FP7-COFUND).

In addition to the call-related activities, the AFR team continued work on the 4 priority actions identified within the framework of the "AFR Roadmap 2011-2013": simplification and adaptation of the AFR Scheme, national strategy concerning the quality of the training for PhDs/postdocs, analysis of AFR Public-Private Partnerships and follow-up of the researchers beyond the end of the AFR funding.

The AFR Scheme was promoted in Luxembourg and abroad, namely at the REEL in Brussels, the *Forum Franco-Allemand* in Strasbourg, Luxembourg's *Foire de l'Etudiant* and *meet@uni.lu*. In order to strengthen its support of the research community, the FNR has backed an initiative to set up a national association for young researchers, called *Luxdoc* asbl (www.luxdoc.org).

Furthermore, 12 sessions of project management courses for PhDs and postdocs, catering for a total of 125 participants, have been organised jointly with *fast training*. Finally, a pilot training module "From learning to earning" has been developed and will be tested in 2012 with a group of 20 PhDs in their last year of AFR funding.





Yves Elsen and Minister François Biltgen at the joint ESF-FNR Workshop "How to Track Researchers' Careers"

AFR ROADMAP 2011-2013: IMPLEMENTATION OF THE PRIORITY ACTIONS

At the request of the FNR's Board of Administration, an implementation plan was scheduled early 2011 for four priority actions defined in the AFR Roadmap, in line with the evaluation of the AFR Scheme in 2010:

- **Simplification and Adaptation of the AFR Scheme**

The AFR Scheme's call procedures will be simplified and streamlined from 2012 onward. Furthermore, the efficiency of the management and of the follow-up procedure will be increased.

- **National Strategy for PhD and Postdoc Training**

In addition to an active participation in the ESF M0 Forum "European Alliance on Research Career Development" and an exchange of information with the OCDE on doctoral training, potential ways for an improvement of the doctoral training and supervision in Luxembourg have been identified together with Vitae UK, the Luxembourg Ministry of Research, the University of Luxembourg and the Public Research Centres. Several actions have been undertaken in view of improving the offer of non-scientific training in Luxembourg: these were an inventory of the training available in the public research organisations, an exchange of information with the University of Luxembourg on the development of doctoral schools and the implementation of several pilot training modules for PhDs. Moreover, a Code of Practice to define quality standards for PhD training in Luxembourg is in the process of being drafted and is foreseen to be adopted in 2012.

- **AFR Public-Private Partnerships**

Several actions have been undertaken in order to promote the public-private partnerships under the AFR Scheme (company visits, conferences, ads and fairs). Furthermore, the collaboration with Luxinnovation has been intensified through trainings and common encounters with interested companies.

- **Career Tracking**

On 9-10 February 2012, within the framework of the priorities defined under the AFR Roadmap, the FNR and the European Science Foundation have jointly organised an international workshop identifying the major studies that track researchers' careers. The workshop, assembling a total of 100 participants from 20 different countries around the globe (www.researcherscareers.eu), constituted a benchmarking of international practice which will be used by the FNR in the course of 2012/2013 to develop its own tracking tool to follow up AFR fellows (and possibly FNR funded PhDs) beyond their projects.

■ For further information on AFR, please refer to www.fnrl.lu/afr



www.fnrl.lu/afr

06 ACCOMPANYING MEASURES



The National Research Fund provides Accompanying Measures (AM) in order to strengthen the general conditions for scientific research in Luxembourg.

In 2011, the FNR has selected a total of 340 activities among 459 submitted proposals, corresponding to a success rate of 74%. The total FNR commitments in 2011 amount to EUR 1.42 million. It should be noted that activities selected in 2011 may take place in 2012 or be extended over subsequent years.

As foreseen in the performance contract, from 1 January 2011, AFR beneficiaries were no longer eligible for AM2a and AM2b as they already benefit from special conditions via their AFR Scheme; as a result, a 50% decrease has been noticed for both Accompanying Measures.

For the Accompanying Measure AM1 – Promotion of Scientific Culture – there has been a large rise in the number of submitted proposals (an increase of nearly 36%). This increase may be attributable to a promotion campaign which targeted schools and associations, as 52% out of a total of 73 funded proposals have been submitted by schools.

Concerning the Accompanying Measure AM2c - Mobility of Researchers - only 2 out of the 21 funded proposals were OUT mobilities. The researchers as well as the institutions still show only a limited amount of interest in research study periods abroad. As a result, the FNR will explore ways to increase the attractiveness of its Mobility instrument for local researchers.

With a view to developing an improved strategy, the Accompanying Measures have been evaluated by an external expert who has carried out an assessment of their necessity and impact. On the basis of the expert's recommendations, the FNR has engaged in a process of strategic refocus.





OVERVIEW OF ACTIVITIES IN 2011

CODE	TITLE OF MEASURE	NUMBER OF PROPOSALS SUBMITTED	NUMBER OF PROPOSALS ACCEPTED	TOTAL FNR CONTRIBUTIONS IN 2011 (EUR)
● AM1	Promotion of Scientific Culture	89	73	411,639
● AM2a	Trainig and Mobility: Active Participation of Researchers in Scientific Conferences Abroad	138	103	202,000
● AM2b	Trainig and Mobility: Trainig for Researchers (including summer schools)	48	36	80,500
● AM2c	Trainig and Mobility: Mobility of Researchers	36	21	238,770
● AM3	Organisation of Scientific Conferences in Luxembourg	55	37	309,400
● AM4	Scientific Publications Including PhD Theses	93	70	174,500
TOTAL		459	340	1,416,809

For an overview of the accepted proposals, please refer to www.fnr.lu/am



www.fnr.lu/am



07 PROMOTION OF SCIENTIFIC CULTURE



FNR STRATEGIC PRIORITY

The need to make science and technology, and consequently research, accessible and comprehensible for the general public and especially for the young – remains an important objective for Luxembourg. The FNR plays a key role in reinforcing the necessary dialogue between science and society.

On the one hand, the FNR actively organises – often in co-operation with other research players – activities to create a profound understanding for the necessity of science and research as a guarantee for life quality and to fill young people with enthusiasm for scientific careers.

On the other hand, the FNR provides funding – the Accompanying Measure AM1 for the promotion of scientific culture – to researchers, associations, teachers and others in contact with pupils, students or the general public to organise scientific projects (examples include scientific workshops, visits to scientific exhibitions, researchers visiting schools, scientific school trips, etc). In 2011, 47 science projects in Luxembourg schools and child care centres have been financially supported through AM1.

PROMOTION OF SCIENTIFIC CULTURE

In 2011, in order to increase the visibility of science and research in Luxembourg's media, the FNR has continued its partnerships with RTL Télé Lëtzebuerg, RTL Radio Lëtzebuerg, Luxemburger Wort and Eldorado, as well as establishing a new partnership with L'essentiel. The FNR was also able to reach out to the general public via several events such as the 8th edition of the Science Festival (co-organised with the National Museum of Natural History), which welcomed 11,000 visitors in four days, or the 2nd edition of the Fouer Science together with the City of Luxembourg.



Furthermore, several sensitisation activities for young people, such as the Chercheurs à l'école campaign, which brings researchers into high schools to share their passion and experience with pupils, the distribution of a scientific Student Diary for graduating classes, and a stand on Research in Luxembourg at the Luxembourg student fair *Foire de l'étudiant*, have been organised. Additionally, several support events were carried out: the second edition of the *Go for Science network* for teachers and educators interested in science, workshops for researchers on how to communicate with the media and with the young, various scientific workshops and a training course for scientific animators together with the *Service National de la Jeunesse*.

Finally, a cooperation agreement has been signed with *CRP-Santé* in the field of "Promotion of Scientific Culture".

MISTER SCIENCE

The FNR's Mister Science character, created with the aim of promoting scientific culture amongst the young, continues to answer scientific questions in an Eldorado show and is still a regular in RTL's popular TV programme *PISA Wëssensmagazin*, where he is responsible for a 5-minute experimental show. The weekly column *Inventor/Invention* of the day on RTL Radio completes Mister Science's media presence. On Facebook, nearly 1,000 fans are regularly kept informed of Mister Science's activities.

For further information on the FNR's PSC activities, please refer to www.fnr.lu/psc



www.fnr.lu/psc





TELEPHONE SURVEY

In 2011, the FNR has also conducted a national telephone survey on the public perception of science and research in Luxembourg. The results have been compared to a first survey realised in 2007 and to the 2010 Eurobarometer Publication Science and Technology. The outcome is encouraging and reflects the sensitisation efforts of the last years, but there are still a lot of improvements to be made, notably among the young.

- **Notoriety**

The notoriety of the majority of the actors involved in scientific research in Luxembourg is increasing, yet there remains room for improvement.

The notoriety of scientific events for the general public is very high (Science Festival: 30%, Researchers' Night: 15%) and Mister Science is known by 30% of the population.

- **Interest and information**

40% of the population show an interest in science and research in Luxembourg; this interest increases with age and the level of education.

The general level of information on science and research in Luxembourg is increasing. However, people under 29 say they feel not well informed and a very high part of the population (65%) feels a need for more information. Also, the Luxembourgish population seems to show more interest for international scientific subjects than for those related to Luxembourg.

- **Value attributed to research**

69% of the population – including the majority of the young people – believe that Luxembourg should invest more into scientific research (2007: 57%) and 78% believe that even a small country like Luxembourg has to do scientific research. These positive results seem to suggest that a collective awareness of the importance of research is beginning to emerge in Luxembourg.

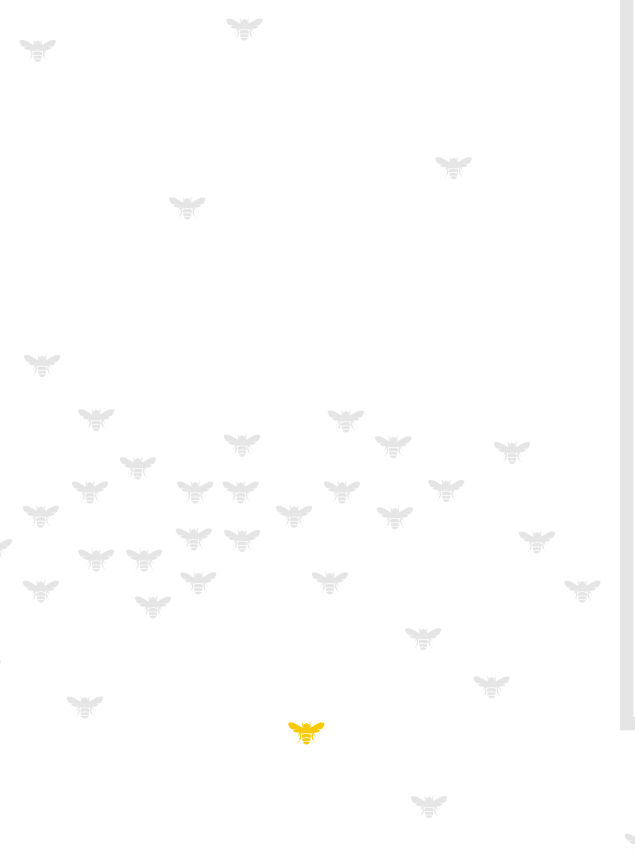
Only 30% think that schools awaken the students' interest for science and research, the young as well as the higher educated respondents giving even more critic scores. People are also sceptic about researchers' efforts to communicate their results towards the public.

- **Relevance of research**

In comparison with 2007, more people believe that scientific research leads to positive outcomes. 42% agree that research in Luxembourg produces practical and concrete results and thus improves daily life. Over 50% believe that scientific research contributes to Luxembourg's economic competitiveness and to the resolution of environmental problems.

- **Scientific careers**

A stunning majority believes that science and research are a good career choice for young people.



08 FNR AWARDS 2011

In 2011, the FNR has granted five awards in the categories “FNR Award for Outstanding Scientific Publications” and “FNR Award for the Outstanding Promotion of Scientific Culture”. These awards aim to encourage communication activities in the fields of science and technology.

Indeed, the FNR believes that communication in the fields of science and research is essential; not only between researchers, but also towards the general public and the young. The FNR Awards highlight these activities and make them more visible to the general public.

FNR AWARD FOR OUTSTANDING SCIENTIFIC PUBLICATIONS

- **Alex Biryukov et Dmitry Khovratovich (University of Luxembourg):** Related-key Cryptanalysis of the Full AES-192 and AES-256, published in LNCS, ASIACRYPT’ 2009
- **Adrien Oth (European Center for Geodynamics and Seismology):** Evaluation and optimization of seismic networks and algorithms for earthquake early warning - the case of Istanbul, published in Journal of Geophysical Research

FNR AWARD FOR THE OUTSTANDING PROMOTION OF SCIENTIFIC CULTURE

- **David Degouis & Virginie Schmitt (Ecole Privée Notre-Dame Sainte-Sophie):** Schoolproject «Semaine de la Science 2010»
- **Pascal Daman & Janine Goedert (Lycée de Garçons Luxembourg):** Schoolproject «Michael Frayn’s COPENHAGEN on stage»
- **Danièle Moes, Anne-Marie Ternes & Monika Dieterle (CRP-Santé):** Workshop «Experimental Cosmetics» and Science Café «Wissenschaft in der Werbung» presented at the Researchers’ Night 2010



For further details, please refer to www.fnr.lu/awards



www.fnr.lu/awards

09 PROMOTION OF THE FNR'S ACTIVITIES



In 2011, the FNR has launched a weekly "FNR Infoletter" for its subscribers, whilst socio-economic players and political stakeholders are addressed twice a year through the new "FNR Newsletter", a publication on research issues and opportunities.

Beneficiaries have also been reached through, amongst others, media campaigns to promote public-private partnerships under AFR (AFR-PPP) and through the Accompanying Measure AM1, which aims to encourage activities in the field of "Promotion of Scientific Culture" (PSC). A brochure on the Promotion of Scientific Culture, a leaflet on the Accompanying Measure AM1 and a joint publication with the LCSB (Luxembourg Centre for Systems Biomedicine@uni.lu) complement the FNR's corporate publications, which are updated on a regular basis.



In the framework of Luxembourg's promotion as a research site, discussions have been started with representatives of the biomedical sciences in order to launch a common nationwide branding strategy for the field of biomedical research.

Finally, events like the 3rd FNR Awards Ceremony, the different Info Days and Networking Days presented further opportunities for networking and for informing researchers and other stakeholders in the Grand-Duchy about the FNR's different activities.



www.fnr.lu/brochures



www.fnr.lu/newsletter



10 OUTLOOK

DEVELOPMENT OF NEW FNR PROGRAMMES

In 2012, the FNR will continue the development of a new "Proof of Concept" programme in order to adequately support the valorisation of research findings. The FNR is currently setting up pilot projects and foresees to develop a funding programme on the basis of this experience.

The FNR will also evaluate the opportunity of implementing two separate priority programmes: one to strengthen the economic valorisation of research findings related to specific domains and another in the form of a thematically open programme to provide funding for outstanding research projects outside the CORE programme's priorities.

FNR STUDIES

The FNR is constantly monitoring the thematic priorities of the CORE programme with regards to new developments, both world-wide and nationally. An analysis of the domain "Sustainable Resource Management in Luxembourg" is foreseen for 2012. The study will help to adapt the domain to new global scientific challenges.

AFR GRANT SCHEME

In 2012, the main priority for AFR will be the 'simplification' of the AFR processes, including the call documents, the evaluation procedure and the reporting, while putting a stronger focus on the quality of PhD and postdoc training, supervision and the research environment. The revised AFR documents will be available from the call 2012-2 onwards. In this reform, the FNR seeks to integrate recommendations received by the various stakeholders involved in the 2010 evaluation of the scheme and its related follow-up.

Beyond the reform, a Code of Practice to define quality standards for PhD training in Luxembourg will be developed in cooperation with the research organisations and the University in 2012.

Moreover, in order to define guidelines for public-private partnerships under AFR, a series of activities relating to promotion and international exchange of good practice for "AFR PPP" will be developed.

THE FNR'S ACCOMPANYING MEASURES AND MULTI-ANNUAL PROGRAMMES

Following the evaluation of the Accompanying Measures in 2012, the FNR will draw up a new strategy in order to improve their impact. The submission procedures will be simplified through the integration of some of the former Accompanying Measures into FNR project-related instruments and AFR on the one hand, and through the adaptation of other former Accompanying Measures on the other hand. An increase in the funding of retained proposals, more comprehensible selection criteria, an increase of the scientific quality of funded applications as well as a decrease of the administrative work for the researchers and for the FNR should thus result in a win-win situation.

Furthermore, the FNR will continue to launch calls for project proposals within the framework of its funding schemes CORE, INTER, ATTRACT, PEARL and AFR.

PROMOTION OF SCIENTIFIC CULTURE

In 2012, the FNR will continue to be a driving force behind the promotion of scientific culture in Luxembourg. There still remains a clear need to focus on the consolidation of the existing activities – for example by guaranteeing the continuity of the media partnerships as well as the consistent identification and development of activities concerning the sensitisation of the young. The activity "Chercheurs à l'école" is due to be repeated in 2012. The FNR will also continue to develop support mechanisms for researchers wishing to promote scientific culture. The main event in 2012 will be the 3rd edition of the Researchers' Nights. Furthermore, the FNR will present a re-design of its Promotion of Scientific Culture website with a stronger bias towards the young and their parents. The site covers, amongst others, scientific activities in Luxembourg, research careers, scientific news, experiments with Mister Science...



PROMOTION OF THE FNR'S ACTIVITIES

Regular press work and information or networking days covering the FNR's different funding schemes will ensure professional public relations and a continuous flow of information to and from the research community, as well as providing excellent networking opportunities for researchers. In addition to its weekly Infoletter, the FNR will publish two newsletters for national and international stakeholders. The FNR will also co-lead a nationwide branding initiative in charge of developing a communication strategy for Luxembourg's research in the field of biomedicine.

FNR AWARDS

In addition to the established FNR Awards for "Outstanding Scientific Publications" and for "Outstanding Promotion of Scientific Culture", 2012 will see the FNR bestow the first award for "Outstanding PhD Thesis", amounting to EUR 5,000. The Award Ceremony will take place in autumn.



11 ORGANISATION



Minister François Biltgen with the members of the FNR's Board and Scientific Council

The National Research Fund is a public establishment with scientific, financial and administrative autonomy and is managed by a Board, assisted by a Scientific Council and a Secretariat.

THE BOARD

THE BOARD CONSISTS OF:

- a member nominated by each of the Ministers concerned, whose areas of responsibility cover scientific research and applied research, higher education, industrial research and development, technology transfer or the budget,
- two members nominated by the Government Council after consultation with the other Ministers organising R&D,
- six members nominated by the Government from among figures in the private sector recognised for their competence in the field of R&D.

MEMBERS OF THE BOARD FROM 2010 TO 2014

President:

- Yves ELSEN, Hitec Luxembourg S.A.

Vice-President:

- Jacques LANNERS, Ceratizit
- Jean BERGH, former General Director of Goodyear S.A.
- Andrée BILLON, Commission de Surveillance du Secteur Financier
- Edmond DIFFERDING, Differding Consulting, former Head Chemistry, UCB Pharma S.A., Bruxelles
- Dominique FABER, Ministry of Higher Education and Research
- Fränk GANSEN, Ministry of Health
- Jean-Marie HAENSEL, Inspection générale des finances
- Christiane HOFFMANN, Lilith Projet s.à r.l.
- Robert KERGER, Ministry of Higher Education and Research
- Marc SOLVI, Paul Wurth S.A.
- Marco VALENTINY, Ministry of Economy and Foreign Trade

THE SCIENTIFIC COUNCIL

The Scientific Council assists the Board as a consultative body on scientific matters.

THE SCIENTIFIC COUNCIL CONSISTS OF:

- a representative of each public research centre (CRP Henri Tudor, CRP Gabriel Lippmann, CRP-Santé),
- a representative of the Centre d'Études de Populations, de Pauvreté et de Politiques Socio-Économiques (CEPS/ INSTEAD),
- two representatives of the University of Luxembourg,
- figures external to the bodies mentioned above, whether from Luxembourg or abroad, selected on the basis of their competence. Their number exceeds that of the bodies listed by one.

MEMBERS OF THE SCIENTIFIC COUNCIL FROM 2010 TO 2014

President:

- **François MEYER**, former General Manager of Centelion SAS and R&D Aventis France
- **Lucienne BLESSING**, University of Luxembourg
- **Jacques BROSIUS**, CEPS / INSTEAD
- **Pierre FLENER**, Uppsala University, Sweden
- **Yves FROMES**, University Pierre et Marie Curie, Institute of Myology, Paris
- **Franck LEPREVOST**, University of Luxembourg
- **Aline MÜLLER**, University of Liège, HEC Management School
- **Fernand REINIG**, Public Research Centre Gabriel Lippmann
- **François SCHNEIDER**, Public Research Centre Santé
- **Aloyse SCHOOS**, IEE S.A.
- **Claude WEHENKEL**, Public Research Centre Henri Tudor
- **Antoine WEIS**, University of Fribourg, Switzerland

MEMBERS OF THE SECRETARIAT

Dr Marc SCHILTZ, Secretary General
Executive Head of the FNR (1)

Frank BINGEN, Programme Manager (3)

Dr Helena BURG, Programme Manager (25)

Dr Carlo DUPREL, Senior Programme Manager (7)

Angelina FRANK, Administrative Assistant (10)

Elvire GEIBEN, Communications Assistant (15)

Dr Frank GLOD, Senior Programme Manager (14)

Sylvie HEINISCH, Senior Administrative Assistant (6)

Tom JAKOBS, Administrative Assistant (18)

Michèle JENTGES-GLESENER, Communications Manager (12)

Christiane KAELL, Senior Programme Manager (16)

Ulrike KOHL, Senior Programme Manager (17)

Yi LIN, Administrative Assistant (4)

Marie-Claude MARX, PhD, Programme Manager (21)

Jill MOUSEL, Assistant of the Secretary General (9)

Dr Andreea MONNAT, Programme Manager (23)

Susana PINTO, Administrative Assistant (20)

Susanne RICK, Programme Manager (8)

Joseph RODESCH, Scientific Mediator (24)

Asaël ROUBY, Programme Manager (11)

Anne SCHROEDER-VAN DEN BULCKE, Scientific Mediator (13)

Josiane STAUS, Administrative Assistant (5)

TEMPORARY MEMBERS OF THE SECRETARIAT

Jean-Paul BERTEMES, Scientific Mediator, FTC (2)

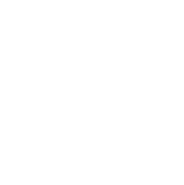
Norman FISCH, Programme Manager, FTC (22)

Ionut PERES, IT Project Manager, FTC (19)

■ The members of the Secretariat can be contacted directly via email, phone or fax. For more details, please refer to www.fnr.lu/contact



www.fnr.lu/contact



12 ANNUAL ACCOUNTS 2011

To the Board of Fonds National de la Recherche, Luxembourg
6, rue Antoine de Saint-Exupéry
L-1017 Luxembourg

Luxembourg, 23 March 2012

REPORT ON THE ANNUAL ACCOUNTS

Following our appointment by the General Meeting of the Board, we have audited the accompanying annual accounts of Fonds National de la Recherche, which comprise the balance sheet as at 31 December 2011 and the profit and loss account for the year then ended, and a summary of significant accounting policies and other explanatory information.

RESPONSIBILITY OF THE BOARD FOR THE ANNUAL ACCOUNTS

The Board is responsible for the preparation and fair presentation of these annual accounts in accordance with Luxembourg legal and regulatory requirements relating to the preparation of the annual accounts, and for such internal control as the Board determines is necessary to enable the preparation of annual accounts that are free from material misstatement, whether due to fraud or error.

RESPONSIBILITY OF THE RÉVISEUR D'ENTREPRISES AGRÉÉ

Our responsibility is to express an opinion on these annual accounts based on our audit. We conducted our audit in accordance with International Standards on Auditing as adopted for Luxembourg by the Commission de Surveillance du Secteur Financier. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the annual accounts are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the annual accounts. The procedures selected depend on the Réviseur d'entreprises agréé's judgement, including the assessment of the risks of material misstatement of the annual accounts, whether due to fraud or error. In making those risk assessments, the Réviseur d'entreprises agréé considers internal control relevant to the entity's preparation and fair presentation of the annual accounts in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the Board, as well as evaluating the overall presentation of the annual accounts.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

OPINION

In our opinion, the annual accounts give a true and fair view of the financial position of Fonds National de la Recherche as of 31 December 2011, and of the results of its operations for the year then ended in accordance with Luxembourg legal and regulatory requirements relating to the preparation of the annual accounts.

PKF ABAX Audit

Cabinet de révision agréé

Represented by

Luc Brucher

Réviseur d'entreprises agréé

BALANCE SHEET

31 December 2011 (expressed in EUR)

ASSETS	NOTES	2011	2010
FIXED ASSETS			
● Intangible assets		702,064.69	681,748.47
● Other fixtures and fittings, tools and equipment		64,685.84	52,897.87
CURRENT ASSETS			
● Other receivables		676,564.98	161,780.16
● Budgetary allocations to be received	3	58,755,684.70	37,471,699.10
● Cash at bank and in hand		55,418,376.55	57,601,993.21
PREPAID EXPENSES AND ACCRUED INCOME	2	18,240.56	5,000.00
		115,635,617.32	95,975,118.81
LIABILITIES			
EQUITY			
● Reserve fund	7	3,638,555.47	4,996,032.05
● Profit for the financial year		(246,096.12)	(1,312,476.58)
DEBTS			
● Amounts owed to credit institutions		6,982.83	34,400.38
● Amounts owed for goods and services provided		370,599.50	585,535.95
● Taxes and social security contributions payable		69,945.26	59,261.68
● Amounts owed to research institutions	3	99,186,929.63	86,852,512.09
● Other debts		298,719.86	191,662.21
DEFERRED INCOME AND ACCRUED EXPENSES			
● Commitments yet to be made	2+3	11,772,788.65	4,568,191.03
		115,635,617.32	95,975,118.81

PROFIT AND LOSS ACCOUNT

31 December 2011 (expressed in EUR)

EXPENSES	NOTES	2011	2010
● Commitments made	3	48,470,878.21	57,432,151.96
● Other external expenses		2,310,757.59	2,257,458.79
● Personnel costs			
● Wages and salaries	8	1,641,866.85	1,488,073.64
● Social security contributions	8	295,142.51	256,948.38
● Value adjustments		43,015.98	39,483.62
● Interest payable and similar charges		667.26	9,710.05
● Extraordinary charges		25,634.47	5,488.89
● Surplus for the year		(246,096.12)	(1,312,476.58)
		53,034,058.99	60,176,838.75

INCOME			
● Budgetary allocation for the year (programmes, measures, AFR)	3	53,107,268.95	51,952,588.81
● Budgetary allocation for previous years (programmes, measures)	3	4,568,191.03	17,186,645.86
● Adjustment for budgetary allocation not yet committed	3	(9,204,581.77)	(4,568,191.03)
● Adjustment for the programmes following the end of the 2008-2010 performance contract			(26,458,723.19)
● Adjustment for the measures following the end of the 2008-2010 performance contract			[140,000.00]
● Adjustment for AFR following the end of the 2008-2010 performance contract		0.00	18,730,422.29
● Budgetary allocation for operating costs	5	2,800,000.00	1,500,000.00
● Budgetary allocation for promoting scientific culture and FNR activities (PSCOM)	4	880,000.00	1,000,000.00
● PSCOM budgetary allocation for the former year		0.00	454,012.77
● Adjustment for unused PSCOM budget	4	8,339.23	0.00
● Other operating income		153,652.94	113,704.37
● Interest and similar income		671,682.55	406,378.87
● Exceptional income		49,506.06	0.00
		53,034,058.99	60,176,838.75

APPENDIX

DATED 31 DECEMBER 2011

NOTE 1 – GENERAL REMARKS

The National Research Fund (hereinafter referred to as the "FNR") is a public institution created by the law of 31 May 1999 and entered in the Trade and Companies Register under the number J40.

The FNR's mission is:

- To receive, manage and use grants and donations originating from public or private sources to promote technological research and development (referred to below as "R & D") on a national level in the public sector, and
- To maintain a constant process of reflection regarding the national R & D policy, with regard to economic data and scientific and technological development and based on detailed studies.

The FNR is administered by a Board comprising representatives from government ministries as well as from the private sector, under the supervision of the minister responsible for scientific and applied research.

The Board is assisted by the Scientific Council, which is its consultative body in scientific matters.

The headoffice of the FNR has been located at 6, rue Antoine de Saint-Exupéry, L-1432 Luxembourg-Kirchberg since 16 February 2004.

The FNR's accounts are kept in accordance with the principles and modalities of commercial accounting.

NOTE 2 – ACCOUNTING PRINCIPLES, RULES AND METHODS

GENERAL PRINCIPLES

The annual accounts are drawn up in compliance with Luxembourg's legal and regulatory provisions and with the generally accepted principles of accounting.

The principal methods used to prepare the annual accounts in accordance with these principles are described below.

CURRENCY TRANSLATION

The company's accounts are kept in EUR and the balance sheet and profit and loss statement use this currency. Assets and liabilities expressed in another currency are valued at the exchange rate in force at the date of the balance sheet.

INTANGIBLE ASSETS

Intangible assets are recorded at their purchase price, after deductions for value adjustments. The value adjustments are the result of linear calculations over a 3-year period.

TANGIBLE ASSETS

Tangible assets are recorded in the accounts at the purchase price and are shown on the balance sheet net of related cumulative value adjustments. The value adjustments are the result of linear calculations based on the estimated life cycle of the individual elements that make up the asset.

ACCOUNTS RECEIVABLE AND ACCOUNTS PAYABLE

Accounts receivable are entered on the balance sheet at their lowest nominal value or estimated realisable value. A value adjustment is made when the estimated realisable value is lower than the nominal value. Accounts payable are entered on the balance sheet at their nominal value.

EQUITY

The FNR had no equity at the time of its constitution. The equity will be comprised of the annual operating surpluses, provided that the Board decides to allocate them for this purpose.



BUDGET ALLOCATION - COMMITMENT

Budget allocations issued by the ministry for the current year, whether received or not, are recognised as income.

Budget allocations to be received result from the legal obligation that the State of the Grand Duchy of Luxembourg has to the FNR by means of the Performance Contract in force to finance multiannual commitments awarded by the FNR to its partners at the time of the annual calls.

Following its annual evaluation, the FNR considers the budget allocations to be received on 31 December of that year as certain. The debt is to be assessed annually by the Board and may be subject to adjustment (budget balances not carried forward, any reduction in the State budget, etc.).

Annual State allocations fixed in the multiannual agreement FNR/CP2-11-13 will clear part of the money owed in the "Budget allocation to be received" for the years 2011, 2012 and 2013.

Payment of the allocation to the FNR is subject to the inclusion (and the vote by the Chamber of Deputies) of the funds necessary for this purpose in the State's annual budget(s).

All of the commitments made to beneficiaries over the course of the year, whether paid or unpaid, are recognised as expenses.

For the programmes, a commitment is considered to have been made if the Board has given its approval.

For measures AM1, AM2c and AM3, a commitment is considered to have been made if the Secretary General has agreed on the basis of an evaluation. For measures AM2a, AM2b and AM4, a commitment is considered to have been made if the Secretary General has agreed on the basis of an assessment of the Secretariat's proposal.

For the AFRs, a commitment is considered to have been made if the Secretary General has agreed on the basis of advice from a panel of experts, or if the Board has given its approval should the Secretary General disagree with the panel's advice.

PREPAYMENTS AND ACCRUED INCOME

Prepayments and accrued income cover the commitments made by the Fund within the framework of its multiannual mission for which the Fund has not yet received an adequate budget allocation, as well as other external expenses paid in advance.

ACCRUALS AND DEFERRED INCOME

The portion of the finances available to the FNR (coming from the budget allocation from the State and the European Commission) in order to finance the commitments made by the FNR within the framework of its multiannual mission that has not yet been allocated to a beneficiary at the end of the financial year (31 December) is entered in the accruals and deferred income section of the balance sheet ("Commitments yet to be made") against an expense account and carried forward to the following periods.

On completion of the multiannual agreement in force, and within the framework of the negotiation of a new agreement, the parties concerned will decide on the allocation of any budget balances not committed by the FNR. The amount will also include an advance from the European Union on the COFUND 2 contract.

NOTE 3 – CHANGES IN THE ALLOCATIONS AND COMMITMENTS MADE

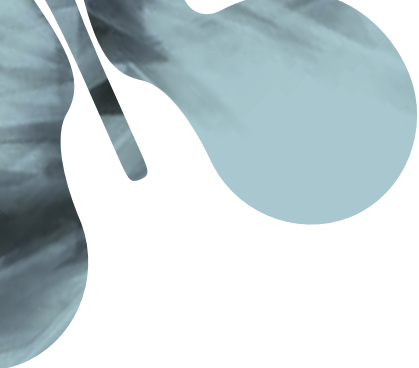
On 15 February 2011 the Ministry for Higher Education and Research and the Finance Ministry signed the 2011-2013 Performance Contract granting the FNR an overall financial package of EUR 192,900,000 over three years.

EUROPEAN CO-FINANCING:

In 2011 the FNR received substantial financial backing from the European Commission by means of the 7th Framework Programme.

	Allocation for the instrument	Allocation for running costs
AFR (COFUND 1)	1,311,983.80	110,100.00
Programmes (ERA-Net MATERA)	197,059.31	28,882.94
PSCOM (Researcher's Night)		12,600.00
	1,509,043.11	151,582.94

DETAIL OF THE BALANCES BY INSTRUMENT		31.12.2011	31.12.2010
3.1 Budget allocations to be received by instruments			
Programmes		37,461,276.81	18,741,276.81
AFR		21,294,407.89	18,730,422.29
Total of budget allocations to be received		58,755,684.70	37,471,699.10
3.2. Accounts payable to research institutions by instruments			
Programmes		68,025,400.94	56,802,103.30
Measures		3,322,596.17	1,840,678.58
AFR		27,838,932.52	28,209,730.21
Total accounts payable to research institutions		99,186,929.63	86,852,512.09
3.3 Detail of budget allocations 2011 Programmes, Measures, AFR and Cofund			
1. Programmes:			
Programmes budget allocations of the year	1)	33,100,000.00	31,000,000.00
Programmes co-financing European Union	1)	197,059.31	0.00
Programmes not yet committed at the beginning of the year		2,139,528.80	33,613,264.54
Programmes regularisation end of Performance Contract		0.00	-26,458,723.19
Programmes regularisation to be committed at the end of the year		-7,277,788.21	-2,139,528.80
Budget PCSCOM regularisation end of Performance Contract		0.00	729,409.22
		28,158,799.90	36,744,421.77
2. Measures:			
Measures budget allocation of the year	1)	2,080,000.00	2,580,000.00
Measures not yet committed at the beginning of the year		2,428,662.23	1,618,939.06
Measures regularisation end of Performance Contract		0.00	-140,000.00
Measures to be regularised at the end of the year		-1,109,881.09	-2,428,662.23
		3,398,781.14	1,630,276.83
3. AFR:			
AFR budget allocation of the year	1)	16,400,000.00	18,372,588.81
Interests on AFR bank accounts	1)	18,325.84	0.00
AFR co-financing European Union (COFUND 1)	1)	1,421,983.80	0.00
Transfer of management fees	1)	-110,100.00	0.00
Regularisation of AFR committed in advance at the beginning of the year		0.00	-18,045,557.74
Regularisation of AFR end of Performance Contract		0.00	18,730,422.29
Regularisation of AFR committed in advance at the end of the year		-816,912.47	0.00
		16,913,297.17	19,057,453.36
Total budget allocations 2011 1): EUR 53.107.268,95			
Total budget allocations 2010 1): EUR 51.952.588,81			
3.4. Detail of commitments made in 2011			
Programmes		28,158,799.90	36,744,421.77
Measures		3,398,781.14	1,630,276.83
AFR		16,913,297.17	19,057,453.36
Total of commitments made in 2011		48,470,878.21	7,432,151.96
3.5. Detail of commitments yet to be made at 31.12.2011			
Programmes		7,277,788.21	2,139,528.80
Measures		1,109,881.09	2,428,662.23
AFR		816,912.47	0.00
Total of commitments yet to be made at 31.12.2011		9,204,581.77	4,568,191.03



In addition, within the framework of the AFRs, a second COFUND co-financing contract has been signed with the European Commission for a total amount of EUR 4,279,944 beginning in 2012. The first payment of EUR 2,567,966.88 has already been received by the FNR in December 2011.

There are two main reasons for the commitments made in 2011 being lower than those made in 2010:

- the CORE programme commitment was lower in 2011 and
- in 2010, a sum of EUR 8,246,365 was reserved within the framework of the INTER programme for contributions to calls for proposals together with international financing agencies (see note 4).

NOTE 4 – 2011-2013 PERFORMANCE CONTRACT

The Performance Contract provides for the concept of a commitment ceiling, defined as a maximum commitment of funds by the FNR (by means of a projects contract) to the beneficiaries. A 3-year commitment ceiling is defined for each type of priority action (multiannual programmes, accompanying measures, AFR grants, promotion of scientific culture). A breakdown of the annual figures is added for information in order to monitor changes in the budgets over the course of the three years. If it proves to be appropriate, the commitment ceilings planned for the different types of action can be modified, provided that the changes per type of priority action do not exceed in total more than 10% of the annual commitment intended for that type of action and without necessarily changing the State's annual financial contribution or the overall sum of the commitments planned between 2011 and 2013. Budget allocations for the Fund's priority actions that are not made within the framework of the Performance Contract (particularly those coming from the European Commission) give rise to an automatic increase in the commitment ceilings.

MULTIANNUAL PROGRAMMES:

On 31 December 2010, and in relation to the end of the 2008-2010 Performance Contract, the FNR, together with international financing agencies, reserved EUR 8,246,365 within the framework of the INTER programme for contributions to calls for proposals. These moral commitments were considered to be definitive commitments in the legal sense of the term on 31 December 2010 and were included in the 2011-2013 Performance Contract.

In 2011, the FNR used an amount of EUR 3,494,000 from this reserve of EUR 8,246,365 to finance research projects resulting from contributions to calls for proposals made with international financing agencies.

The table at 3.3.1 shows that the commitments made by the FNR (EUR 28,158,799.90) do not exceed its commitment ceiling (EUR 35,436,588.11). The FNR has, therefore, fulfilled the Performance Contract within the framework of its multiannual programmes. The difference (EUR 7,277,788.21) is available to the Fund for commitments in 2012 and 2013.

ACCOMPANYING MEASURES:

The amount comprising accompanying measures not yet committed for a sum of EUR 2,428,662.23, for which the FNR had already obtained the financial contribution and which remained available to the Fund on completion of the 2008-2010 Performance Contract, was reallocated to the AFR support measures budget.



The table at 3.3.2 shows that the commitments made by the FNR (EUR 3,398,781.14) do not exceed its commitment ceiling (EUR 4,508,662.23). The FNR has, therefore, fulfilled the Performance Contract within the framework of its accompanying measures. The difference (EUR 1,109,881.09) is available to the Fund for commitments in 2012 and 2013.

AFR:

The 2011-2013 Performance Contract takes account of the difference between commitments and payments for projects selected during the period 2008 to 2010 as well as of the 4th year of the doctorate that had not yet been committed as of 31 December 2010. The 4th year AFR-PhD commitments allocated in 2011 will be made as appropriate at the end of the 3rd year of the AFR-PhD. The FNR deals with these problems outside of the accounts.

The table at 3.3.3 shows that the commitments made by the FNR (EUR 16,913,297.17) do not exceed its commitment ceiling (EUR 17,730,209.64). The FNR has, therefore, fulfilled the Performance Contract within the framework of the AFRs. The difference (EUR 816,912.47) is available to the FNR for commitments in 2012 and 2013.

PROMOTING THE FNR'S ACTIVITIES AND PROMOTING SCIENTIFIC CULTURE (PSCOM):

The budget for PSCOM expenses is managed on a multiannual basis. The commitment ceiling for PSCOM expenses is EUR 880,000.

Figures for 2011 are as follows:

PSCOM

Budget available on 01.01.2011:	0.00
Spending ceiling for the year:	880,000.00
Budget allocation for the year:	880,000.00
Budget used during the year:	-888,339.23
Overspend:	8,339.23

The overspend on the budget is 0.94%. The planned commitments may be modified under the terms of the Performance Contract, provided that the modification does not exceed 10% of the originally authorised budget. An additional allocation of EUR 8,339.23 has therefore been provided, which is to be considered as an advance on the commitment ceiling for 2012 and 2013.

NOTE 5 – OPERATING COSTS AND CONTRIBUTIONS TO INTERNATIONAL ORGANISATIONS

Under the terms of the new Performance Contract, the FNR is authorised to commit a maximum of EUR 3,267,000 for operating costs and a maximum of EUR 333,000 for the cost of contributions to international organisations, i.e. a total of EUR 3,600,000. Operating costs are supposed to be financed up to a limit of EUR 800,000 by interest earned on bank investments and up to a limit of EUR 2,800,000 by the State's budget allocation.

In 2011, spending on operating costs and the costs of contributions to international organisations amounted to EUR 3,396,006.30. On the basis of the AFR Cofund and MATERA contracts, the FNR receives a contribution to operating costs from the European Commission of EUR 138,982.94. The amount of interest actually earned was EUR 671,015.29. The actual budget allocation from the State amounted to EUR 2,586,008.07.

The operating costs and the costs of contributing to international organisations were covered as follows:

Budget used during the year:	(3,396,006.30)
Contribution from the EC during the year:	138,982.94
Interest received:	671,015.29
Actual budget allocation from the State for the year:	2,586,008.07
Planned budget allocation from the State for the year:	2,800,000.00

Difference between the planned budget allocation and the actual one:
EUR 213,991.93

This surplus is allocated to the reserve fund of EUR 3,683,555.47 (see Note 7).

NOTE 6 - TAXES

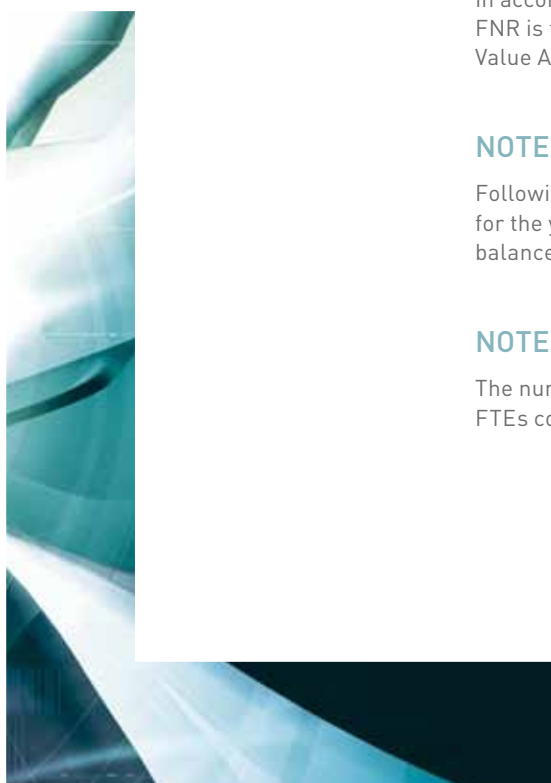
In accordance with the provisions of article 16 of the law of 31 May 1999, the FNR is free from all taxes and duties payable to the State with the exception of Value Added Tax and taxes on remuneration.

NOTE 7 - RESERVE FUNDS

Following its meeting on 25 March 2011, the Board decided to deduct the deficit for the year 2010 amounting to EUR 1,312,476.58 to arrive at a reserve fund balance to EUR 3,683,555.47 on 31 December 2011.

NOTE 8 - STAFF

The number of staff employed on average during the course of 2011 was 24.25 FTEs compared with 24.67 in 2010.



For the "Research Highlights":

Liza Glesener

For the articles: Fonds National de la Recherche

For the pictures ©:

FNR (005, 028, 030, 032, 037)

CRP-Santé (010)

Christian Jung (011)

BBC11 Organisation (012)

Benoît Otjacques (013)

Oli Kerschen (026)

MNHN (030)

Lola (033)

Layout: lola.lu

Print: Faber



This report is also available
for download on
www.fnr.lu/annualreports

© Fonds National de la Recherche 2012

For further information, please visit our websites www.fnr.lu or send an
e-mail to info@fnr.lu.

Fonds National de la Recherche

6, rue Antoine de Saint-Exupéry

B.P. 1777

L-1017 Luxembourg

T +352 26 19 25-1

F +352 26 19 25-35

Press Contact

Michèle Jentges-Glesener

michele.jentges@fnr.lu

T +352 26 19 25-43

F +352 26 19 25-35

