

ProAcademia

NEWS FROM THE ACADEMY OF FINLAND
2/2007



**Peer reviews key to developing
Finnish science**

Finland through a drinking glass

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This year's Nobel Prize in Chemistry was awarded to Professor **Gerhard Ertl** of Germany. Professor Ertl's collaboration with Finnish scientists, Professor **Tapio Ala-Nissilä** and Adjunct Professor **Petri Salo**, is widely referred to in the motivation for the Prize. The two Finnish scientists work at the COMP Centre of Excellence (CoE) at the Laboratory of Physics of Helsinki University of Technology (HUT). The CoE, headed by Academy Professor **Risto Nieminen**, models nanoscale phenomena. The HUT research team was involved in developing the calculatory models used by Ertl's team. The scientific calculation of the model was done by the CSC (Finnish IT Centre for Science) supercomputer in Otaniemi, Finland.

Seen from a science policy standpoint, the cooperation that led to this Nobel Prize is, in many ways, very interesting. Scientific research has become much more complex. Research of the highest quality often calls for multidisciplinary research knowledge. Research using theoretical modelling, in turn, requires highly advanced scientific calculation, so that different phenomena can be controlled and understood. Research collaboration and networking is also crucially important, insomuch as combining the knowledge and skills of top-tier experts from various fields sets the climate for innovative processes.

As we well know, international cooperation is an integral part of today's cutting-edge scientific research. An increasingly common occurrence is that research teams joining forces to tackle a collective research problem establish a world-wide network of experts.

A requirement for cutting-edge research is the opportunity to focus on one's own research in the long view. Time opens the door to new breakthroughs and allows for risk-taking. Funding provided by the Academy of Finland in its CoE programme made it possible for the Finnish scientists to participate in Professor Ertl's project. The long-term investment in CSC's scientific calculation computers and support given to CSC researchers also played a key role in achieving a successful end result.

Only researchers who have access to internationally competitive research environments, facilities and materials can achieve top results. It is clear that, in addition to the expertise of the scientists, the state-of-the-art scientific calculation infrastructure used by Professor Ertl's Finnish collaborators has made them an attractive cooperation partner.

The above research project comprehends numerous challenges in terms of science policy. As a funding agency for basic research, the Academy of Finland lays a foundation for forefront research by identifying the most talented researchers

and ensuring that they have funding for as long as necessary. A funding agency can also set the stage for international co-operation with leading researchers and work toward ensuring that researchers have access to competitive research infrastructures.

The need for strategic development within the European Research Area (ERA) has been identified in the European Union. The Commission has, for instance, published the ERA Green Paper, which specifies the developmental challenges facing science policy. One of these is stepping up the level of research investment by Member States. This is a prerequisite for the creation of long-term, creative research environments. Another primary challenge is to build world-class research infrastructures in Europe.

The EU has also drafted the ESFRI (European Strategy Forum on Research Infrastructures) road map, a plan for the building of large-scale research infrastructures and the strengthening of Europe's scientific competitiveness. Finnish researchers have been very active participants in the execution of ESFRI projects. They are also prepared to take a leading role in a number of these projects. This also poses a challenge for research funding agencies.

In Finland, measures have also been taken toward strengthening national research infrastructures. The Ministry of Education has drafted a plan on how the national research infrastructure road map should be drafted, how prioritisations are to be made and how funding will be provided. For Finnish research, it is important that the available infrastructures are of the highest international standards. The ministerial working group proposes that special funding be allocated for this purpose. The proposed source of funding is state-owned company revenues and share sales income. This is also in line with the Government Programme.

Enthusiastic and talented researchers, a sufficient supply of resources, international research collaboration and research infrastructures of the highest quality will be the fundamental challenges facing both national and European science policy also in the years to come. In the end, there are no short cuts to the top, least of all in science. ■

Peer reviews key to developing Finnish science

Text: Ilkka Salmela
Photos: Nina Dodd

Riitta Mustonen, newly appointed Vice President for Research at the Academy of Finland, is adamant that the peer review process is a worthwhile and vital tool in identifying the best research applications – despite the challenges involved.

“The Academy’s success in its mission depends on our success in identifying the most talented researchers and the most promising research projects. Given the Academy’s role as a major funding agency for scientific research, this success has a direct bearing on the overall standard of Finnish research and the national science system.”

In general, Mustonen says that the Academy is a prominent player in Finnish science policy and society at large.

“We’re a valued and well-respected partner not only in Finland but worldwide as well. The Academy’s competence and expertise is recognised within the Finnish innovation system, and researchers are highly appreciative of our funding. Cooperation and internationalisation are key aspects of all our activities.”

Riitta Mustonen took her PhD from the University of Helsinki and holds an Adjunct Professorship in Genetics. Her career at the Academy has included the position of Science Adviser at the Research Council for Environment and Natural Resources in 1995–97 and Director of the Research Unit for Health as from 2003. In the early 1990s, she spent a few years abroad, including a period of more than 18 months as postdoc researcher at MIT Massachusetts Institute of Technology and a 12-month appointment at the German Cancer Research Center in Heidelberg.

A YEAR OF CHANGE FOR THE ACADEMY

Mustonen says that the past year at the Academy has seen a series of important changes. The new Board and new Research Councils took office in January, and the

Academy’s new President, Professor Markku Mattila started at the beginning of March. Mustonen herself started in her new position at the beginning of June. A new Vice President for Administration will also be appointed from the beginning of 2008.

A lot is happening right now with regard to the development of research environments, and the Academy’s Board, Research Councils and management will need to articulate their position on these developments. The major challenges that lie ahead for the Finnish science system over the next few years lie in the development of the research career and researcher training, research infrastructures, Strategic Centres for Science, Technology and Innovation, and the Government’s productivity programme.

“The Academy’s new strategy from 2006 is certainly well-timed. It’s an ambitious programme and highlights the Academy’s role as the single most important funding agency for scientific research in Finland.”

“The Academy has continued its efforts to bring about a closer integration between strategy and practice. A new communications strategy and a new international strategy will be published shortly. We’ll also be updating our research programme strategy in the near future,” Mustonen explains.

Work has also begun on the next major review of the state, quality and impact of scientific research in Finland, which will be the fourth of its kind.

ACADEMY COMMITTED TO INTERNATIONALISATION

Finland and other countries face a huge challenge in promoting multiculturalism and internationalism

to a new level. Ongoing work to develop the Academy's new international strategy has given special consideration to finding ways of increasing researcher mobility in all forms of Academy funding. Young researchers in particular are encouraged to go abroad, gain their independence and carve out their own distinctive research niches.

"Mobility and networking are extremely important to researchers because they enhance the quality of research, boost the competitiveness of researchers in the international funding market and bring more funds to the science community at home. If the mobility of researchers continues to decrease, that will adversely reflect on their networking and by the same token on their future prospects for cooperation."

"The Academy has long been an active player in the field of international science policy. We're working constantly to develop new and creative mechanisms of international cooperation and to increase the appeal and visibility of Finnish research. However, it's not enough just to be active – you must also have a clear objective and be effective in the pursuit of that objective."

In Europe, the Academy is co-funding several ERA-NET networks. In its own research programmes the Academy enjoys the cooperation of a number of European partners, with which it has implemented numerous joint calls. With the launch of the Nordic Research and Innovation Area (NORIA), Nordic cooperation has expanded into new areas, including joint calls and networks.

Research funding cooperation with North America and Japan is also on the increase. Special effort has been invested in stepping up cooperation with emerging science nations, such as China, India,



"The peer review process is an excellent opportunity to improve the quality and visibility of Finnish research," Riitta Mustonen says.

Russia, Brazil and Chile. With all these countries the Academy has undertaken joint calls aimed at genuine research collaboration.

With Tekes, the Finnish Funding Agency for Technology and Innovation, the Academy also contributes to funding the Finland Distinguished Professor Programme (FiDiPro) to recruit foreign top researchers or expatriate Finnish top researchers who

have worked abroad for long periods. In the first call, the Academy awarded funding to 16 professors from ten different countries. The deadline for the second call was the end of October.

"The Academy's Centres of Excellence could and should be more active in recruiting foreign researchers as well. And research teams at universities and research institutes should aim to establish concerted and long-term international cooperation."

The Academy works consistently to facilitate international research collaboration, for instance, by hosting seminars where scientists from Finland and

other countries can get together, exchange experiences of their work and discuss possible mutual cooperation.

"Finland has a strong doctoral programme system and considerable experience of developing that system. The concept might be of interest to other countries as well, particularly many newly emerging science nations. For graduate schools, the main avenue for international cooperation would be through the structures of their host university."

"It's also essential that work is continued to develop our research infrastructures. Without high-level research environments, we can't expect to attract either domestic or foreign scientists to work here," Mustonen emphasises.

PEER REVIEW PROCESS TO RECEIVE CONTINUED DEVELOPMENT

"It's not an easy task to identify the most talented researchers and most promising research projects. Peer review is the Academy's most important tool in this, and that's why we're continuing to develop the peer review process on the strength of our experiences."

The Academy's peer reviews are undertaken by panels of foreign experts who assess and review the proposals submitted. In smaller disciplines that receive less applications, panels are not always feasible. In this case, statements are solicited from individual, usually foreign experts. The funding decisions are made by the Academy's Research Councils or sub-committees that mainly consist of university professors and experts from research institutes.

Mustonen says the individual researcher cannot help but benefit from the peer review feedback.

"For researchers, the peer review process is effectively a way of getting feedback from their own science community. It's extremely valuable to know where one stands in terms of scientific quality. Feedback from the international science community could be seen as an internal indicator with which researchers can assess the contribution of their own work to the advancement of science. Regardless of whether or not the review returns a funding decision, all applicants are informed of their assessment."

"We certainly appreciate the importance of peer feedback to the individual researcher. That's why peer review must be of the highest quality and why the process must be constantly improved."

The Academy's international efforts to improve and develop the peer review process are channelled through Nordic forums and the European Science Foundation.

"All research funding agencies face the same challenges. The Academy's practices and experience and expertise are rated very highly internationally. I'm sure that in the future we'll see more and more international cooperation for the development and implementation of the peer review process."

AIMING FOR A TRANSPARENT AND IMPARTIAL REVIEW PROCESS

In 2006, the Academy received some 5,600 funding applications, of which 3,300 went through the peer review process. In processing and reviewing these applications, the Academy is committed to exercising the best possible expertise, impartiality and transparency. Given the large number of applications, even projects that receive the best ratings are not guaranteed a favourable funding decision.

Mustonen wants to remind that researchers themselves are happy with the current system, because it is the best way to guarantee objective and reliable decision-making.

"The experts involved in peer reviews usually study the applications processed by the panels in advance and produce a draft evaluation of each application. At the panel meetings, the experts discuss each application



and write their final panel evaluation. These statements as well as the applications themselves are then reviewed and discussed by the members of the relevant Research Council. The application therefore passes through several critical filters before the final funding decision is made.”

Mustonen points out that it is often extremely difficult to find and recruit competent enough experts.

“You can’t decide on who you want to have on the panel until all the applications have come in, because it’s only then that you know exactly what sort of expertise will be needed. The same is true in situations where the applications aren’t submitted to a panel, but where statements are solicited from individual experts. It can also be hard to find experts who don’t have a vested interest,” Mustonen adds.

Each year, the Academy uses the services of some one thousand experts to review its funding applications. Most of them are from outside Finland. Top-level experts are in demand from other countries’ funding agencies as well. With this in mind, the Academy is keen to retain the services of the best reviewers so that they serve on several panels.

“The peer review system may be laborious and involve many challenges, but it’s also a unique way of increasing international awareness of Finnish research. Indeed, this role of the peer review process deserves to be emphasised more. How else could we get hundreds of leading foreign experts to read and study thousands of Finnish research plans each year,” Mustonen asks.

For this same reason, Mustonen encourages Finnish researchers to join the work of expert panels set up by the EU and other national research funding agencies. ■

EXAMPLES OF THE ACADEMY’S INTERNATIONAL ACTIVITIES

EUROPEAN COOPERATION

European cooperation with several key research funding agencies in Europe.

- 16 ERA-NETs launched in EU FP6. Two ERA-NETs coordinated by the Academy
- Several ESF (European Science Foundation) EUROCORES programmes
- Bilateral cooperation with several European countries

NORDIC COOPERATION

NORIA-NETs

Nordic Centre of Excellence programmes

GLOBAL COOPERATION

BRAZIL

National Council for Scientific and Technological Development (CNPq)

- Research Programme on Sustainable Energy (SusEn)

CANADA

Institute of Neurosciences, Mental Health and Addiction

(INMHA/Canadian Institutes of Health Research)

- Research Programme on Neuroscience (NEURO)

CHILE

Chilean National Commission for Scientific and Technological Research (CONICYT)

- Research Programme on Sustainable Energy (SusEn)

CHINA

Chinese Academy of Social Sciences (CASS)

- Research Programme on Cross-Cultural Communication

National Natural Science Foundation of China (NSFC)

- Environment-related ecology
- Environment-related energy research
- Research Programme on Neuroscience (NEURO)

Chinese Academy of Social Sciences (CASS)

- Research Programme on Ubiquitous Computing and Diversity of Communication (MOTIVE)

National Natural Science Foundation of China (NSFC)

- Research Programme on Ubiquitous Computing and Diversity of Communication (MOTIVE)

INDIA

Department of Biotechnology (DBT)

- Environmental biotechnology
- Vaccine research, diagnostics and drug development
- Plant and crop biotechnology
- Medical biotechnology

JAPAN

Japan Society for Promotion of Science (JSPS)

- Core-to-core programmes (on Life Sciences and Medical Sciences)

RUSSIA

Russian Foundation for Basic Research (RFBR)

- Baltic Sea Research Programme (BIREME)
- Optic Materials Research
- Research Programme on Substance Use and Addictions (ADDIKTIO)
- Material Engineering and Biosciences

Russian Foundation for the Humanities (RFH)

- Research Programme Russia in Flux (VENÄJÄ)
- Research Programme on Substance Use and Addictions (ADDIKTIO)
- Research Programme on Business Know-how (LIIKE 2)
- Research Programme on Ubiquitous Computing and Diversity of Communication (MOTIVE)
- Linguistics

Two researchers received Academy of Finland Awards

Photo: Nina Dodd



The Academy of Finland Awards have been presented to two researchers. The awards went to **Hannes Lohi**, Academy Research Fellow and Adjunct Professor in Molecular Biology, and **Jan Lundell**, Academy Research Fellow and Adjunct Professor in Physical Chemistry, who are both based at the University of Helsinki.

The Academy of Finland Award for scientific courage went to genome researcher Hannes Lohi. Lohi's research interests lie in the genetic background and inheritance of epilepsy. He has launched a genetic research programme at the University of Helsinki that is aimed at identifying genetic defects related to hereditary diseases in different dog breeds. In Finland, this marks a whole new approach to studying genetic diseases, making use of canine genome data to explore the heredity of certain similar diseases in both dogs and humans.

The Academy of Finland Award for social impact went to Jan Lundell, who has significantly promoted the use of computer-aided chemistry in chemistry teaching and in chemistry teacher training. He has produced educational materials both for university teacher training programmes and for supplementary training courses for upper secondary school chemistry teachers. ■

Brain response discovery has worldwide application

The mismatch negativity (MMN) brain response discovered by Academy Professor Emeritus **Risto Näätänen** has laid the foundation for brain research now put to use all around the world. The wide spread may primarily be attributed to a number of surprising clinical applications of MMN.

Mismatch negativity has provided new means with which to monitor the condition of stroke patients. Headed by Näätänen, the Cognitive Brain Research Unit (CBRU) at the University of Helsinki has looked into stroke patient recovery. Their studies have shown that MMN can be used to record the post-stroke gradual recovery of auditory perception, and above all speech comprehension, even when the patient's condition does not allow for monitoring by means of questioning. *Stroke*, a leading journal on cerebrovascular diseases published by the American Heart Association, stated in its editorial that MMN and the methods employed in the research, which can be easily implemented in thousands of medical facilities worldwide, are just the right tools for daily patient treatment and monitoring.

One of the most important applications of mismatch negativity is using it as a predictor of coma recovery. One of the top hospitals in France is already applying a largely MMN-based method to predict the outcome of anoxic coma, unconsciousness caused by a lack of oxygen. The method has been tested on nearly a hundred patients: a verified MMN response translates into a 100 per cent chance of recovery.

Mismatch negativity is today also the most favoured method worldwide to research brain activity changes underlying schizophrenia. MMN can help distinguish the first schizophrenic episode and the chronic stage from each other better than any other method for brain activity measurement.

The Centre of Excellence (CoE) Helsinki Brain Research Centre (HBRC), which includes the Cognitive Brain Research Unit, investigates the cognitive principles of brain activity using the latest brain research methods. The CoE comprises six laboratories from the University of

Helsinki, Helsinki University of Technology and Helsinki University Hospital. The objective of the research conducted at HBRC is to determine fundamental principles of brain activity in memory, attention, emotions, language and learning. The new research knowledge of the brain's activity and the HBRC's work to develop new research methods will lay the groundwork for a variety of clinical applications. HBRC is under the leadership of Academy Professor Emeritus Risto Näätänen. From 2002 to 2007, HBRC is a Centre of Excellence of the Academy of Finland. ■

Finns discover key to understanding cancer formation

Biomedical basic research centred on the underlying mechanisms of cancer formation may reveal completely new factors that are of crucial importance to cancer development. This is evident from the results of a team of researchers headed by Academy Research Fellow **Jukka Westermarck**. Westermarck's team has managed to identify a new protein involved in the process that transforms normal cells into cancer cells. The research findings shed light on a hitherto unknown mechanism that is instrumental in terms of cancer formation.

The results of Westermarck's team suggest that inhibiting the function of the discovered protein might offer a new approach to the treatment of cancer. Given that the protein does not occur in normal tissue, it is possible that a drug designed to inhibit its function would have only minor side effects. The research team is presently hard at work aiming to discover inhibitor molecules to the protein.

Westermarck and his team have long had the goal of identifying mechanisms decreasing protein phosphatase 2A (PP2A) activity in cancer cells. The protein found in this research, designated CIP2A Cancerous Inhibitor of PP2A, interacts with the PP2A complex and thereby inhibits its activity. Inhibition of PP2A activity has previously been determined as a prerequisite for the transformation of normal cells into cancer cells. However, the mechanisms by which PP2A activity is inhibited in

human cancers have been unclear at best.

The core of the team's breakthrough discovery is the observation that inhibiting PP2A activity through CIP2A prevents degradation of the c-Myc protein in cells. Since c-Myc plays a key role in the regulation of cancer cell growth, an increase in c-Myc protein levels is most likely the mechanism with which the CIP2A protein downregulates cancer cell growth.

Westermarck's research team is based at the Institute of Medical Technology, University of Tampere, and at Turku Centre for Biotechnology, University of Turku. The research is funded by the Academy of Finland, the Sigrid Jusélius Foundation, the Finnish Cancer Organisations, the Emil Aaltonen Foundation, Tampere University Hospital and the University of Tampere.

The research results were published in the July issue of *Cell*. ■

Academy CoE researchers involved in Nobel prize-winning research

Two researchers at the COMP Centre of Excellence (CoE) at the Laboratory of Physics of Helsinki University of Technology (HUT) have participated in the work of Professor **Gerhard Ertl**, who was awarded the 2007 Nobel Prize in Chemistry. Involved in the research at HUT have been Professor **Tapio Ala-Nissilä** and Adjunct Professor **Petri Salo**. Ala-Nissilä and Salo are senior members of the Academy of Finland CoE for Computational Condensed-matter and Complex Research Unit (COMP), headed by Academy Professor **Risto Nieminen**, in the field of theoretical and computational nanophysics and nanotechnology. Ala-Nissilä is also Adjunct Professor of Physics at Brown University.

Results of the collaboration have been published in *Physical Review Letters* and *Physical Review B* in 2002 and 2003. The Nobel Committee widely cites these results in its motivation for awarding the Prize. The research featured in the Nobel Committee's motivation is conducted jointly by Helsinki University of Technology, Brown University in the US and Fritz-Haber Institute der Max-Planck-Gesellschaft in Berlin, Germany. ■

FiDiPro attracts top researchers to Finland

Text: Mariliina Karppo/Edita Press Oy
Photos: Antero Aaltonen



Indian professor Kalyanmoy Deb and Finnish professor Ari T. Friberg, who has been working in Sweden for several years, have previously worked together with Finnish researchers. The joint Academy of Finland and Tekes FiDiPro funding programme made it possible for these professors, leading minds in their respective fields, to bring their influence to Finland, thus enhancing the level of cutting-edge research done in the country.

Deb will be working at Helsinki School of Economics for a two-year period. Friberg will be working at Helsinki University of Technology and the University of Joensuu for five years. These top-tier scientists already considered Finland to be an extremely high-quality working environment. However, an internationally competitive recruitment programme was needed to make Finland a more attractive option as a moving destination.

Ari T. Friberg is a world-class researcher in the field of optics.

Correspondingly, the Finland Distinguished Professor Programme (FiDiPro) sets ambitious goals for the professor-level researchers it selects. During their stay, researchers are committed to developing the strengths and areas of specialisation of the Finnish scientific community.

THE GURU OF EVOLUTIONARY ALGORITHMS NOW DOING RESEARCH IN FINLAND

Kalyanmoy Deb made a decisive career decision at the University of Alabama, where he completed a postgraduate degree in mechanical engineering at the end of the 1980s.

“A lecture course called ‘Genetic Algorithms’ caught my eye. The name hinted at genetics and Darwin’s theory of evolution, which is why I asked my father for his opinion on whether it would be a sensible course of study,” Deb tells.

Deb, the eldest of four engineer brothers, received the following answer from his father:

“Consider this: After getting a degree in studies like that, would you be able to return to India and work there?”

Deb chose the subject that fascinated him and became an associate professor at the Indian Institute of Technology Kanpur, the most prestigious university of technology in the country, where he is now a full professor.

His father has reason to be proud: Deb is considered one of the leading experts in evolutionary algorithms used for multiobjective optimisation.

Multiobjective optimisation involves the optimisation of conflicting objectives. Applications of this can be found in, for example, the development of problem-solving tools for economics, engineering and medicine. These methods can be turned into useful software applications for business decision-making and R&D needs. In evolution-based multiobjective optimisation, a set of compromise solutions is sought between conflicting objectives.

COMPETING SCHOOLS COMBINE THEIR KNOW-HOW

“Using algorithms to find a set of compromise solutions is very different from choosing the best one among the solutions,” emphasises Professor **Kaisa Miettinen**.

Miettinen uttered these very words in 1999, when she and Deb met for the first time at an international conference. Miettinen’s research is based on multi-objective optimisation that focuses on supporting decision-making, whilst Deb examines optimisation from the standpoint of his own school, evolutionary algorithms. For Miettinen it is important to develop methods that can be used by decision-makers to find the best compromise solution for one’s purposes.

Moreover, as every consumer who has ever purchased something like a car knows, opinions on what constitutes the best solution can vary widely.

Over the years, the two professors, despite their slightly different objectives, have become colleagues who listen to and support one another.

“Deb was very excited about the FiDiPro programme, and I nominated him for selection as a visiting researcher at Helsinki School of Economics. We were very pleased and grateful that our application was accepted,” Miettinen explains, as Deb’s professorial counterpart.

OPENING DOORS TO THE BUSINESS SECTOR

Starting from autumn 2007, Deb and Miettinen have two years to develop hybrid methods that combine perspectives from two different schools in a productive way.

“The most important thing is to identify differences in the applicability of methods, take advantage of their strengths and take their development to the next level with new ideas. It’s high time for this kind of cooperation,” say the professors.

Deb is also working to establish contacts with businesses, as the FiDiPro programme is intended to promote top expertise in both Finnish science and technology.

“We already have strong evidence that the multi-objective optimisation methods work,” Miettinen explains.

Applications include dosage planning for radiation cancer therapy and the optimisation of paper machine cost-efficiency. Application-independent optimisation methods can be used in a wide range of fields.

Professor Deb’s FiDiPro contract comprehends the bringing of two Indian doctoral students to Finland. Overall, Deb and Miettinen are guiding a group of researchers from India and Finland.

FINLAND VS. INDIA

Deb enjoys living in Finland immensely: most people in the country speaks English well, the small-sized School of Economics is an innovative working environment, and Finland is a good place for the family to live. Deb’s professor seat, the family home and his son’s and daughter’s school were put on hold back in India. When this top expert and his research team, along with their families, were called upon to leave their home country for awhile, it is clear that such a relocation cannot be done with minimal resources.

The idea behind FiDiPro is to ensure that Finland is attractive enough to compete for cosmopolitan, well-paid researchers, who have something to offer Finland. Helsinki School of Economics funds the living costs



“It’s said that whatever you can do with your own resources has already been done,” cites Kaisa Miettinen, professorial counterpart to FiDiPro professor Kalyanmoy Deb. This team will be engaging in a close, scientific dialogue over the next two years.

for Professor Deb and his researchers, whilst FiDiPro funding agency, the Academy of Finland takes care of the researcher salaries and other costs.

Deb is a product of the competitive Indian educational system. In India, talented researchers and their professor live close to one another on the same campus, devoting nearly all of their time to research. “Finnish researchers are more independent – they’ve seen more of life at a very young age. In Finland, thesis writers are already capable of using their powers of reasoning. In India, the professor leads his researchers through the scientific process by hand,” he explains, comparing the differences between the two countries.

Part of networking with different universities and industries is Professor Deb’s collaboration with a research project headed by Professor Miettinen. This project involves five universities and belongs to the Modelling and Simulation technology programme funded by Tekes, the Finnish Funding Agency for Technology and Innovation.

NETWORKING VITAL TO OPTICS RESEARCH

New FiDiPro professor **Ari T. Friberg** finds two primary reasons for success.

“I’ve been fortunate, in that I got to study and work at the world’s finest universities of optics: Rochester in the US, Imperial College in the UK, and Berlin in Germany. I’ve also networked through international optics organisations.”

Networking would have been considerably more difficult if the Finnish Optical Society had not been established in Finland in 1996. Founding of the Society was a long-time dream and objective of Friberg and his colleagues, who were able to realise it despite opposition.

“Optics and photonics research can’t make any progress locally without international research and organisation contacts,” Friberg says.

TOP EXPERTISE IN THE RESEARCH OF BASIC PHENOMENA

For the internationally acclaimed professor, FiDiPro was a sufficiently attractive opportunity to return to Finland for full-time work. Friberg’s specialised expertise is the study of basic physical phenomena related to optics. Knowing and utilising these phenomena form the basis for new optical applications, which are hotly awaited in such fields as information technology and biosciences.

“Basic phenomena sound like something very ordinary, even though all revolutionary innovations are based on them. One such basic phenomenon is stimulated emission, hypothesised by Albert Einstein in 1905. Over the decades, physics books stated that ‘there is no real application for stimulated emission’ – that is, until the laser was developed based on it in the early 1960s,” explains Friberg, using one of his favourite examples.

Another excellent example is optic fibres. Fibres and the applications made possible by them were to some extent already known 30 years ago. However, it was not until the fibre material and structure were known well enough that fibre could be manufactured with almost complete purity, thus making optical data transfer possible.

“The 21st century is the century of research in optics and its close cousin photonics. The impetus for their increased prestige came from a national study published in the US in 1998. The study examined the applicability of optics and photonics in society. The study had such tremendous impact that it resulted in the establishment of a separate photonics research and development sector in the EU in 2005,” Friberg points out.

CONCENTRATION PAYS

With funding from the FiDiPro programme, Friberg has purposefully set a different course for his Finnish optics research than the area of emphasis he had in his former home country of Sweden. He highly praises the FiDiPro objective of encouraging Finnish universities to enhance their strengths.

“The University of Joensuu, one of my host universities, has taken bold steps. Its Department of Physics has concentrated its focus on optics research. Whereas Finland has strong expertise in the research of basic phenomena, Sweden focuses primarily on the development of optical devices, which is another common orientation.”

Friberg heads some ten researchers in Otaniemi and Joensuu. The Academy of Finland will fund 80 per cent

of his five-year term in Finland, and the remainder will be funded by the two host universities.

FINLAND VS. SWEDEN

Professor Friberg still makes regular trips to the Royal Institute of Technology in Stockholm and is also building bridges for joint Nordic optics research. In his opinion, Sweden has more advanced research instruments and equipment than Finland. However, he has nothing but praise for almost everything else in his new home country:

– “Finnish research resources are of exceptionally high quality. Furthermore, the Finnish decision-making culture is fast-paced, far more streamlined than in our neighbours to the west. In Finland, researchers have a lot more opportunity to do important work than in Sweden. Here, researchers can literally roll up their sleeves and work at a fast pace.”

Nowadays, optics and photonics are focused a great deal on micro- and nanostructures. Friberg explains that there are more nanoscience-based companies in Finland than in the other Nordic countries put together.

He praises the FiDiPro programme, whilst giving it constructive criticism:

“What comes after these five years?” he asks.

Friberg, who is placed among the top 1 per cent of optics researchers in the world, returned to Finland without knowing what kind of employment there would be following the FiDiPro term. Naturally, in his opinion it would be ideal if a FiDiPro professor had the opportunity to extend his or her agreement under similar terms, even after conclusion of the programme.

He believes that the FiDiPro programme will effect positive changes within the Finnish scientific community. In Friberg’s opinion, another specific aspect of Finland that promotes its competitiveness is the unparalleled system of graduate schools funded by the Academy of Finland. ■

The FiDiPro (Finland Distinguished Professor) programme is a joint funding programme of the Academy of Finland and Tekes, the Finnish Funding Agency for Technology and Innovation, for the recruitment of top foreign or expatriate Finnish researchers to work in Finland for two to five years. The funding programme strengthens Finland’s scientific and technological expertise and internationalises the Finnish research system. The goal is to create a new form of international cooperation between basic and applied research and business sector R&D. Finnish universities and research institutes can apply for funding. A total of 24 FiDiPro professors were selected in the first FiDiPro call for applications. These professors began working at the beginning of 2007. ■

www.fidipro.fi

New ESF Chief Executive Marja Makarow to advantage the synergy benefits of research funding

Text: Harriet Öster
Photo: Vesa Moilanen



All the synergy benefits of European research funding should be fully advantaged. This is the reason why new European Science Foundation (ESF) Chief Executive Marja Makarow wants to open a dialogue with the EU to discuss how everyone could best work together in research funding.

Professor Marja Makarow, University of Helsinki Vice Rector for Research, was appointed the new Chief Executive of the European Science Foundation (ESF) at the end of September. Her five-year term in office starts on 1 January 2008. The ESF is an association of 75 member organisations devoted to scientific research in 30 European countries, including organisations providing basic research funding, research institutes and key scientific academies. ESF member organisations in Finland are the Academy of Finland and the Delegation of the Finnish Academies of Science and Letters. The ESF is based in Strasbourg, France.

The ESF is an independent organisation that finances its operations with the membership fees paid by its member organisations. These funds are used to hold research conferences and workshops, establish research networks, provide funding for researcher-driven programmes through member organisations and draft forward looks for scientific disciplines. Research itself is funded through national funding agencies.

“The ESF’s strength is that it covers all scientific disciplines and its operations are researcher-driven, arising from the needs of research. Scientific academies are involved to ensure a direct link to researchers,” says Makarow.

“EUROCORES (European Collaborative Research) programmes are by and large the ESF flagship, in which the operating principle is crystallised. Researchers are asked to give proposals on strong topics, for which they themselves assemble a cooperative network from different countries. The ESF assembles these ideas into research programmes, which are approved by the ESF Science Advisory Board. Then the national member organisations are brought in to provide funding for their respective share of the research cooperation,” Makarow explains.

In her opinion, an ideal situation would be one where the funding agencies put their money into a common pot, from which the ESF could distribute it to the best research projects, regardless of the researcher’s nationality.

“Some member countries are ready for this kind of approach, while others are not – at least not yet. One must keep in mind that different countries have very different ways of doing things. Getting people to see eye to eye is one of the challenges I’ll be facing,” she says.

As regards the ESF’s other functions, Makarow wants to strengthen science policy forward looks. Top researchers from different fields analyse the current status of their respective scientific discipline and foresight its future. If the field’s importance and societal impact are on the rise, recommendations for the increase of training and research resources will be drafted.

“This kind of analysis provides invaluable information to research funding agencies and political decision-makers, both at the national and European level,” Makarow states.

EUROPEAN RESEARCH WOULD BENEFIT FROM FUNDING AGENCY COOPERATION

European research funding patterns and the roles that different funding agencies play are not characterised very easily. The European Commission funds transnational research projects, using framework programmes as instruments in accordance with certain principles.

“The overlapping of structures and functions is, on the whole, a problem in Europe. There are so many actors in science, as well as very powerful organisations in different scientific fields. I’ve run into overlaps time and time again while working with international operations,” Makarow points out.

According to Makarow, many researchers tend to avoid EU framework programmes, because specific constraints are placed on the composition of research teams, a large percentage of the programmes are concentrated to a few scientific fields, commercialisation is the objective and the research projects are tied to an enormous bureaucracy, in terms of both the call process and reporting.

The EU, however, has introduced an entirely new concept in the Seventh Framework Programme (FP7): the European Research Council (ERC). The ERC awards grants of approximately one million euro to the best applicants, without any constraints or utilisation requirements.

“This kind of principle is very similar to the way the ESF works. Now would be a good time to open a discussion and come up with ideas on how we could form an alliance, so that together we could find synergy benefits in funding as effectively as possible. That would be very beneficial to European research,” Makarow explains.

GLOBAL COOPERATION NECESSARY ON MAJOR ISSUES

Makarow says that there is already a bridge between the ESF and the ERC and it could represent a new beginning for cooperation. She refers to the EURYI Award, which was given to outstanding young researchers for a five-year period solely based on quality. The programme was funded by the European Heads of Research Councils (EUROHORCs) and organised and executed by the ESF.

“In its first call for applications, the ERC has followed the EURYI example, and thus the EURYI Awards were given for the fourth and last time this year. In the future, the monies will be given through

the FP7 by the ERC. At the same time, the number of researchers receiving awards and the total amount granted to them will increase ten-fold from the EURYI level,” Makarow says.

“Now we can think up new, different approaches to pilot within our own operations and then put them up, tried and tested, for EU funding. It’s in everyone’s best interests to come up with new operating approaches that serve the needs of science and researchers. We need to come up with something so clever that it’ll also be good enough for the EU,” explains Makarow enthusiastically.

Indeed, she already has some ideas, but will not divulge the details yet – at least not all of them.

“I think today’s biggest problems, such as climate change, should not be studied in different countries separately, but as joint efforts. Not only that, but the problems are usually only approached from a technical standpoint. Solutions would also require social science expertise on how information is exchanged, how to make the general public understand very difficult issues, or what kind of impact these problems and their solutions will have on society.”

Although there are no global organisations for research funding, there are natural cooperative partners for European funding agencies elsewhere, such as the National Science Foundation in the US and similar organisations in many Asian countries.

FINLAND HAS A GOOD REPUTATION FOR SCIENCE ADMINISTRATION

“It’s very gratifying to join international efforts as a Finn. Our science administration is top notch and investment in research funding is high. Finland has a good reputation and is highly esteemed,” Makarow says.

Makarow holds numerous Finnish and foreign positions of trust. Among others, she is a member of the Science and Technology Policy Council of Finland and serves on the Board of Science Foundation Ireland. At the ESF, she has served, for example, as the chair on the EURYI Award Life Science panel. During the past four years, she has served as President of the European Molecular Biology Conference (EMBC).

Makarow has otherwise led a very cosmopolitan life. As a child, she lived in Holland, where she attended a French school. In Finland, she continued her education at the Deutsche Schule Helsinki. She has also lived in Germany, working for two years as a postdoc researcher at the European Molecular Biology Laboratory (EMBL) in Heidelberg. ■

ESF advances science at the European level

The European Science Foundation (ESF), headquartered in Strasbourg, France, promotes European science and basic research by bringing together researchers from different countries, by organising research programmes, networks, exploratory workshops and conferences and by dealing with issues of strategic value to European science policy. The ESF is an association of 75 member organisations from 30 European countries. The organisations are mainly agencies funding basic research and scientific academies. The two Finnish member organisations are the Academy of Finland and the Delegation of the Finnish Academies of Science and Letters.

EUROHORCs (European Heads of Research Councils) is an informal association of the heads of research funding and research performing organisations in Europe. The association has 42 member organisations from 23 European countries. During the last few years, EUROHORCs has become an active player in the field of European science policy with the aim of promoting and enhancing inter-council cooperation and serving as an advisory body on science policy issues.

The EURYI Awards (European Young Investigator Awards) were created and presented by EUROHORCs and the ESF. Funding came from national research funding organisations from the 15 European countries participating in the EURYI scheme. The Academy of Finland was the Finnish participant.

Twenty outstanding young researchers were presented with the EURYI Award in Helsinki in September 2007. The Awards, worth 1–1.25 million euros each, were designed to create a high-profile incentive for the best and brightest European researchers to pursue an independent research career as well as to produce internationally high-level research in Europe. The award-winning researchers were selected in an open competition. The evaluation of EURYI applications was carried out in a two-stage process at the national and European level. A total of 474 applications were submitted in this fourth and seemingly final EURYI call, the average age of the applicants being 33. The 20 award-winning scientists hail from the Czech Republic, France, Germany, the Netherlands, Poland, Sweden, Switzerland and Turkey. ■

Scientific excellence only found through international evaluation

Text: Harriet Öster

Photos: Vesa Moilanen

One of the problems facing European science is fragmentation: as first-rate researchers in small countries are very isolated, it is impossible to evaluate their real international level. “That’s why international cooperation in scientific evaluation is absolutely critical,” explains Sir Tim Hunt, 2001 Nobel Laureate in Medicine.

“No one alone is capable of assessing whether a researcher is the world’s number one or number five in their own field. This is a problem, if the objective is to give support first and foremost to the absolute top minds,” Sir Tim says. In September, he came to Helsinki to present the EURYI Award to 20 young researchers, who have the makings of top researchers.

“Enormous sums of money go to waste when support is given to mediocre research. That’s not to say that the research is poor in and of itself – it’s just very, very ordinary and average. Even though all researchers should naturally have the same opportunities to advance, we really must admit that not everyone has what it takes to make it to the top.”

Sir Tim is delighted that he could be on hand to present the substantial award – more than one million euros – to the extremely promising young researchers. The winners can use the money to establish their own research team and focus on their own projects for several years. It gives the researcher freedom, which would otherwise take years to achieve.

“Young and talented researchers should be given a great deal more freedom and opportunities to do what they want. Particularly in hierarchical countries like Germany, researchers don’t achieve such status that they can establish their own research team until very late in their careers,” he says. Even at 25, a researcher is often ready for greater freedom – and most certainly at 35.

The EURYI Award was granted by the European Science Foundation (ESF) and European Heads of Research Councils (EUROHORCS). The funding came from national research funding organisations in 15 European countries. The Finnish contribution was made by the Academy of Finland.



This was the fourth and last time the award was granted. There were 474 applications received in the call. During the four calls, there were approximately 2,000 applicants, 95 of which were awarded. Sir Tim served on the award evaluation panel for all of the calls held, first as the chairman of the panel for natural sciences and then on the panel for medicine.

“We were quite unanimous on the panels, and there was no national favouritism of any kind when making decisions. Basically, the most successful persons in the beginning are the stars also in postdoc science. Some people flourish very young,” he states.



STATE OF EUROPEAN UNIVERSITIES CAUSE FOR CONCERN

Cambridge alumnus Sir Tim is concerned about the current state of European universities.

“Something terrible has happened to the universities in Europe, because there are only five European universities left in the world’s top thirty,” he says.

He believes that the reason for this, particularly concerning German and French universities, is that these countries are trying to separate universities and research institutes.

“Research and teaching, however, support one another, and researchers should be proud of the fact that they also teach.”

He considers scientific communities like Cambridge, where teaching, research and businesses close to the university work together, to be the most productive environments for researchers. The US has even better communities, where it is easy to switch back and forth between research and teaching.

“In the US, there are many people who started out as a lab technician and gradually became a leading researcher. In Europe, we should get away from rigid hierarchies and allow for a different kind of career development,” Sir Tim points out. ■

‘I don’t believe in intellectual property’

Sir Tim Hunt is a staunch supporter of the free availability and application of research data. In his work at Cancer Research UK, he has seen how quickly the results of public basic research are applied in companies and how those results are then completely confidential.

Although his research results are used in the development of cancer medicines, he has no idea of how much progress companies have made in their work. Data from only a few studies have been published, and companies do not divulge any results for use by researchers in the public sector.

“I do understand the competitive situation, but companies also demand the free use of, for example, reagents, which might have taken us as long as 25–30 years to develop. I detest it! I can’t even tell you how much!” he fumes.

“I don’t believe in intellectual property. Research data should be free and available to everyone. I want to know what’s being researched elsewhere,” he says, comparing scientific progress to an anthill or beehive, where an individual reports any findings it has made to the entire group.

In 2001, Sir Tim received the Nobel Prize in Medicine along with Leland Hartwell and Paul Nurse, for the discovery of cyclin proteins and cyclin-dependent kinases. Together they regulate the cell cycle, i.e. the mechanism during cell replication.

“It’s surprisingly difficult to explain what my research is really about: how molecules support cells and their division, how cells build organs and from these, organisms. Some two million new cells are formed in our bodies every second, and during each cell division cyclins are formed and degraded as needed.”

“I know that companies are studying substances that either completely or partially block enzyme function – inhibitors – as potential cancer medicines. These could be used to stop the uncontrolled division of cells. I myself don’t study cancer cells, but rather frog egg cells. The egg cell is just waiting for a sperm cell, and when they meet everything bursts into a frenzy of activity,” Sir Tim explains.

“The reaction is fast and extremely complicated. We really don’t understand it; the more we learn to know how nature works, the more new and unknown things we face.” ■

Finland through a drinking glass

Text: Paula Launonen/Edita Press Oy
Photo: Matti Matikainen

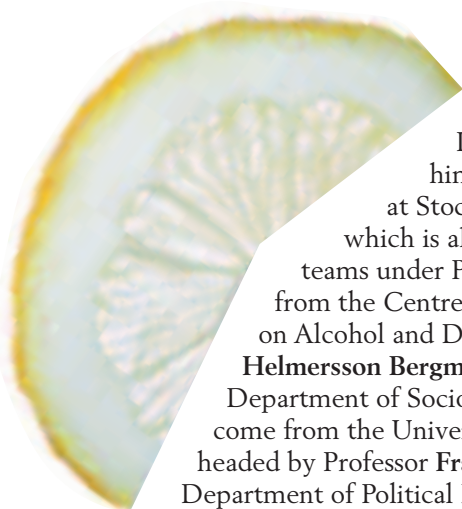
New research to explore and explain the whos, whys, wheres and hows of changing drinking patterns in present-day Finland.

One of the new exciting research projects set up under the umbrella of the Academy of Finland Research Programme on Substance Use and Addictions is called Changes in the Cultural Position of Drinking. Launched at the beginning of 2007 under the leadership of Professor **Jukka Törrönen**, the aim of the project is to define the current state of Finnish drinking culture and to track changes in alcohol use over the past 40 years.

The project has a strong international element and involves research teams from Sweden and



"In contrast to common belief, drinking patterns in Finland haven't remained traditional and unchanged," Professor Jukka Törrönen says.



Italy. Professor Törrönen himself is currently based at Stockholm University, which is also home to the Swedish teams under Professor **Börje Olsson** from the Centre for Social Research on Alcohol and Drugs and under **Karin Helmersson Bergmark**, PhD, from the Department of Sociology. The Italian teams come from the University of Turin and are headed by Professor **Franco Prina** from the Department of Political Research and **Franca Beccaria**, PhD, from the Department of Health Sociology.

“In each country, we’re interested to study drinking habits across four generations from the 1960s to the present day,” Törrönen explains.

Törrönen wants to dispel the myth that there exists a distinctive Finnish culture of heavy drinking.

“In Finland, drinking patterns have often been studied from a national perspective, which has prompted the argument that these patterns have remained traditional, homogenous and unchanged.”

However, there is good reason to assume that drinking patterns vary across generations and by gender, age and life situation. People do sometimes drink in order to get drunk, but often drinking has other functions as well. Intoxication has many faces.

MANY DIFFERENT INTOXICATIONS

“Heroic male intoxication, the heavy-drinking experience shared with one’s best mates on a cruise or out at someone’s summer cottage involving a show of heroic determination to drink to the last man, is just one manifestation of our drinking culture,” Törrönen says.

Another more recent drinking pattern that is closely associated with modern city culture is partying. This is characterised by social and good-natured inebriation and a conscious avoidance of drinking out of control. Other drinking genres include drinking with meals, which emphasises the importance of sensory pleasure and good manners, and drinking alone, which may be driven by the search for company or the alleviation of anxiety.

At the same time as pure alcohol consumption in Finland has increased from less than two litres in 1950 to more than eight litres per capita in 2005, drinking has become a more everyday occurrence and spread to wider population groups.

For a long time now, drinking has no longer been the exclusive domain of men, but become an integral part of the way of life of women, girls and underage adolescents.

PERSPECTIVES AND MATERIALS

“It’s important for us to understand how the cultural position of drinking has changed in Finland. We’re looking at this question by using both quantitative and qualitative materials and by using an historical and comparative approach. For instance, we’re comparing different generations in Finland and comparing the situation in Finland with that in Sweden and Italy,” Törrönen adds.

The main focus of statistical analysis is on drinking situations and quantities, on external and internal control, the homogeneity of drinking culture and the consequences of drinking. This analysis has a solid foundation in the drinking habits survey that has been conducted in Finland at eight-year intervals since 1968. The next survey will be completed in 2008.

The data for the qualitative component of the research project will consist of individual and group interviews, biographies, and alcohol-related articles and advertisements from women’s magazines. The analysis here will focus on drinking motives and situations, internal and external regulation, emotions of honour, joy and shame and on the adverse effects of drinking.

ALWAYS OF TOPICAL INTEREST

Alcohol research in Finland is known for its exceptionally high quality. Alcohol use has been extensively researched from both a natural and social sciences point of view.

“Since drinking is an activity that’s dependent on time, place and social interaction, it’s constantly in flux, and consequently researching this phenomenon is always of topical interest,” Törrönen says.

One interesting area that has received only limited research attention is the attitude of older people towards alcohol. Another is the drinking habits of immigrants from different cultural backgrounds. And what is the role of alcohol in different drinking situations and rituals?

“In general, it’s important to produce more knowledge about the boundary line between responsible and harmful drinking and about the development and mechanisms of substance addiction.” ■

Major research programme to shed light on the aetiology of addiction

Launched at the beginning of 2007, the Academy of Finland Research Programme on Substance Use and Addictions is designed to tackle issues of substance use and addictions on a broad front. Its areas of interest include alcohol, drugs, tobacco and gambling addictions as well as the aetiology of addiction.

The methods and perspectives applied will range from health sciences and biosciences to psychology, from social sciences to the humanities and law.

“The added value from the programme comes from the way it integrates and transcends different disciplines, methods, data sources and traditional boundaries,” says Programme Manager **Mikko Ylikangas** from the Academy of Finland.

Apart from its multidisciplinary nature, another key strength of the research programme is its international collaboration. Its main international partners are from Canada and Russia. The programme involves seven Finnish research projects, one Finnish consortium, two Finnish-Canadian consortia, two Finnish-Russian consortia and one consortium involving teams from all three countries.

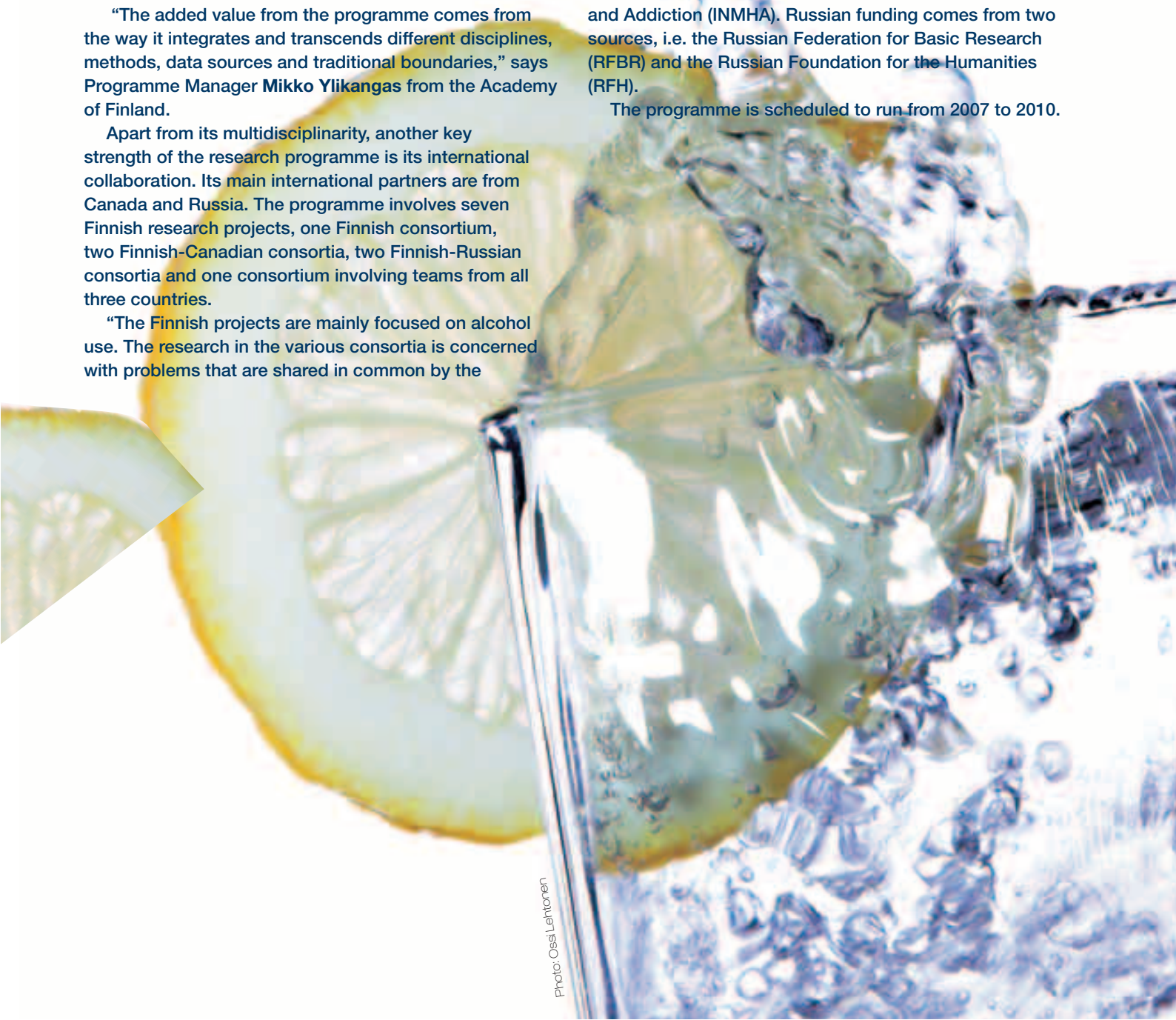
“The Finnish projects are mainly focused on alcohol use. The research in the various consortia is concerned with problems that are shared in common by the

participating countries, such as tobacco and gambling addictions or images of addiction behaviour.”

The Academy of Finland is the single biggest contributor to the programme, providing funding worth 5.5 million euros. Funding from the Finnish Ministry of Social Affairs and Health amounts to 200,000 euros.

Canada’s contribution is 182,000 euros and Russia’s 100,000 euros. The main source of funding in Canada is the Canadian Institute of Neurosciences, Mental Health and Addiction (INMHA). Russian funding comes from two sources, i.e. the Russian Federation for Basic Research (RFBR) and the Russian Foundation for the Humanities (RFH).

The programme is scheduled to run from 2007 to 2010.





Researchers of the Substance Use and Addictions research programme as well as representatives of the funding agencies convened at the House of the Estates in Helsinki in April.

Humanities research enjoys rapid growth in Russia

Text: Toivo Tupin
Photos: Johnny Korkman

Humanities research in Russia is growing very rapidly: in 2007, the Russian Foundation for the Humanities (RFH) received 8,000 applications. This represents a 25 per cent increase over the previous year. The RFH is one of the funding partners of the Academy of Finland's research programme Substance Use and Addictions.

The Russian Foundation for the Humanities (RFH) is a government agency, established in 1994 by a Government of the Russian Federation decision. The primary purpose of the RFH is to support basic research in the humanities. Scientific research projects account for 70 per cent of the funding volume. The RFH has thus far provided support for some 26,000 research projects.

The RFH also provides support for scientific conferences, seminars and symposia held in Russia, as well as for sending Russian researchers abroad for scientific events. It also funds scientific research travels and research infrastructure. In addition, the RFH engages in extensive publishing: it has supported the publication of more than 3,600 scientific books. In other words, one book has been published almost every day since establishment of the RFH.



Chair of the Council of the Russian Foundation for the Humanities, Professor Yuri Vorotnikov explains that there are completely new and unexamined addictions in Russia.

“Financial support from the RFH rescued the publication of humanities texts when science funding in Russia was at its nadir in the 1990s. The RFH strives to further develop publishing, both quantitatively and qualitatively,” declares Professor **Yuri Vorotnikov**, who serves as Chair of the RFH Council.

INVESTING IN INTERNATIONALISATION

The RFH promotes the establishment of international contacts with Russian humanities scholars. Indeed, over the past 3–4 years, international activities have increased considerably. Cooperative ventures have been carried out, particularly with CIS member states: the RFH has organised joint calls for applications with Ukraine, Belarus and Moldova. There are also cooperation partners outside the CIS, for example in Finland, Germany, France, Canada, the US, Mongolia, Vietnam, Taiwan and China.

“International operations are crucial to the RFH, which is why we make every effort to promote them,” Vorotnikov points out.

The Academy of Finland is one of the RFH’s first foreign funding partners. Since 2005, the RFH and the Academy have held joint calls for applications for three research programmes: Russia in Flux; Business Know-how; and the latest addition Substance Use and Addictions.

The joint projects with the Academy have attracted a great deal of interest in Russia. Finnish and Russian humanities scholars have traditionally had positive experiences with cooperation, and good personal relationships should by no means be played down. Vorotnikov thinks that the Substance Use and Addictions research programme is extremely topical all over the world, particularly, he says, in Russia, which traditionally has a high rate of alcoholism.

“Over the past twenty years, alcohol has been joined by drugs, both of which pose a serious problem. On top of everything else, Russia is seeing completely new and unexamined dependencies, such as gambling addiction,” Vorotnikov explains.

Next year, the RFH will host an international conference in Moscow that addresses alcohol, drug and addiction issues.

“The RFH is making every effort to strengthen and expand its international activities. Above all, we want to deepen our relationships with the RFH’s old cooperation partners.”

STATUS OF RESEARCHERS IMPROVED IN RECENT YEARS

The Russian Foundation for the Humanities receives 1 per cent of the state budget funding allocated for civilian basic research. This funding is rapidly increasing: this year it is 25 million euros and by the year 2010 it is expected to double to nearly 48 million euros. Today, a single research project receives approximately 10,000 euros a year. According to Vorotnikov, the support, which is paid as a salary supplement, provides substantial financial assistance to Russian researchers.

“The situation for researchers has improved in other ways as well: last year, their salary increased by 60 per cent. Despite the fact that more and more resources are being devoted to research and researcher salaries, there are still many problems to solve. One major improvement is making all grants tax-free starting in 2008; right now, taxes on grants are around 30–40 per cent.”

“The Russian leadership and the Government have a clear objective: scientific research must absolutely be developed. Fortunately, the prohibitive attitudes that prevailed in the 1990s, when the state completely forgot about science, are a thing of the past. In those days, the general thinking was that good research would manage to find its own funding and everything was left to chance. Basic research, however, won’t succeed without state support,” Vorotnikov says. ■

“We want to strengthen Nordic research to serve as a common home turf for Nordic scientists,” explains NordForsk Director Liisa Hakamies-Blomqvist.

Finn at the helm of Nordic science funding

Text: Paula Launonen/Edita Press Oy
Photo: Matti Matikainen

When Liisa Hakamies-Blomqvist assumed her position as the first Director of the recently founded NordForsk in October of 2005, she set out to build a system unique in the whole world.

“I was overjoyed to accept the position. I want to promote the consolidation of Nordic research strengths and raise its profile in the international arena.”

NORDIC BALANCE

Hakamies-Blomqvist was born in Helsinki, where she also studied. In 1996–2005, she worked for the Swedish National Road and Transport Research Institute in Linköping, initially as a researcher and later as Scientific Director.

“The nine years I spent in a Swedish research environment strengthened my Nordic identity and the conviction that collaboration is absolutely necessary, if we here in the Nordic countries want to achieve international success.”

This ‘renaissance’ humanist has also studied Romance philology, historical linguistics and musicology and holds a degree in psychology as well.

Just over 18 busy months are now behind Hakamies-Blomqvist. Her job description has included everything from the establishment of interest group relationships and operative management to strategy development and the drafting of recruitment notices.

“When hiring personnel, I took into consideration not only the level of professional skill, but also the Nordic and gender balance,” Hakamies-Blomqvist says.

According to the energetic and efficient director, a multifaceted approach has provided an excellent basis for carrying out the assignment and developing operations.

“Of course, there’s been no shortage of work, but at least I know quite thoroughly the organisation I’m heading. Now, when the size of our team is nearly

sufficient for the assignment we’ve been given, I can focus more on strategic management and building external relationships.”

INTERNATIONAL NETWORKER


Hakamies-Blomqvist says she travels extensively; NordForsk’s visibility is as important as personal contacts.

“In terms of recognition, we’ve got off to a good start. We’ve set up cooperation with national science funding agencies and other Nordic actors. In addition to these, we’ve established relationships in the Baltic region and Northwest Russia.”

“NordForsk’s goal is to strengthen the Nordic countries as a single research area, not just from a European standpoint, but also within a global context,” Hakamies-Blomqvist explains.

NordForsk is a Nordic research board operating under the Nordic Councils of Ministers for Education and Research and responsible for Nordic collaboration in research and researcher training.

The Nordic Research and Innovation Area (NORIA) is part of the European Research Area (ERA). NORIA’s goal is to keep the Nordic countries at the global forefront of scientific and technological development. As part of NORIA, NordForsk’s objective is to contribute to strengthening and further developing the Nordic region as one of the most dynamic regions in the world for research and innovation and thereby enhancing the international competitiveness of the Nordic countries and the living conditions of the populations in the region. NordForsk works to concentrate its efforts on research areas where the Nordic countries have an international position of strength, but can also choose to promote strategically important areas where the countries consider that joint Nordic efforts would enable the desired development of



research and education competence of international quality and strength to be achieved more rapidly.

Annually, NordForsk grants nearly 100 million Norwegian crowns (€12m) to Nordic research collaboration. Representatives from all scientific disciplines can apply for funding, which is intended for various networks, researcher courses, course grants, research supervisor courses and seed money.

UNITED FRONT TO THE WORLD

The most visible aspect of NordForsk operations are the Nordic Centres of Excellence in research (NCoE). The goal of the first five-year NCoE programmes is to generate synergies and advance, among others, Nordic climate change and genetic medicine research.

Top researchers and research teams, also those working in the social and behavioural sciences, are currently being assembled within existing NCoEs.

“The NCoE programmes are thematically defined and accept projects that represent the cutting edge of their respective fields. In practice, the NCoEs are networks in various scientific fields that include researchers and research teams from at least three Nordic countries,” Hakamies-Blomqvist explains.

In addition to NordForsk, the NCoE programmes receive funding from national research funding agencies in the Nordic countries, such as the Academy of Finland.

Hakamies-Blomqvist stresses that the goal of these programmes is to increase the quality, efficiency, competitiveness and visibility of Nordic research through enhanced collaboration between the Nordic countries.

“Individual projects that are dispersed and fragmented can be denied the attention they deserve. We’re not giving special emphasis to the Nordic content of research. We’re joining Nordic forces so that we can work together to become world leaders in research,” Hakamies-Blomqvist sums up. ■

www.nordforsk.org

Participating in the application evaluation process for the Academy of Finland has provided several benefits. First, it's afforded me opportunities to survey the current state of historical scholarship in Finland. Second, I've gained useful insights in applying for grants. I now write applications with a much stronger sense of the evaluator's perspective. Third, I can apply my wide knowledge of Finnish historical scholarship to the evaluation of applications. For some fifteen years, I've lectured on the history of Finland from prehistory to present. My most recent work is a book based on these lectures. In these tasks, I've had to develop a mastery over all fields of scholarship concerning Finland's past, not just those in my areas of specialty.

Despite the large number of applications for evaluation, many factors lighten the evaluator's load. The electronic database is easy to access and doesn't require carrying paper around. Traveling light is important when flying to Finland. The questions asked of the applicants are well formulated and represent relevant considerations for all scholarly projects. With few exceptions, the applicants present applications in clear and proper English. As English has grown into the *lingua franca* of scholarship, so has the contempt toward the rules and usage of the English language in international scholarship. The applications to the Academy represent a welcome corrective to this worrying trend.

The work of evaluation culminates at the evaluators' meeting at the Academy's headquarters in Helsinki.

The Academy staff go to great ends to ensure a well-organized meeting and a pleasant work environment. Nonetheless, the task at hand is demanding. Scholars from different countries, areas of specialization and academic traditions come together to harmonize their evaluations into one response to the applicant. Usually only two days are reserved for evaluating twenty or so applications. Despite the seemingly great possibility for tension and frustration, my experiences have revealed to me a broad consensus concerning quality historical scholarship. The quality of the applications often turns the discussion among evaluators to more general questions concerning the study of history. I've left evaluation meetings feeling better about being a historian.

The only frustration with the process stems from the fact that, regardless of the quality of the applications, only about 10 per cent of the applicants gain funding from the Academy. Of the applications that I've evaluated over the years, at least 60 per cent could have been given funding without lowering the overall quality of projects already funded. This points to a larger problem in the funding of research in Finland: funding for doctoral students and senior scholars is plentiful, while there's a relative lack of resources for postdoctoral and mid-career researchers in the humanities and social sciences. Unemployment, underemployment, and short-term funding among this group of researchers are widespread. Finland has traditionally invested deeply in education and research. Besides wood, Finland's only other significant

natural resource is human capital. What sense does it make to heavily invest in people who become world-class scholars only to see those same scholars draw unemployment benefits every few years?

The Academy, of course, can't alone provide the solution to this problem. In the meantime, I'm prepared to evaluate more applications from an outstanding community of scholars. ■

Jason Lavery

is Associate Professor of History at Oklahoma State University in the United States. During the 2007–08 academic year, he is a visiting fellow at the Collegium for Advanced Studies at the University of Helsinki, where he is working on his book entitled *Lutheranism's Frontier: The Reformation in Finland 1523–1611*.



Photo: Susanne Weinberger

Success rate and application evaluation in figures (2006)

- Some 5,500 applications worth 1.1 billion euros were submitted to the Academy of Finland.
- About 1,200 applications were funded with a total sum of 238.7 million euros (the number of applications also include minor applications, such as funding applications for short-term visits abroad); the success rate of the applied funds was about 14 per cent.
- More than 1,000 experts evaluated applications submitted to the Academy. (Minor funding applications were not assessed by external experts.)
- 85 per cent of the experts were foreign researchers. In 2000, the percentage was less than 20. (These percentages apply to the major funding instruments, i.e. general research grants and research posts.)
- Men and women shall be equally appointed as evaluation experts, the aim being 40 per cent representation of the minority gender in all preparatory groups and committees, unless special circumstances otherwise require.

ERA-PG sprouts a different kind of thinking

Text: Mariliina Karppo/
Edita Press Oy
Photos: Antero Aaltonen

“Finnish plant genomics research is enjoying success with its ‘Think Different’ approach. This kind of scientific originality can be achieved particularly by means of a thorough, unhurried definition of the research subject and spontaneous networking,” says Yrjö Helariutta, renowned Professor of Plant Developmental Biology.

Professor Yrjö Helariutta's research team has achieved significant results in the study of, for example, thale cress, Arabidopsis.

ERA-PG (European Research Area Plant Genomics), a joint European plant genomics research network, largely meets the criteria listed by Helariutta. The ERA-PG research programme, which was launched at the beginning of 2007 and the first in its field to be funded through the ERA-NET scheme, promotes research in which researchers from at least three European countries engage in consortium-based cooperation. The idea is that cutting-edge plant biology research from each country is reinforced and complemented by the expertise of researcher colleagues from other countries.

ERA-NET is a funding scheme within the EU framework programmes for research, which is designed to develop cooperation between national research organisations. The funding scheme was started with the establishment of the EU Sixth Framework Programme in 2002.

In the first ERA-PG call there were twelve European funding organisations; the network currently comprises 17 organisations. The amount of funding distributed in the network's first call was over 38 million euros. Each country's funding organisation provided funding for its own researchers selected in the call. This year, nearly 30 consortia representing both basic and applied research are starting work.

"We're sure to see some new scientific breakthroughs here," Helariutta promises.

ROOT, SHOOT AND CAMBIUM JOIN FORCES

Professor Helariutta, who works at the University of Helsinki Institute of Biotechnology at the Viikki campus, is involved in two ERA-PG consortia. One is a study of regularities in the combined effect of two growth hormones – auxin and cytokinin – conducted by Finnish, German and British researchers.

"Auxin and cytokinin are like a married couple that both gets along and fights. How does the hormone pair behave, for example, when a plant is branching and differentiating? Are there any universally applying principles apparent in the combined effect of the hormones?"

Helariutta serves as the coordinator for this consortium, which involves supervising the mutual exchange of information between colleagues from different countries. Helariutta, who has received the European Young Investigator Award (EURYI), among others, believes that this will give Finnish plant research greater visibility in the European research community.

The other consortium in which Helariutta is involved brings together experts in different types of plant stem cells to examine the differentiation mechanisms of stem cells.

"We have root specialists from the Netherlands and Portugal, shoot specialists from Germany and cambium specialists from here in Finland," says Helariutta, describing the different parts of the whole.

"The free networking of research teams and researcher-specific assignment of subjects increase the level of motivation and raise the scientific bar. In basic research, the bottom-up approach is the only way to go," he states.

A VARIETY OF POSSIBILITIES

Helariutta sees the ERA-NET scheme as an instrument that improves quality.

"National research programmes are usually too interdisciplinary for young research teams. The challenge facing research cooperation between two pre-designated countries is, on the other hand, finding precisely the right team. This is why cooperation involving several countries is the most fruitful."

Helariutta also feels that ERA-PG is a welcome addition because genetic research on plants was given relatively little attention in the EU's Sixth Framework Programme, probably due to the value-charged debate.

"What's unique about ERA-PG is that Sweden, our traditional partner, wasn't in the first ERA-PG call. This entails new directions for our networking."

According to Helariutta, Finland has traditionally been more focused on forest research than agriculture when it comes to the genetic research of plants. Helariutta's area of specialisation, molecular plant development, opens a variety of possibilities. One of the hottest topics today is the use of biomass and wood in the processing of energy and fuel.

IN-DEPTH ANALYSIS AND SYNERGY

The international consortia that made it through ERA-PG's two-stage calls have recently been announced, and many research teams are just starting work.

"The consortia haven't been given a set timetable for their work. Because of this, we'll initially have an excellent opportunity to really get into the subject and scientifically specify the more interesting definitions for the team's work. This kind of approach is necessary, especially for Finland. The best way to reach the top is to make every effort to find a non-mainstream area of research or approach," Helariutta states.

Helariutta has had his research results published in, for example, the highly esteemed magazine *Science*, so it is evident that this research approach is working.

When Helariutta and his research team submerge themselves in their work, it involves an examination of the research situation for partner countries Germany and the UK, among others. What kind of regularity have consortium colleagues **Ottoline Leyser** and **Jiri Friml** found in the reactions of growth hormones thus far? Based on these assumptions, can the subject being researched in Finland be defined?

BACKING ONE HORSE OR MANY?

Helariutta's own scientific views were broadened during his postdoc years in the US. He believes that top European plant genetics research has a lot to offer global forestry and agriculture. Genetic research is still a sensitive subject, on which Helariutta would like to maintain an objective scientific perspective.

"I'd like to point out that, throughout history, the genome of flora and fauna species all over the world has been affected by, for example, the cross-breeding of species indigenous to different continents. On the other hand, the environment has also been harnessed for human use by, for example, turning forests into fields for growing crops. In principle, transgenic breeding in agriculture is just one step on this millennial path of evolution, and this step might result in farming with a much lower environmental impact."

The US and Europe are approaching plant genetics research in very different ways.

"In the US, large sums of money are spent on extensive, systematic research. A good example of this is a project, whose objective is to systematically

and relatively straightforwardly chart the function of some 30,000 thale cress genes. In Europe, funding organisations provide funding with more creativity and greater range. Europe's weakness might be, however, the partial overlapping of research," Helariutta says.

Coordination of the ERA-PG research programme, which has performed exemplary work, is centralised to the Netherlands. The decision to use a joint secretariat, also based in the Netherlands, in the first call streamlined the call process.

YOUNG, INTERNATIONAL RESEARCHERS MUST BE GUARANTEED A CONTINUOUS CAREER

As multi-European as ERA-PG may be, it still has a clear connection to the national plant genetics research conducted by participant countries. ERA-PG research projects can be effectively branched out even after the project has concluded, provided there is sufficient national interest and investment.

Indeed, Helariutta, who has himself returned to Finland relatively recently, knows how it feels to move from a foreign vantage point to Finland and then re-establish a vantage point. It is here that he sees a clear area for development.

"I propose that funding forms be further developed to specifically support researchers returning to their home countries. The uninterrupted continuation of their careers should be more effectively guaranteed." ■

"In addition to following the latest research trends, I also support giving consideration to alternative approaches. After all, this is what Finnish plant genomics is already somewhat known for," Professor Helariutta says.



Academy involved in polar research

Text: Heikki Jaakkola

March 2007 marked the beginning of the International Polar Year, a major scientific programme focusing on the Arctic and Antarctic regions. The cooperation guarantees sufficient resources for extensive and even financially demanding research projects.

The International Polar Year (IPY) is a massive joint project in which thousands of researchers from over 60 countries are investigating the biology and physics of the Arctic and Antarctic regions. In addition to natural sciences, social sciences will also be part of the research. The Academy of Finland is also actively involved in polar research. The Academy is providing a total of 4.3 million euros in funding for several research projects in the Arctic and Antarctic regions. The International Polar Year will run from March 2007 to March 2009.

One of the Academy-funded research projects is the Finnish Antarctic Research Programme on Polar Climate Change (FARPOCC), which is headed by Research Professor **Esko Kyrö** of the Finnish Meteorological Institute. Kyrö, along with fellow project team members Senior Researcher **Outi Meinander** and Researcher **Leif Backman**, explains that the project will not be doing impact research, but produce hard data and modelling to form the basis for such research. The project includes ozone layer and UV radiation research and will continue running after the conclusion of the Polar Year.

The ozone research portion of the project is the result of one of the scientific community's greatest victories, the Montreal Protocol, whose implementation has resulted in a considerable reduction of CFC use.

The appearance of a hole in the ozone layer at an altitude of approximately 20 kilometres, and specifically over the polar regions, was a discovery that sent shockwaves through the scientific community. The discovery set off a flurry of research, which served to increase knowledge of the ozone layer and its related phenomena by leaps and bounds.

Although a great deal has been learned about the subject, there are still many questions left unanswered. Indeed, Kyrö admits that findings and models do not correspond with one another in certain areas: for example, ozone depletion occurring in the low light of early winter is much greater than the models indicate it should be.

The need for updated information can also be found in climate change, which also has an impact on ozone depletion.

Leif Backman, who works on modelling, explains that one poorly understood area of ozone depletion is the formation of cloud particles in the upper atmosphere of the polar regions and the variation in the amount of particles. However, occurrence of particles and the dynamics of clouds forming in the stratosphere over polar regions have a direct impact on ozone depletion, because the phenomena that break down ozone begin on the surface of particles floating in the upper atmosphere.

"It's actually been proven that depletion has a direct correlation to the air mass volume at which small particles occur."

Backman and his colleagues still have a lot of work to do with their models. Events comprehend a considerable mix of meteorology, chemistry and physics, in addition to which attention must be given to the numerous conflicting feedbacks in reference to ozone destruction.



Photo: Lehtikuva/AFP/Rodrigo Arangua



Photo: Heikki Jaakkola

Outi Meinander, Esko Kyrö and Leif Backman of the Finnish Meteorological Institute are researching the polar regions in an Academy-funded research project.

Once Backman gets going, a layman might suspect that the entire system is a black box, which one should not even attempt to approach with any measure of reason.

This, however, is denied by all three unanimously.

“Even the present models are capable of describing key factors extremely well.”

“We’re currently complementing our basic models at a detailed level.”

NEED FOR INTERNATIONAL COOPERATION IN COLLECTING OBSERVATIONS

A large volume of high-quality observation data is, however, needed as the foundation for model building. A majority of this data must be obtained from the polar regions and at an altitude of 20 kilometres, which is not nearly as easy as taking a look at a thermometer in the kitchen window.

Observations can be collected by such means as the Match technique, in which observation equipment is sent into the upper atmosphere by balloon. The ozone concentration of a certain air mass is measured during the ascent of the balloon.

When the same air mass has moved above another observation station, a similar sounding is also launched there. A comparison of the results indicates the rate of ozone depletion in that air mass per sunlit hour.

However, in individual measurement pairs the result may be affected by chance or observational errors. Reliability requires that the number of soundings be increased on a statistical scale, i.e. practically thousands of measurement pairs. According to Kyrö, the collection

of data is more expensive and difficult than it sounds.

In many cases, other substance concentrations must also be measured to an accuracy of one part per million or even billion, which places serious demands on the measuring instruments. These are typically extremely expensive and also very heavy.

This means that the balloon must carry a payload of several hundred kilograms in extraordinarily difficult conditions. The balloon’s dimensions are also considerable; according to Kyrö, the envelope height may be around a hundred metres.

“Joint projects such as the International Polar Year are absolutely necessary precisely because resources can be combined for extremely costly, large-scale projects like this.”

“For example, Finland wouldn’t be able to afford taking Match-based measurements in polar regions on its own.”

Several Match research projects have thus far been carried out in the Arctic regions. However, the project now starting in Antarctica is only the second of its kind there.

SIGNIFICANT IMPROVEMENT IN UV MEASUREMENT RELIABILITY

Outi Meinander talks about the UV research conducted by the team. In addition to taking UV measurements in Antarctica, she has also initiated the measurement of snow-reflected UV-B radiation this past spring in Sodankylä.

Meinander explains that, in principle, the UV research being conducted is simply measurement,

where there is no need to consider atmospheric circulation or the formation of fine particles. However, even in this case simplicity only extends to the theoretical level. Measurement in this context involves extremely precise metrology, which is always difficult.

An error in measurement may be caused by, for example, electron-generated thermal noise, instrument uncertainties or even the slightest tilting of the instrument. Results are also affected by the ozone volume, cloudiness, solar elevation angle, aerosols and reflectivity of the earth's surface. The margin for error in UV measurements has been reduced from ± 50 per cent to 10 per cent.

However, UV measurements are still complicated by the fact that data should be obtained from wavelengths that just barely make it through the atmosphere.

"The wavelength of UV radiation falls within a specific range of 200–400 nanometres, with oxygen and ozone in the atmosphere in practice completely blocking wavelengths shorter than 280 nanometres. Measurements are not taken at the Finnish Aboa station, because instrument servicing would require a permanent, year-round crew."

"It's often cold and windy in Antarctica, which is why instrument covers have to be regularly cleaned and dried. And this requires people. UV radiation is measured in cooperation with Argentine and Spanish scientists at three stations maintained by them. Resource-consolidating international cooperation has proven to be exceptionally useful also in this respect."

One station is situated directly underneath the ozone hole, another at its edge and the third outside.

The most remote station, Argentina's Belgrano II, is directly underneath the hole. For the persons manning the station, this is one extraordinary post: there are no visitors, because for most of the year there is no way to reach the station. Once a year, the instrument is taken to Spain for recalibration and the station technician is changed.

The station at the edge of the hole, Marambio, is located on the Antarctic Peninsula. This station is far more accessible and can even be reached by plane. The station is manned by Argentine servicemen, because meteorology falls largely under the purview of the Argentine Armed Forces.

The third station is located in the southernmost city of Argentina (and the whole world), Ushuaia.

The calibration of instruments is done every two weeks by means of standard lamp measurements. Instrument readings are compared with the radiation known to be emitted from a standard lamp. It takes one person around one working hour to conduct a standard lamp measurement, which has been done regularly at all three stations since 1999.

Calibration can, however, also be done as a sky measurement. In this case, a reference device that is rotated from one station to another is required. The results provided by the device are compared to the station's own instrument results. This rotated reference device is the responsibility of the Finnish Meteorological Institute.

According to Meinander, the quality of measurements is already so high that the data is used by the World Meteorological Organization (WMO).

Even though further ozone depletion has been stopped and recovery seems to be starting, the threesome is not ready to give the 'all clear' just yet. Kyrö actually predicts that the worst ozone depletion of all time is yet to come.

Still, Kyrö says that there is no reason to panic.

"Many people wonder if there's any ozone left at all over the polar regions after all this depletion."

"The ozone layer has always almost fully regenerated itself every year after the spring depletion thanks to atmospheric fluxes."

MEASUREMENT TECHNOLOGY IN HARSH CONDITIONS

Balloons being sent up into the upper atmosphere over the polar regions are also carrying Finnish measurement technology. This technology is represented by Vaisala radiosondes and ground equipment.

According to Product Manager **Matti Lehmuskero**, standard radiosonde equipment includes temperature, humidity and air pressure sensors. The radiosondes are also fitted with a GPS navigation system, whose position data provides the basis for calculating wind speed. The entire unit can be supplemented with an ozone measurement instrument, which is placed in an insulating styrofoam case.

According to Lehmuskero, ozone research instruments have very special requirements because the measurement ranges are extremely broad. For example, industrial thermal sensors must maintain normal operability in temperatures as low as -40°C . In the upper atmosphere, temperatures can drop as low as -90°C . Pressure can also drop to 3 hectopascals and humidity can vary anywhere between 0 and 100 per cent.

The mechanical durability of the instruments is also put to the test in such extreme conditions. According to Lehmuskero, extreme cold places serious demands on materials, just as the wind and atmospheric vortices can shake the instruments violently. The fact that these instruments do not contain moving parts makes their design easier.

The IPY website can be found at www.ipy.org and the Finnish IPY website (also in English) at www.ipy-finland.fi. ■

European research in comparative religion gains steam

Text: Mariliina Karppo/Edita Press Oy

Photo: Laura Vesa

Scholars have traditionally debated whether the diversity of religions enhances or weakens the religiosity of the individual. Funded through a research programme of the NORFACE ERA-NET, the consortium ‘What are the Impacts of Religious Diversity?’ is taking the debate in new directions.

At first glance, Finland, Germany and Slovenia would not seem to have anything in common from the standpoint of religion. In Finland, a majority of the population belongs to the Lutheran Church. Germany has two primary religions of equal standing: Protestantism and Catholicism. In the relatively new state of Slovenia, religion has developed strongly under the influence of its political ideology, communism.

“There you have it. The role religion plays in different countries varies widely, as it’s tightly woven into a given society’s historical and cultural evolution,” Researcher **Kimmo Ketola** explains.

“Furthermore, religion has an entirely different function in a modern society than it did in the past.”

JOINT EUROPEAN RESEARCH ON THE INFLUENCE OF RELIGION IN SOCIETY

Comparative religion scholar Kimmo Ketola is a researcher with a joint European consortium that has intentionally grouped these three very different countries together. There is serious justification for such transnational research. It brings us closer to a more universal concept of religion. This topical debate, on how the sheer volume and diversity of religions affects personal religiosity, is becoming more and more interesting.

“What’s special about our consortium’s approach is that we more broadly examine the impact of religious diversity not only on religiosity, but also on the values and social attitudes held by individuals. In other words, we study how religiosity affects a person’s social

activity and participation in, for example, volunteer organisations,” says Ketola, discussing the research subject that he and his eleven colleagues are tackling.

The consortium is one of ten projects receiving funding from the NORFACE programme ‘Re-emergence of Religion as a Social Force in Europe?’ that impressed European funding agencies with its innovation and timeliness. The budget for this NORFACE-funded social science research programme focusing on religion is 5.4 million euros, which has been contributed by the funding organisations from twelve member states. The programme was started in 2007 and will conclude in 2010.

THE EXPANDING BOUNDARIES OF RELIGION

The specific research theme being worked on by Ketola, who works at the Church Research Institute, and his Finnish, German and Slovenian colleagues is ‘What Are the Impacts of Religious Diversity?’.

“By ‘diversity’ we mean the large number of religions as well as the wide variety of ways in which religion is manifested. The number of spiritual movements began to proliferate in the 1970s. The influx of immigrants into Europe has been constant. We’re interested in the impact of these phenomena on the religiosity and values of individuals,” the researcher explains.

Extending research to the individual level, however, presents challenges.

“For example, Western Esotericism, Wicca and New Age are religious in nature. But, because these communities don’t have specific criteria for



“We’re pushing the boundaries of religiosity research. We’re interested in finding out whether a religious person is more actively involved in society than on average,” explains Kimmo Ketola of the Church Research Institute.

membership, there’s no clearly defined congregation that can be studied. There are only closer or more relaxed individual affiliations with a certain core group – somewhat similar to client relationships.”

Many religious movements are also not mutually exclusive, which makes it possible for individuals to belong to more than one movement. This makes their study even more challenging.

NEW THEORY PUT TO THE TEST

Indeed, it has been necessary to broaden research methods for comparative religion. Today, religiosity can

be examined just as well using sociological, economic and cultural methods.

“The German researchers in our consortium are developing a new kind of theory and methodology, which we and the Slovenian researchers can use. Typically, changes in religiosity are determined at the national level using surveys, but now our analysis approach also includes qualitative material, which has been gathered from religious organisations in certain areas. The surveying of different communities is an important part of the research,” Ketola says.

He is still unable to predict what kinds of findings

will be made by this team of top researchers. The NORFACE programme cooperation is now starting, with team assignments just now being made. It is clear that there will be more to discuss over the next three years.

FINLAND A UNIQUE SUBJECT

Ketola believes that comparative religion research in Finland is vigorous, despite its limited resources. In other Nordic countries, however, the situation seems even worse.

“In Sweden, at Uppsala University, one of the few remaining sociology of religion professorships was just closed.”

According to Ketola, among Europeans, Finnish researchers are very active participants at international seminars. The organisation of such events is precisely what the NORFACE programme encourages. Ketola considers this a very welcome development.

Ketola was previously involved in the ‘Religions in Finland’ mapping project. It was initially funded by the Church Research Institute and later by the Finnish Ministry of Education in 2003.

“Finns are very lax about attending church compared to many other Europeans. In spite of this, Finnish attitudes toward religion are on average more positive than, for example, those of other Scandinavians.”

Ketola believes that the NORFACE pilot project will enhance the prestige of comparative religion. Modern religiosity is currently a trendy research subject, gradually gaining a foothold all over Europe. Still, the networking of comparative religion scholars, addition of professorships and creation of international career opportunities would require a more active involvement of the scientific community. ■

NORFACE ERA-NET – New Opportunities for Research Funding Agency Co-operation in Europe

NORFACE is a 5-year ERA-NET project that receives its core funding from the EU Sixth Framework Programme. The project runs from 2004 to 2008 and is coordinated by the Academy of Finland.

NORFACE is a partnership between twelve national funding agencies, all of which are networked into their own national research communities. The following research councils take part in NORFACE: Academy of Finland, Research Council of Norway, Swedish Research Council, Economic and Social Research Council from the UK, Danish Agency for Science, Technology and Innovation, Icelandic Centre for Research, Irish Research Council for the Humanities and Social Sciences, German Research Foundation, Estonian Science Foundation, Foundation for Science and Technology of Portugal, Netherlands Organisation for Scientific Research, and Slovenian Research Agency. The Social Sciences and Humanities Research Council of Canada participates in NORFACE as an associate partner. Together, these organisations provide the capacity for significant levels of cooperation and exchange. A major objective of the collaboration is improved cross-national research; another is new and durable support for the funding of research in areas of strategic importance. The ultimate objective is to launch jointly-funded transnational research programmes that provide new opportunities to European researchers.

To reach the objectives the NORFACE partner councils are involved in common strategic activities and in best practice studies that help the partner councils to familiarise themselves with each others’ research activities and deepen the cooperation. The strategic activities of NORFACE include comparative analysis of partner organisations, analysis of data and research infrastructure in the NORFACE countries, ethnic diversity in funded research and impact of language on international research cooperation. The NORFACE partner councils have also prepared best practice studies that compare practices in different NORFACE countries. These include studies in gender equality, user engagement in research, programme development and management, and evaluation and peer review processes.

NORFACE has also developed common research funding instruments in which all NORFACE partner councils participate. Three rounds of the NORFACE seminar series have been completed with nine seminar series funded. In January 2006, the call for the first NORFACE Research Programme was launched on the theme ‘Re-emergence of Religion as a Social Force in Europe?’. The funding decisions were taken in December 2006 when ten trans-European research projects were awarded funding. In 2008, NORFACE will launch a call in its transnational research programme with the theme ‘Migration in Europe’ that will deal with demographic, economic, social, cultural and political dynamics of migration. The estimated budget of the programme is about 20 million euros.

The NORFACE network is led and overseen on behalf of all the partners by a Network Board, assisted by a Management Team, which consists of staff members of partner councils, and by a Coordination Office at the Academy of Finland in Helsinki. In addition, the network receives independent scientific and policy advice from an International Advisory Panel, which consists of leading scientific experts in social sciences. ■

Finns active in FP6

Participation by Finns in the EU Sixth Framework Programme for Research (FP6) has been active. On the EU level, the average success rate in FP6 has been about 18 per cent, while Finland boasts a 25 per cent rate. The success rate varies between different programmes. Within the whole Union, a total of 8,861 projects were funded through FP6; Finns were involved in 1,052 of these, with a total of 1,439 participations.

Of Finnish participants, 35 per cent are universities, 29 per cent business companies, 27 per cent research institutes and 9 per cent other actors. ■

Martin Scheinin Professor of International Law at EUI

Doctor of Laws Martin Scheinin has been appointed Professor of International Law at the European University Institute (EUI) in Florence, Italy. Scheinin is the first Finn to be appointed Professor at the EUI, an EU-funded institute providing advanced academic training to PhD students, with departments in history and civilisation, economics, law, and political and social sciences. The Academy of Finland is the agency responsible for EUI cooperation in Finland. Scheinin's five-year term at the EUI will start 1 September 2008. ■

New body to manage Baltic Sea research administration

A new independent organisation, BONUS Baltic Organisations Network for Funding Science EEIG (European Economic Interest Grouping), has been established to oversee the launching of a joint Baltic Sea research programme. Set up in April 2007, the BONUS EEIG comprises research funding agencies from the Baltic Sea countries and representatives appointed by these.

The BONUS EEIG is in charge of processing calls for proposals and coordinating the research programme. Its secretariat is located in Helsinki in the premises of the Academy of Finland. This arrangement provides a platform for building mutual synergies. The Academy also has its own representation in the grouping, through the cooperative FIRD (Finnish Research and Development).

"The BONUS research programme will generate a new breed of inter-agency research collaboration. When work for the programme was first started four years ago, there weren't many joint efforts between Baltic Sea research funding agencies. Nor was there all that much dialogue between the agencies and end-users of research

knowledge, with the Baltic Marine Environment Protection Commission HELCOM and the EU Directorates-General related to marine issues being a case in point. Implementing a joint research programme has shifted this situation in a better direction for the future of the Baltic Sea," says Kaisa Kononen, Executive Director of the BONUS EEIG.

The first joint call of the BONUS-169 programme expired at the end of November 2007. The call for proposals was open to researchers from all Baltic Sea countries. The funding is aimed at research that enhances our understanding and predictive capacity of the Baltic Sea ecosystem's response to impending changes. The total funding amount is about 23 million euros, which will be distributed among three-year research projects. The money comes from both national agencies and the European Commission. The Academy of Finland's funding share is approximately four million euros. ■



Academy revamps its website

The Academy of Finland has overhauled the structure and layout of its website. The key topics have been grouped so that they are as easy to find as possible. The 'For researchers' section, for instance, is aimed at researchers and gives an overview of the Academy's funding opportunities, application guidelines, evaluation process and decision-making. The 'Science in society' section, in turn, presents the Academy in its role as a science and science policy expert. The website is, by and large, available in Finnish, English and Swedish.

Popularised texts on researchers, science in general and research results have been and will be bunched together on a separate site, Tietysti.fi, available only in Finnish.

During 2008, the Academy will continue improving its web-based services for researchers. ■

www.aka.fi/eng
www.tietysti.fi

The Finland Distinguished Professor Programme (FiDiPro) is a funding programme managed and financed by the Academy of Finland and Tekes, the Finnish Funding Agency for Technology and Innovation. The programme enables distinguished researchers, both foreign and expatriates, to work and team up with the 'best of the best' in Finnish academic research, creating long-term synergy in science and technology. FiDiPro raises scientific and technological excellence by establishing long-term international collaboration among outstanding researchers around the world. Currently, there are 28 FiDiPro professors working in Finland through the Academy and Tekes. ■



Academy of Finland publications

Annually, the Academy publishes several reports in its publication series on science and research policy as well as on research funding and the state and quality of scientific research in Finland. Recent reports in the series and other Academy brochures in English include:

- Microbes and Man Research Programme (MICMAN) 2003–2005. Evaluation Report
- Research Programme on Proactive Computing (PROACT) 2002–2005. Evaluation Report
- *Civilisation Cannot Be Imported*. Researcher Commentary on the Impact of Cultural and Social Research
- *Breakthrough Research*. Funding of High-risk Research at the Academy of Finland (pdf)
- Baltic Sea Research Programme (BIREME) 2003–2006. Evaluation Report
- *Academic Finns Abroad – Challenges of International Mobility and the Research Career*
- *Computer Science Research in Finland 2000–2006: International Evaluation*
- *Dental Research in Finland: International Evaluation*

BROCHURES

- Finland Distinguished Professor Programme: *Teaming up with the best*
- Academy of Finland (available also in Swedish, German, French, Spanish, Russian, Chinese and Japanese)
- Finnish Programme for Centres of Excellence in Research 2008–2013 (available in January 2008)

The Academy of Finland has published a researcher commentary on the impact of cultural and social research. The report *Civilisation Cannot Be Imported* addresses the following questions: What is impact in the humanities and social sciences? How is impact manifested? How can impact be identified, and how can it be promoted? In the fields of cultural and social science research, impact is a highly complex phenomenon that does not lend itself to simple and straightforward models or measurement. Studies into the impacts of research must therefore aim to shed more light on those dimensions of this broad and multifaceted phenomenon that often tend to remain in the dark. The focus of the report is on the societal and scientific impact of research funded by the Academy's Research Council for Culture and Society. ■

The reports and brochures can be read online at www.aka.fi/publications in pdf format or ordered free of charge from the Academy's Communications Unit by phone +358 9 7748 8346 or by email viestinta@aka.fi.

Academy of Finland

The Academy of Finland works to promote high-level research through long-term funding, reliable evaluation, science-policy expertise and global cooperation. The Academy is the major source of funding for basic research in Finland and accounts for 16 per cent of total government research funding. In 2007, Academy funding for research primarily at universities and research institutes amounts to around 260 million euros.

The Academy is committed to securing the diversity of scientific research and its capacity for renewal and regeneration, and aims to advance the broad application of research in the best interests of welfare, culture, the economy and the environment.

A further mission for the Academy is to improve the interaction between basic research and applied academic research and to promote international research cooperation as well as cooperation among research funding agencies.

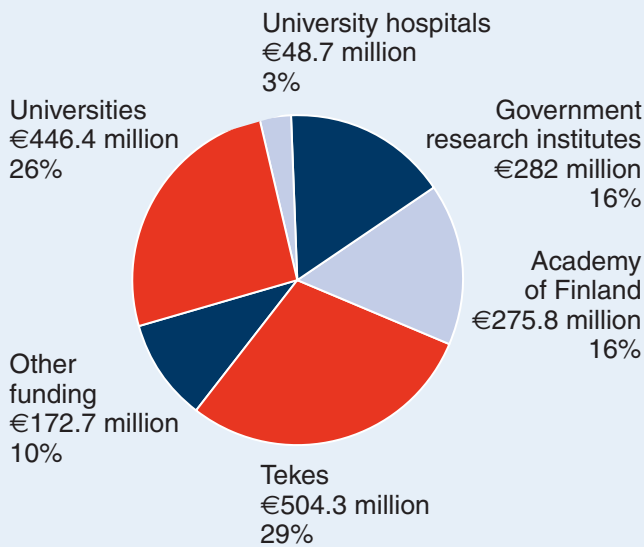
The Academy also works to raise public understanding of science and to enhance the esteem and social status of scientific research.

Research in Finland

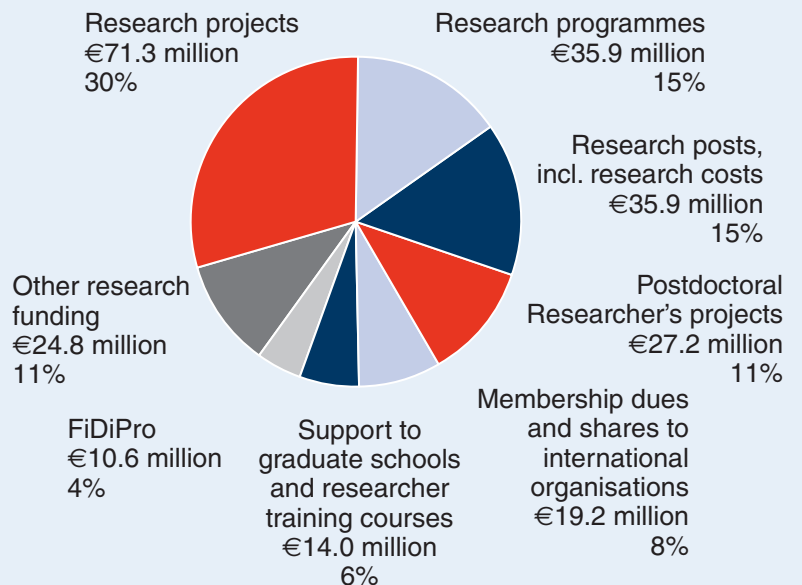
Education, science and technology have an ever more important part to play in boosting national competitiveness. International comparisons have shown that the Finnish research and innovation system is highly effective, and Finnish research is of a high standard.

Finland has a very high level of research and development investment relative to GDP. In 2006, the Government spent 1.7 billion euros on R&D. Finnish R&D expenditure as a proportion of GDP in 2006 stood at 3.4 per cent. Business R&D expenditure accounted for 71 per cent of total R&D investment. According to the OECD, Sweden and Finland were among the leading European performers.

GOVERNMENT R&D EXPENDITURE IN 2007



ACADEMY OF FINLAND RESEARCH FUNDING IN 2006





ACADEMY OF FINLAND

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