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EUROPEAN COMMISSION

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Building research careers in Europe

2005

Directorate-General for Research
Human resources and mobility (Marie Curie actions)

FOREWORD

Recent European Community RTD Framework Programmes have increasingly focused attention on structuring the European Research Area, with reference to human resources, through host-driven actions for support of the mobility of researchers and transnational research training, including complementary skills. These actions are aimed at supporting higher education and research organisations as well as enterprises, including SMEs, in the provision of such training. They are intended to have a strong structuring effect on the European research system, in particular by encouraging early-stage researchers to pursue a career in research. Examples of such actions are the Marie Curie Host Fellowships, where the host organisation applies for Community funding and thereafter, if successfully selected, advertises internationally the open positions available and selects the appropriate fellows.

This brochure has been compiled from a selection of successful Marie Curie Host Fellowships which have been chosen to illustrate the different types of host fellowships available in the Fifth and Sixth RTD Framework Programmes and, at the same time, exemplify the breadth and variety of subjects involved as well as the wealth of structured training opportunities available through Community funding.

The fellows interviewed laudably expressed satisfaction with the research training and mobility experience they have benefited from. Not only do they mention the possibilities they have had of working in challenging multidisciplinary research environments with world renowned expertise and state-of-the-art equipment, but also the complementary skills they have obtained equipping

them for employment in different research sectors and enhancing their career development.

It is especially gratifying to learn that so many of the fellows have already obtained jobs in research or continue with further research training. It is with confidence and expectation that we look forward to continuing and further developing these host actions in the forthcoming Seventh RTD Framework Programme. By successfully training highly motivated researchers we can make a vital contribution, not only to future research in Europe, but also to making it “the most competitive and dynamic knowledge-driven economy in the world”.

It is my hope that you will find the examples chosen not only informative concerning the impact of the Marie Curie Host Fellowships, but also enjoyable reading which will give you an insight as to how the excellent research undertaken during transnational training is used in everyday life.



Raffaele Liberali
Director

INTRODUCTION

Excellent training and facilitating the mobility of researchers are seen as key to achieving the objectives of the Sixth RTD Framework Programme (FP6) which seeks to make the European Union “the most competitive and dynamic knowledge-driven economy in the world”. Consequently the 1.58-billion-euro budget dedicated to Human Resources and Mobility in FP6 represents an increase of more than 50% with respect to FP5. The Human Resources and Mobility Programme consists of a coherent set of actions that finance training and other career development opportunities for researchers, collectively known as the Marie Curie Actions.

Comparisons between the Marie Curie Actions of FP5 and FP6, show several differences. For example, initial training fellowships in FP6 can last from three months to three years for each fellow and can be started at any point in early-stage training, whereas only short fellowships of less than one year were available in FP5.

This brochure illustrates ten examples of successful Marie Curie Training sites (FP5) and Marie Curie Host fellowships for Early Stage Training (FP6). It is intended to give an insight into the day-to-day reality of EU-funded projects which offer structured training possibilities for researchers in the early stages of their professional careers. Two success stories also describe successful Marie Curie Industry Host Fellowships, a type of host fellowship awarded to companies, for the training of young postgraduate and post-doctoral researchers.

Marie Curie Training Sites (FP5) took the form of block grants for research groups in academia, research centres and industrial or commercial enterprises. Successful training sites offered short stays to young researchers pursuing doctoral studies, providing them with the possibility of undertaking part of their doctoral

studies in a country other than their own, and allowing them the benefit of working within an internationally recognised group in their specialised area of research.

Marie Curie Host fellowships for Early Stage Training (FP6) are targeted at higher education and research institutions, training centres and enterprises, with a view to reinforcing their training capability. The action focuses on the acquisition of specific scientific and technological competencies in research, as well as complementary skills. The scheme is directed at researchers in the early stages of their professional career, irrespective of nationality.

Some of the projects illustrated in the brochure have already concluded their work. Others are still fully operational and will complete their training programmes during the period 2005-2007. The information provided for each project is limited to a summary of the main scientific features together with a description of the training aspects and information about the different partners.

The main objective of this brochure is to give an overview of, as well as an insight into, the impact of the Marie Curie Fellowships. The examples chosen aim to show how the Marie Curie Fellowships offer training and transfer of knowledge in order to build up long term perspectives concerning career paths in both academia and industry. The success stories cover different disciplines and the heterogeneous make up of the participants (e.g. gender balance, participation by different nationalities from all over the world, and involvement of industry).

The examples each comprise several key features:

- Scientific excellence of the project
- Scientific output (publications, patents, spin-offs, dissemination)

- Quality of the training programme
- Mutual recognition of degrees and/or EU master/ PhD
- Intersectorial mobility/recognition
- Long-run sustainability of the training structures
- Opportunities for life-long learning

Besides offering excellent training possibilities in order to produce more R&D personnel, Europe needs to attract top international talent and allocate its existing pool of scientific skills as effectively as possible. This is why the European Commission has launched two concrete initiatives aimed at improving dissemination of information and assistance to researchers:

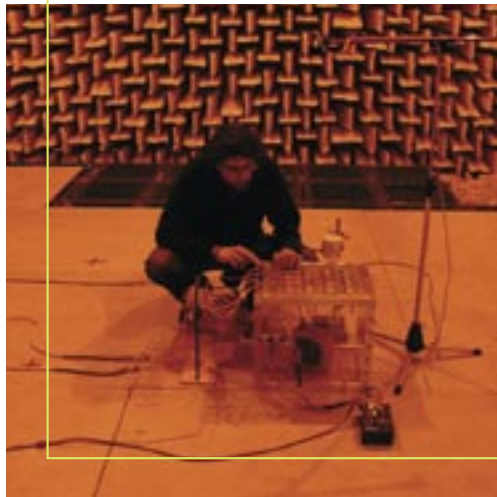
- The European Researcher's Mobility Portal, to help researchers identify training and jobs throughout Europe: <http://europa.eu.int/eracareers>
- ERA-MORE: the European Network of Mobility Centres intended to facilitate the life of mobile researchers by offering tailored assistance: <http://europa.eu.int/eracareers>

Last but not least, opportunities still exist to participate in Marie Curie Host Fellowships. Current vacancies are listed on the Marie Curie website: www.cordis.lu/improving/opportunities

SENDING OUT GOOD VIBRATIONS

The European Doctorate in Sound and Vibration Studies

The European Doctorate in Sound and Vibration Studies (EDSVS) was set up by a partnership of eight European universities and higher education institutes. With support from the Marie Curie scheme, they have developed a truly European training programme for basic research in acoustics, noise and vibration, combining the complementary expertise of the top European research centres in the field.



Marie Curie fellow
in the ISVR anechoic chamber

The EDSVS project was conceived in 1999 as a means of formalising existing student exchanges between the project partners. Its aim was to offer high-quality doctoral-level training, with an international outlook, for students of acoustics, noise control, sound and vibration studies. In the first four years of activity, 63 young researchers from across the European Union and the Associated States have received the 'European Doctorate in Sound and Vibration Studies', thanks to funding from the European Commission – a title which attests to a unique and enriching experience in European collaborative research and learning.

Providing new skills

EDSVS fellowships aimed to provide young researchers with the knowledge base and professional skills they will need to pursue a scientific career in their chosen field: essential training in the use of specialised equipment and facilities; hands-on experience of fundamental and novel research; and the development and testing of new methodologies and systems. The actual and potential applications are many and varied, ranging from the control of road, rail and aircraft noise, mechanical and structural engineering to the development of new and improved vehicles, appliances and equipment of all kinds.

Increasing knowledge

Dr Paolo Gardonio, coordinator of the EDSVS project is very enthusiastic: "The value of this kind of project is enormous and the impact is clear on many different levels. Of course, for the students this is a fantastic opportunity to enlarge their horizons – personally and professionally. For universities as well, however, it is an extremely valuable tool as the freedom to choose the area of research allows us to determine research priorities independently of immediate results or applications. This has allowed us to undertake some very important basic research projects in collaboration with our partner institutes and the visiting fellows. Working together in this way gives us – and the fellows – access to a much wider pool of knowledge and expertise than if we all worked individually."

“Working together in this way gives us – and the fellows – access to a much wider pool of knowledge and expertise than if we all worked individually.”

Achieving professional independence

Fellows from all over Europe have had the opportunity to participate in important basic research projects supported by the expertise of the partner institutions. Italian student, Sylvia Rossetti was awarded a Marie Curie fellowship of one year which she spent at the Institute of Sound and Vibration Research (ISVR) in Southampton (UK), researching the acoustic properties of

rigid-frame porous material. "I greatly appreciated the opportunity to work in such a dynamic and motivating environment, with both experienced researchers and other students from all over the world," notes Rosetti. The challenge of adapting to different ways of working and having to defend my ideas in such a mixed environment helped me to grow enormously on both a personal and a professional level. Rosetti is now working as an acoustics consultant in a large engineering and architecture company in London, a position which she attributes largely to her EDSVS experience.

Unique opportunities

For Polish PhD student Krzysztof Mendrok, it was the opportunity to access the high-level facilities of the Katholieke Universiteit Leuven (KUL) in Belgium that was the prime motivation for applying. KUL is a recognised centre of expertise for modal analysis and houses one of only a few '6 Degrees of Freedom' hydraulic shaker tables in the world. The fellowship enabled him to have hands-on training in the use of this equipment and actively contributed to the advancement of his PhD studies by allowing him to put his ideas to the test and obtain publishable results. Krzysztof is now employed as a researcher at the AGH University of Science and Technology in Krakow.

Creating a scientific European identity

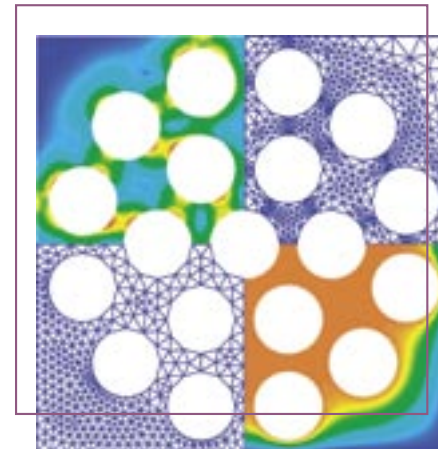
Gardonio points out that the exchanges generated by the project are not just of a scientific nature, but are also important on an academic level. The title of 'European Doctorate' is an important

innovation in this respect. Developed and agreed by the participating institutions and approved by the Confederation of European Union Rectors' Conferences, it provides recognition of the European training experience of the fellows involved and also offers a model for similar initiatives in other fields.

As well as reinforcing links between the existing partners, Gardonio notes that receiving students from other institutions also encourages closer relations with a wider network and creates links which last beyond the period of the fellowship itself. In this

context, it is interesting to note that the EDSVS will be continuing with a second project (2004-2008) which includes two new partners from Germany and Sweden.

“The challenge of adapting to different ways of working and having to defend my ideas in such a mixed environment helped me to grow enormously on both a personal and a professional level.”



Simulation of strain and pore pressure fields in porous filters

European Doctorate in Sound and Vibration Studies (EDSVS)

Action:

Marie Curie multi-partner training site

Coordinator:

Institute of Sound and Vibration Research (ISVR), University of Southampton (UK)

Partners:

Office National d'Etude et de Recherches Aéronautiques (ONERA); Institut National des Science Appliquées de Lyon (INSA Lyon) (FR); Università degli Studi di Padova; Università degli Studi di Ferrara (IT); Katholieke Universiteit Leuven (BE); Trinity College Dublin, (IE); Technical University of Denmark (DK). New partners: Institut für Technische Akustik (TUB), Berlin (DE); The Marcus Wallenberg Laboratory for Sound and Vibration Research (MwL), Stockholm (SE)

Community's financial contribution:

€1 440 000

Community's financial contribution for the second project:

€2 875 343

Project duration:

August 2000 – April 2005

Second project:

October 2004 – September 2008

Contact details:

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Control Training Site (CTS) – Advancing control theory and its applications

Type of project:

Marie Curie multi-partner training site

Coordinator:

Centre National de la Recherche Scientifique (CNRS),
Gif-sur-Yvette, France

Partners/Host institutions:

Belgium: University of Gent; Catholic University of Louvain (UCL); University of Liege. Germany: University of Stuttgart; University of Augsburg; University of Würzburg. France: Institut National de Recherche en Informatique et en Automatique (INRIA) in Rocquencourt, Metz and Sophia Antipolis; University of Paris Sud, Orsay; Ecole Normale Supérieure de Cachan; University of Bourgogne, Dijon; Ecole Supérieure d'Electricité, Gif-sur-Yvette; Ecole Supérieure des Mines de Paris; University of Versailles St Quentin; Institut National des Sciences Appliquées (INSA), Rouen. Italy: International School for Advanced Studies (SISSA/ISAS), Trieste; University of Rome «La Sapienza»; the National Research Council; University of Rome «Tor Vergata»; University of Siena; University of Florence.

The Netherlands: Delft University of Technology; Eindhoven University of Technology; University of Twente. Poland: Polish Academy of Sciences, Warsaw. Portugal: University of Aveiro, University of Coimbra. UK: Imperial College, London; University of Sheffield.

Community's financial contribution:

€2 112 000

Number of fellow months:

960

Number of fellows:

128

Project duration:

December 2001 – December 2005

Contact details:

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ALL SYSTEMS GO

Control Training Site (CTS) – interdisciplinary training in control systems and their applications

The Marie Curie European 'Control Training Site' (CTS) is a large-scale multi-partner training network with 29 participating institutions from eight Member States. One of the largest actions of this type, the CTS seeks to build a critical mass of knowledge in a rapidly developing field.



Thomas Chambrión

A control system is a device which uses external data to modify the behaviour of a physical system. Such systems are already widely used in cars (i.e. ABS brakes, airbags), aircraft, consumer electronics, biomedical and telecommunications applications, among others. Rapid advances in information technology have greatly increased the scope and complexity of control devices and computer control systems are becoming an increasingly important competitive factor in a wide range of applications in economically important industries.

“The idea is not just to follow current trends but rather to set new trends in research and development.”

Combining complementary areas of expertise

The CTS was developed to support regular exchanges of European doctoral students between the major centres dealing with control-related research. CTS coordinator, Françoise Lamnabhi-Lagarrigue, stresses that this is very much a multidisciplinary field involving several scientific communities – from applied mathematics, engineering, systems, optimisation, modelling and simulation to all the possible and potential applications of digital technology.

In particular, the rapidly developing field of hybrid control requires close collaboration between disciplines in order to master the increasing complexity and heterogeneity of the systems involved. The mobility programme developed by CTS has provided a very effective tool for promoting the intensification of exchanges between the various communities and provides an essential basic training ground for the 'control' researchers of the future.

Optimal training

In the first three years of the project, some 128 fellows from across the European Union, as well as from Romania, Bulgaria, Norway, the US and Israel, have benefited from the complementary training and exposure to international research offered by CTS. Nearly 27% of these were women and over 20% were from the new Member States.

Camelia Avram was one of 19 fellows from Romania. Her 12-month fellowship was divided between the University of Gent in Belgium and the University of Stuttgart in Germany. For Camelia the opportunity to work in these high-quality international research teams was extremely formative and has contributed greatly to the advancement of her PhD. In turn, she was also able to contribute to the development of a new model for urban traffic control with the Gent team; and of new optimisation and estimation software in Stuttgart.

Camelia notes that the benefits of this were both personal and general: "The transfer of knowledge generated by the young researchers who go abroad and bring new ideas home – and indeed from one site to the other – is very important."

“The transfer of knowledge generated by the young researchers who go abroad and bring new ideas home – and indeed from one site to the other – is very important.”

Camelia, for example, now intends to apply the knowledge gained in Stuttgart to road traffic behaviour thus 'optimising' the experience gained.

Stimulating new collaborative research

French student, Thomas Chambrion, divided his 12-month fellowship into a series of three-month visits to the International School for Advanced Studies (SISSA) in Italy where he was actively involved in research into the 'Controllability time of single input control systems on compact Lie groups'. This experience pushed Chambrion onto a new level scientifically. "Getting up to speed with the high quality of work required was a challenge, but very enriching," he notes.

Moving between France and Italy allowed him to compare and contrast approaches and benefit from high-level supervision at both sites. Chambrion has now been offered a full-time post at the University of Nancy I in France and intends to continue long-term joint research with a fellow researcher from SISSA.

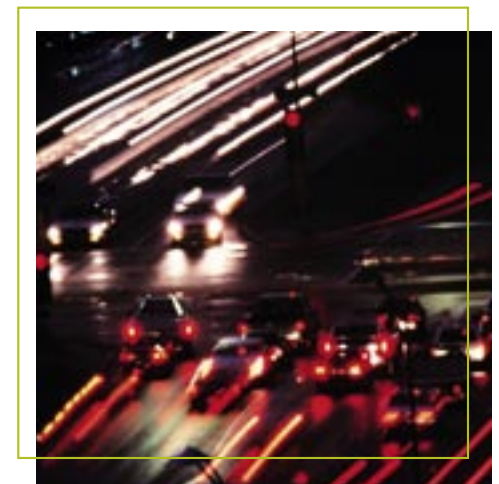
"Research in geometric control is very active in Europe, despite the relatively small number of researchers involved. CTS makes it possible for people to meet and creates links that can be useful in the future. In my case, it has been very influential."

Creating and exploiting synergies

For Lamnabhi-Lagarrigue, CTS is an essential element of a wider strategy aimed at ensuring Europe's place at the forefront of control

research. There is, for example, close coordination with the HYCON EU Network of Excellence which aims to coordinate European research in the design of networked embedded control systems and develop a shared infrastructure and tools.

In this context, a joint CTS/HYCON workshop is planned for July 2006. Promoting European training is also a major objective of the planned European Institute for Hybrid Systems. Lamnabhi-Lagarrigue believes wholeheartedly in the benefits of CTS in both the short and long terms: "The intention is to create a dynamic which will push European research forward and develop the young researchers we will need. The idea is not just to follow current trends but rather to set new trends in research and development."



Control systems have become a vital element in traffic monitoring



© NASA

CORE RESEARCH FOR A SOLID FUTURE

An excellent grounding in earth materials

The Bayerisches Geoinstitut in Bavaria is an internationally renowned centre for Earth materials research and one of the recognised European 'research infrastructures' supported by the EU. This Marie Curie project has given young European researchers access to the unique facilities offered there and the opportunity to advance their PhD studies in collaboration with some of the top scientists in the field.

“We have researchers from all over the world here. This is very stimulating. It is good for science and it is good for scientists.”

The study of Earth materials through experiments at high pressure and temperature is vital to advancing our understanding of how the Earth functions as a complex system. Natural phenomenon such as volcanoes and earthquakes can have a tremendous impact on human society so being able to better analyse and predict them is certainly of great significance. Over and above this, however, our understanding of how Earth materials (minerals, rocks) are formed and how they react in different conditions is of fundamental importance to understanding our planet and managing its resources.

Important materials

Crystal structures and properties change with pressure and temperature, which paves the way to the development of a diverse and expanding array of high-technology applications. Materials developed from high pressure research have hundreds of applications and their technological, environmental and economic importance is considerably greater than might be expected. The diverse properties of these materials makes them essential for a wide spectrum of actual and potential uses ranging from the 'mundane' (grinding and polishing) to the high-tech and futuristic (superhard semiconductors, nanoparticles, high-temperature superconductors, and safe storage and transport of hydrogen for a post-hydrocarbon economy).

Opportunities to experiment

The Marie Curie project at the Bayerisches Geoinstitut provided 13 fellows from all over Europe with the opportunity to undergo in-depth training in the specific field of 'High pressure crystal chemistry and physics of Earth's materials'. This involved hands-on experience of a wide range of experimental techniques applied to problems in geo- and material sciences.

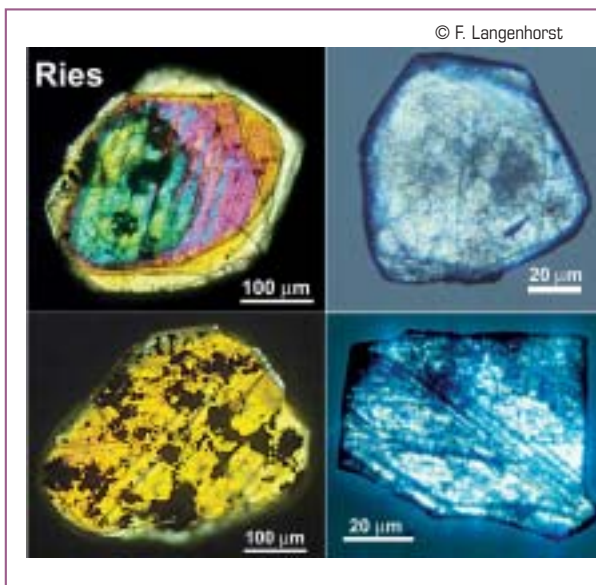
Project coordinator, David Rubie, points out that the range of facilities on offer at the institute is unique in Europe, and indeed the world: "Our aim is to make these facilities available to the next generation of European researchers so that they have the grounding they need to shape the course of future research and maintain Europe's competitive position in this field." Research topics were chosen based on the fellows' current research and career goals, but were also aimed at building the base of researchers in Europe experienced in a broad range of experimental methods. "This is an important field of research and we need to remain competitive with the US and Japan. So far we are doing quite well," notes Rubie.

Carving a niche

For Fabrizio Nestola from Turin, the fellowship gave him the opportunity to significantly advance his research into the behaviour of certain minerals under high pressures and high temperatures, thanks to the exceptional facilities available (in particular the multianvil laboratory). As a result of the support received at the Geoinstitut – both in terms of the facilities and the high-level scientific expertise, Nestola was able to publish

a number of scientific papers in leading international journals. “Before the fellowship, nobody knew me from a scientific point of view,” he says. Now firmly embarked on a scientific career, he believes the experience helped him establish a place for himself in the ‘Earth materials’ scientific community and certainly confirmed his decision to pursue a career in this field. He now holds a postdoctoral position at Bayerisches Geoinstitut, and is sharing his knowledge with the next generation of students.

“Our aim is to make these facilities available to the next generation of European researchers so that they have the grounding they need to shape the course of future research.”



Optical micrographs of impact diamonds from the Ries crater, Germany

European results – in practice and on paper

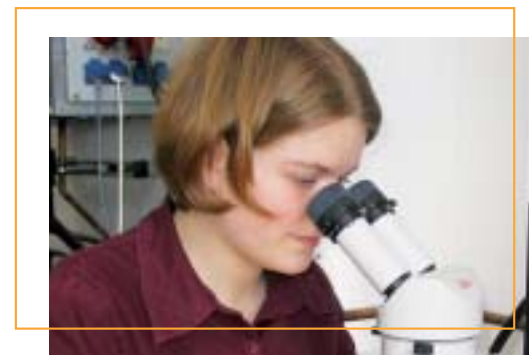
Hélène Couvy was the first student at the University of Bayreuth to receive an international doctorate (a joint Ph.D. awarded also by her home university in Lille, France) through a framework agreement aimed at promoting mobility and European cooperation. Hélène also greatly appreciated having access to the facilities, scientific expertise and international

environment of the Geoinstitut which allowed her to obtain outstanding results in her research, that were published in internationally renowned journals, including “Nature”. She is now continuing her research in a postdoctoral position at an internationally recognised high-pressure research institute in the USA.

A European dynamic

Following the success of the first project, the Bayerisches Geoinstitut will be continuing and extending its Marie Curie fellowships for a further four years with more fellows and longer fellowships. Some three-year fellowships will be granted to allow students to complete their doctorates at the institute and fellowships will also be awarded to students from outside the EU to broaden the range and diversity of the research programme.

For Rubie, the Marie Curie scheme has helped change the face of European science: “Science is much more international now than it was even ten years ago, and this trend is intensifying,” he notes. “We have researchers from all over the world here. This is very stimulating. It is good for science and it is good for scientists.”



Hélène Couvy

High pressure crystal chemistry and physics of Earth’s materials

Type of project:

Marie Curie mono-partner training site

Host institution:

Bayerisches Geoinstitute, University of Bayreuth (UBAY), Germany

Community’s financial contribution:

€150 000

Number of fellow months:

60

Number of fellows:

13

Project duration:

January 2002 – January 2006

Contact details:

David Rubie

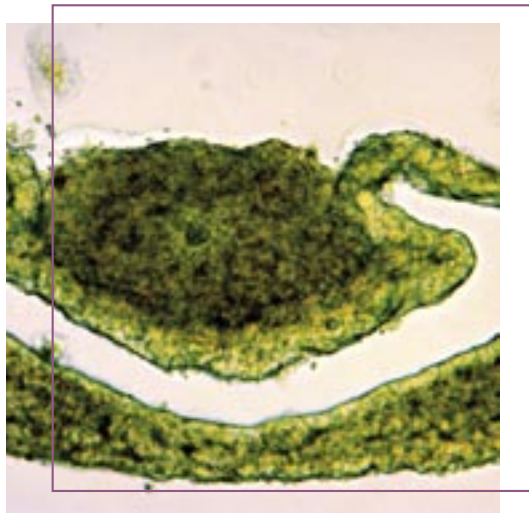
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MEETING OF MINDS

Boosting Europe's brain power

Understanding the brain, how it works and how we can repair it presents a major challenge in both scientific and social terms. Thanks to the Marie Curie fellowships, young scientists from across Europe have had the opportunity to participate in specialised training in developmental neurobiology in Göttingen, an established international 'Mecca' of neuroscience research.



Acute tissue slice from newborn pituitary gland

Research into the brain and brain diseases, such as dementia, Parkinson's and Alzheimer's, is especially important in Europe today where an ageing population is likely to lead to an increasing incidence of neurodegenerative disorders. The development of causative therapies for these, as well as other psychiatric and neurological disorders, is a major goal of EU health policies and is of prime socio-economic importance for Europe where the personal and financial cost of such diseases can weigh heavily on society. However, Europe faces a shortage of highly trained neuroscientists able to master the broad range of skills needed to significantly advance this area of research.

Stimulating independent research

The Max Planck Institute for Biophysical Chemistry and the Physiology and Neurobiology departments of the University of Göttingen have been collaborating closely for many years to build joint international research training programmes in molecular biosciences and neurobiology. Through the Marie Curie fellowship scheme, they have been able to provide 11 young European PhD students (five men, six women) with specialised research-oriented training in developmental neurobiology and certain aspects of cellular and molecular neurobiology, drawing on their extensive

experience and on the synergies created by the presence of several important research institutes in and around Göttingen.

One of these is the European Neuroscience Institute (ENI) which was set up in 2001. The concept of the ENI is to promote the independent work of young researchers, helping them to develop their own teams and research programmes.

“Building international contacts will facilitate future networking and improve the cohesion of the research community in Europe. It is an essential step in building the European Research Area.”

Moreover, the young teams are part of a recently established European network of 14 similar neuroscience institutions (ENI Network) supporting common activities and the exchange of knowledge and ideas. Nobel Prize laureate and coordinator of the project, Erwin Neher, recognises

that one of the aims of the NeuroDevelopment project was to supply the ENI, as well as other research organisations, with motivated young researchers. “We hope that we can help to create an attractive pool of internationally trained scientists for research institutions and companies around Europe,” he says. “Building international contacts will facilitate future networking and improve the cohesion of the research community in Europe. It is an essential step in building the European Research Area.”

Building new skills

Simon Sedej, a young researcher from Slovenia, was awarded a 12-month fellowship which he spent working at the ENI on research into the development of endocrine function in the pituitary gland

which may serve as a neuroendocrine model system providing clues to the causes – and possible treatment – at neuroendocrine hormonal disorders. “The opportunity to work at an institute like ENI was a dream for me, he says. There are students here from all over the world, access to new experimental equipment, and the supervision and support of reputed scientists in the field.” Sedej was able to present his work at international conferences in Canada, Japan, the UK and the US, and has published three papers as a result of his research.

One particular benefit was the training he received in many new techniques, including the use of confocal microscopes, how to make pituitary tissue slices, and the use of different optophysiological methods, such as photometry and calcium imaging. He also appreciated the chance to learn directly from senior scientists: “I was able to discuss scientific problems first hand with some of the best scientists in the field, which is very different from reading about them.”

Sharing resources

Polish fellow, Aleksandra Klos, spent six months working at the Max Planck Institute where she was able to participate actively in research into α -synuclein conformation, assumed to be involved in Parkinson's disease and other neurodegenerative disorders. The results of this work will soon be published in a paper co-authored by Klos, who is very enthusiastic about the experience gained: “This was the best time of my life from a research point of view and I am now sure that I want to stay in science.” Certainly, one important aspect was access to the world-class equipment in Göttingen: “In Poland, we have excellent scientists but resources are limited and we do not have the new, modern equipment they had in Germany. It was great to be able to have first-hand experience of this.”

Training Europe's future Neuroscientists

The success of the NeuroDevelopment project has led to its continuation and extension in the recently started NEUREST project for Early Stage Research Training (EST), which will provide fellowships of up to three years to European PhD students. Training will be offered in all areas of neuroscience, based on focused and cutting-edge research. The training programme will also include the development of complementary skills such as report writing and presentation skills. Reinhard Jahn and Joachim Bormann, coordinators of the new project, are convinced of the benefits of this type of action: “Our aim is to help train the neuroscientists of the future. The fellowships should have a very positive impact on the career development of these young scientists and equip them with the skills they will need to become future group leaders in neuroscience research.”

“I was able to discuss scientific problems first hand with some of the best scientists in the field, which is very different from reading about them.”



Aleksandra Klos

European Training Site for Neurosciences – Neuronal Signals and Development (NeuroDevelopment)

Action:

Marie Curie mono-partner training site

Host:

Max Planck Institute for Biophysical Chemistry, Göttingen, Germany

Community's financial contribution (NeuroDev – FP5):

€240 000

Number of fellows:

11

Community's financial contribution for the second project (NEUREST – FP6):

€2 501 620

Project duration:

August 2000 – August 2005

Second project (NEUREST):

September 2004 – August 2008

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BROADENING THE SPECTRUM FOR LASER SCIENCES

Advanced training in laser technology

The Institute of Electronic Structure and Lasers of the Greek Foundation for Research and Technology (IESL-FORTH) has been providing young researchers from across Europe with access to its state-of-the-art experimental facilities with the help of the Marie Curie Fellowship scheme. The specialised training on offer here equips Europe's future scientists with the skills and experience needed to advance the field of laser sciences and their applications.



Florian Lang

Laser technology is being used today in a surprisingly diverse and ever-widening range of fields that encompass fundamental scientific research, as well as innovative technological research, with a wide range of applications in manufacturing technology, communications, medicine, environment, art conservation and even entertainment.

The European Site for Ultrashort Lasers in Novel Materials and Structures (EULANOMS) project aimed to provide young European scientists with specialised training in the field of laser-matter interactions and the processing of advanced materials, with particular emphasis on the use of ultra-fast laser pulses. Thanks to this project, some 16 fellows (six men and ten women), from nine European countries, had the opportunity to use the state-of-the-art experimental facilities of FORTH's Ultraviolet Laser Facility (ULF) – a recognised European Research Infrastructure (ERI) since 1990.

Exposure to an international environment

Project coordinator, Dr Demetrios Anglos, traces the initiative of the project to a desire to open up the 'trans-national access' activity already supported by the EU, to include training for

Europe's future scientists in order to strengthen the continent's leading role in laser research. "Fellows in EULANOMS, and its sister project ALPHA (Atom/Molecule Laser Interaction – Physics and Applications), were able to benefit not only from the exceptional facilities, but also from the high-level supervisory support available at IESL and the interaction with experienced scientists from all over the world," he notes. "The international environment we have here is very stimulating."

“Fellows were able to benefit from the high-level supervisory support available at IESL and the interaction with experienced scientists from all over the world.”

Sandra Zoppel from Austria was one of the students to benefit from this international exposure: "At my home university in Voralberg we are a very small group, so for me the experience of working in a big international group like the one at FORTH was a real challenge – a very positive one. As

a PhD student you can learn so much from discussions with other students and professors." Zoppel stresses that scientific research is based very much on team work and the opportunity to build international contacts is very important for a future career: "It is essential these days to have experience abroad."

Focus on results

EULANOMS provided its young fellows with the chance to carry out innovative research work and to advance their studies in ways that would not have been possible without this experience.

The project led to over 20 scientific publications in peer-reviewed journals and to several oral and poster presentations in major international conferences. In several cases, the new research results achieved by individual fellows turned out to be quite important.

For Florian Lang, from the University of Konstanz in Germany, it was a valuable opportunity to pursue his research into laser-induced nanomechanics. This could have important applications in the cleaning of silicon wafers, for example, an ongoing challenge for the semiconductor industry. "The equipment at IESL provided a perfect complement to the equipment in Konstanz and allowed me to make significant advances. In particular, I was able to publish my results in an international journal and participate in three international conferences," says Lang, who is now finishing his PhD studies in Germany. "I believe that the ability to co-operate and to solve problems in international teams is of fundamental importance for most fields of work. The Marie Curie fellowship gave me valuable experience in this area, as well as the opportunity to make many new friends from all over Europe."

New wave research

EULANOMS paved the way for a new Marie Curie Early Stage Training project which will provide advanced research training in laser-based science and technology for use in cutting-edge multidisciplinary research in physics, chemistry, biology and nanoscience. The new project, ATLAS, started in November 2004 and combines the facilities and expertise of four major

European centres for laser research: IESL-FORTH, the European Laboratory for Non-Linear Spectroscopy (LENS) in Italy, the Laser Centre of the Vrije Universiteit of Amsterdam (NL) and the Vilnius Laser Research Centre in Lithuania.

"Lasers provide a very important novel tool for science and technology and have applications in an increasingly wide range of fields," notes Anglos. "We are working together with other major laser research centres in Europe within the context of two key European initiatives – LASERNET and LASER-LAB EUROPE – to develop strategies to push laser technology towards

new frontiers. The presence of these young researchers adds an important dimension to our research and will ensure the future strength of Europe in this field."

"I believe that the ability to co-operate and to solve problems in international teams is of fundamental importance for most fields of work."



Lasers provide a very important novel tool for science and technology



Students at IESL-FORTH

European Training Site for Laser Technology – Using ultra-short lasers in novel materials and structures (EULANOMS)

Type of project:

Marie Curie mono-partner training site

Host institute:

Foundation of Research and Technology (FORTH), Greece

Community's financial contribution:

€220 000

Project duration:

August 2000 – March 2005

Number of fellows:

16

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<http://www.iesl.forth.gr:mc-sites/atlas>

Economical Manufacture of Ultraprecise Aspherical Optical Surfaces (EMUAOS)

Type of project:

Marie Curie Industry Host Fellowship

Host institution:

Carl Zeiss AG

Community's financial contribution:

€117 600

Project duration:

January 2000 – March 2004

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NOT AN OPTICAL ILLUSION

Key industrial player successfully hosts Marie Curie fellows

One of the world's major producers of high-quality optical equipment, Carl Zeiss, regularly receives Marie Curie fellows, providing them with invaluable experience while strengthening its own competitive edge.

Carl Zeiss is a pioneer in optical technologies and an innovative global leader in precision engineering and electronic visualisation, offering high-quality products for applications in research, medicine and industry, as well as for use in leisure activities.

The company is particularly competitive in the manufacture of precision aspherical optics or 'aspheres'. According to Zeiss' Marie Curie coordinator Hexin Wang, "the ability to produce aspheric lenses more economically strengthens the company's leading position in high-precision optics. This in turn reinforces the position of Germany and the European Union as a whole."

For Carl Zeiss, says Wang, "the Marie Curie programme has been very useful indeed. We have achieved most of the goals set for our Marie Curie fellows, and our own employees have benefited greatly from the knowledge these excellent individuals have brought with them."

Delivering the goods

As a Marie Curie Industry Host and with the help of two Marie Curie fellows, Zeiss has undertaken among other things, an important research project on aspheres, achieving three specific goals:

- A method for improving mirror surface roughness by 50% under high magnification, allowing for current mirror specifications to be more reliably achieved in shorter periods of time.
- A process for manufacturing an aspherical mirror for the European Space Agency's Herschel Project. Steps include grinding, lapping, polishing and measurement.
- Documentation of basic material removal rates and achievable surface quality using small diameter tools, essential for computer controlled polishing in asphere manufacture.

“Marie Curie Fellowships are synonymous with high-quality research and are known and respected both within and outside of Europe.”

A multifaceted experience

Marie Curie fellow Brigid Mullany says she heard about Marie Curie while working on a PhD at University College Dublin. "Fellow students and faculty members had mentioned the Marie Curie fellowships and how they provide great research opportunities," she says. "I found my position by completing a simple



XMM (X-ray multi-mirror)-
Newton telescope



Herschel spacecraft

search of Marie Curie openings. Carl Zeiss was a good fit for what I was doing and it provided the opportunity to live and work in another country.”

One of the main challenges, explains Mullany, was learning to work in a new language. “I did find the German somewhat tough,” she says, “But Zeiss provided intensive

language lessons and that, combined with the never-ending patience of my colleagues, allowed me to become reasonably proficient.”

“As Carl Zeiss is a world leader in optics, I got to see all the latest technologies in action, and I gained first hand experience in project management, coordinating the work of people in several different departments.”

Mullany is now employed as an assistant professor at the University of North Carolina. “I have absolutely no doubt,” she says, “that my time spent at Carl Zeiss was influential in getting me this position.”

Heaping praise

Diana Tonova is another Marie Curie fellow who is eminently satisfied with her experience at Carl Zeiss. Formerly an assistant professor at Sofia University in Bulgaria, she worked with a highly professional team at Zeiss.

“As a fellow, I developed procedures and models for precise characterisation of optical interference coatings,” she explains, “gaining important insights into some of the world have most advanced technologies. As a scientist, I found it exciting and highly satisfying to contribute directly to the development of quality optical products.”

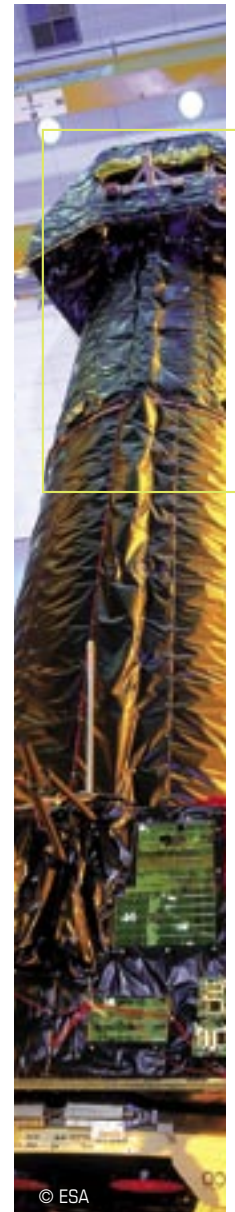
Tonova now works as a full-time employee in Zeiss’ Coating Technology Department.

The programme works

Tonova says that mobility and knowledge exchange are essential to researchers, and, more generally, for the advancement of science and technology in Europe. “The Industry Host Fellowship scheme helps to establish a closer connection between research carried out at universities and research centres,” she says. “Marie Curie fellowships give many young researchers the opportunity to apply their knowledge and skills to real scientific or technological problems, furthering their own work and careers.”

Brigid Mullany agrees: “The Marie Curie system is very valuable in promoting research in Europe. The Fellowships are synonymous with high-quality research and are known and respected both within and outside of Europe. The high profile of the programme is essential in showcasing the research strengths of Europe and the EU’s continuing commitment to both young researchers and research bodies alike.”

“Mobility and knowledge exchange are essential to researchers, and, more generally, for the advancement of science and technology in Europe.”



XMM-Newton telescope preparation

A FORMULA FOR SUCCESS

A fresh look at advanced mathematics

Under the EU's Marie Curie scheme, the Banach Centre in Warsaw provided young researchers in mathematics with specialised knowledge and facilities, allowing them to pursue their career goals in several advanced and challenging disciplines.

Mathematics plays a key role in our daily lives and is a powerful tool for modern industry. The logical, problem-solving approach employed by mathematicians provides an undisputed competitive edge, delivering technical advantages and cost savings through clever modelling, analysis, and computation in design and manufacturing.

Software systems allow design data to be quickly moved from the computer to numerically controlled machining and prototype production, thus cutting the costs by shortening the design-to-production cycle.

In critical areas such as safety testing in the transport industry, manufacturers routinely use mathematical models to replace million-dollar prototypes with computer simulations for a fraction of the cost. In the semiconductor industry, device modelling has now completely replaced expensive design and prototyping of next-generation devices.

“Fellows were provided access to one of the richest mathematical libraries in Europe.”

The Banach Centre as a successful Marie Curie Training Site

From 2000-2004, the Banach Centre for Differential Equations Functional Analysis and Stochastic Processes, part of the Stefan Banach International Mathematical Center of the Institute of Mathematics of the Polish Academy of Sciences, hosted 14 Marie Curie fellows as a Marie Curie Training Site.

According to project coordinator Professor Feliks Przytycki, the objective of the initiative was to provide training for young European researchers in several modern and challenging mathematics disciplines, including:

- Financial mathematics;
- Modelling of biological processes;
- Neural networks;
- Stochastic control theory;
- Fluid and stochastic partial differential equations;
- Dynamical systems;
- Banach and Sobolev spaces;
- Complex analysis; and
- Wavelet theory.



Mathematicians have found that the pseudo-Anosov braid is the most effective pattern for mixing paint

“Fellows and PhD students”, says Przytycki, “received training through coursework and participation in seminars and conferences, and through contact with professors and other advanced students. Fellows were provided office space and access to one of the richest mathematical libraries in Europe, as well as the opportunity to perform simulation and numerical modelling using the Centre’s computer facilities.

“The programme provided a critical mass of scientists for seminars and joint projects, attracting researchers from several Polish universities. It has significantly strengthened the Institute’s PhD programme and has contributed greatly to its international character. The presence of foreign researchers also created a stimulating environment for our Polish students and added new impetus to the work being carried out.”

Sense of direction

For Marie Curie fellow Gavin Band, from the UK, the project made a huge difference. “Before coming to Banach,” he says, “I was not sure what I would do next. I believe it is unlikely that I would have continued in the field of research. Being at Banach gave me the time and space to develop my research and also led to the publication of a paper. The interaction with other students and established experts from all over the world was very stimulating and made me aware of what is going on in the international research community in my own and related fields.”

“I think this action has been very valuable. I see this not only in my case, where it led directly to the beginning of my post-doctoral career as a mathematician, but also in others who I have met who were Marie-Curie fellows. Often what one needs

in mathematics is not some specific knowledge but a certain experience, known as ‘mathematical maturity’. I believe these visits are important above all because they turn fellows from students into mature mathematicians.”

The importance of contact

Spain’s Godofredo Iommi is another fellow who found the international environment created at Banach crucial to his development as a mathematician. “I met some very well known people in the field and had a chance to learn from them,” he explains.

Now working in a post-doctoral position in Lisbon, Iommi says, “I applied to the programme because I wanted to spend some time studying in a different place. Access to the Institute’s impressive library was really appreciated in my work on multifractal analysis.”

During his stay at Banach, Iommi finished writing his PhD thesis, initiated important collaborative work with other PhD students and wrote a paper. One of the greatest challenges he faced was that of learning a new language.”

Altogether, Banach hosted 14 Marie Curie fellows, each of whom stayed for between three and 12 months. Five fellows were from Spain, three from the UK, three came from Germany, one from Greece and two were from France. A total of 16 papers, at least partially written at Banach, have been published, some of them in prestigious journals, or submitted for publication by the fellows. Some were submitted jointly with Polish researchers. Eight fellows have defended PhDs as a result of their time at Banach.

“Often what one needs in mathematics is not some specific knowledge but a certain experience, known as ‘mathematical maturity’.”



Gavin Band

Banach Centre for differential equations, functional analysis and stochastic processes

Type of project:
Marie Curie mono-partner training site

Coordinator:
Institute of Mathematics of the Polish Academy of Sciences

Community’s financial contribution:
€158 400

Number of fellows:
14

Project duration:
September 2000 – September 2004

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MONEY MAKES THE WORLD GO AROUND

Building a common market for economics research

The European Network for Training in Economics Research (ENTER) is a co-operative venture between seven leading European economics departments, promoting the exchange of PhD students between the network members. The Marie Curie fellowships supported the participation of students from all over Europe in this now established European economics research training programme.

“The aim was to foster internationally competitive research by broadening the experience of European economics students.”

Sabine Kröger

The study of economics is important to understanding the production and distribution of wealth in any particular context or society. In Europe, it is essential that we continue to develop our ability to analyse current market and financial trends, to spot both positive and negative developments, and to find new and innovative ways of influencing the evolution of the European economy in a positive way. This is true not just in terms of financial wealth, but within the context of Europe's social agenda and the requirements of sustainable development.

Reversing the brain drain

The ENTER exchange programme was set up in 1993 to provide PhD students with the possibility to undertake part of their training in a related institute in another country. The aim was to foster internationally competitive research by broadening the experience of European economics students and exposing them to a wider array of experienced researchers and research options.

Eric Van Damme, coordinator of the project, believes that they have been successful in building a European doctoral programme in economics which is on a par with the US. “Until recently, training in economics research in Europe was not well developed, with only a few really good research centres and many smaller economics departments not able to offer a full range of options. Many of our best economists

went to the US and did not come back. We wanted to reverse this brain drain.”

Ready for the open market

Thanks to the Marie Curie fellowships, through ENTER some 125 PhD students from Europe and the Associated States were able to take advantage of the combined expertise of some of Europe's top economics departments, thus significantly broadening their experience and future career options. Nearly 40% of these were women.

Sabine Kröger from Germany spent one year at Tilburg University in The Netherlands. She believes that her time there was crucial in stimulating her love of research and preparing her for a career as a researcher: “I did not know much about the ‘research business’ and I learned a lot from interacting with the other researchers and visitors at Tilburg.”

For Kröger, the Marie Curie fellowships are important in creating the future generation of European researchers: “By allowing students to experience different approaches to science and research, the fellowships facilitate and enhance the development of research ideas and help build a new generation of European scientists open to the ideas of others and able to benefit from the networks of international contacts built up thanks to the exchanges.” Kröger has recently accepted a position as assistant professor at the University of Laval, Quebec, Canada.

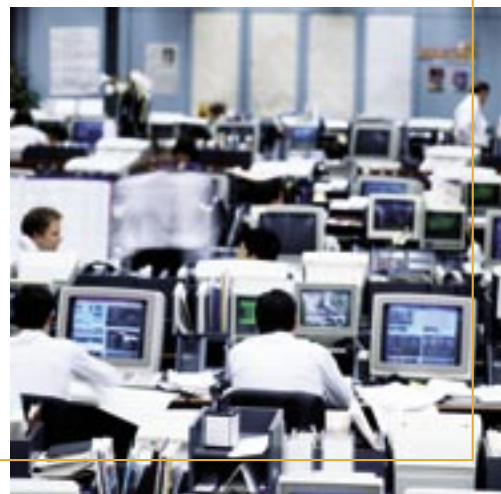
Seal of approval

A stated aim of ENTER is to develop scholars able to analyse economic phenomena from a European rather than a national point of view. "There has been a definite change in economics research in Europe over the past ten years," notes Van Damme. "Before, research was much more national, but now, thanks to training programmes like ENTER and the exchanges promoted by the EU, it is much more European." The impact is not just on the level of the students either. The joint supervision of doctoral studies between different institutions also intensifies contact between senior researchers.

ENTER has its own diploma which is awarded to the participating students in addition to the PhD in their own country. The ENTER diploma is now recognised as a signal of quality and 'European' experience and adds value to a researcher's curriculum vitae.

Integrating research

Grzegorz Pawlina from Poland and Anatasia Kartasheva from Russia were two more of the 125 Marie Curie fellows able to take part in the ENTER programme. They both spent their fellowships at the economics department of the Université Libre de Bruxelles (ULB - ECARES) in Belgium where they appreciated the opportunity to interact with other students and researchers from different countries. Pawlina is now working as a lecturer in finance at the Lancaster University Management School, a position which he is sure was helped by his European experience.



It is essential that we continue to develop our ability to analyse current market and financial trends

“Research is always about the exchange of ideas, and the fellowships promote this exchange by providing a framework for the interaction of researchers.”

Kartasheva is an assistant professor at the Georgia State University in the US. For project coordinator Eric Van Damme, this is a signal of success in that, in the past, it was rare for economists trained in Europe to be awarded positions in the US. Kartasheva is convinced of the added value of her fellowship, both in personal terms and more generally: "The Marie Curie fellowships are extremely beneficial because they allow for real European integration. Research is always about the exchange of ideas, and the fellowships promote this exchange by providing a framework for the interaction of researchers."

European Network for Training in Economic Research (ENTER)

Type of project:

Marie Curie multi-partner training site

Host institute:

University of Tilburg (NL)

Partners:

University of Toulouse 1 (FR); Autonomous University of Barcelona (ES); Free University of Brussels (ULB) (BE); University College London (UK); Mannheim University (DE); Stockholm University (SE)

Community's financial contribution:

€2 136 200

Project duration:

August 2000 – August 2005

Number of fellows:

125

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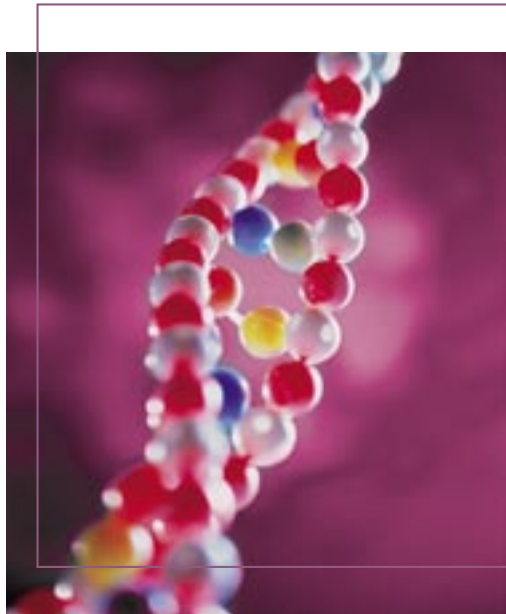


Grzegorz Pawlina

FINDING THE RIGHT EQUATION

Marie Curie promotes exchange in fundamental mathematics

The University of Paris 13 has used support from the EU's Marie Curie Programme to reinforce existing links and to create new ones between its mathematics department and other mathematics departments in universities across Europe.



One branch of topology, known as knot theory, can be applied to the study of how segments of DNA arrange themselves

"The goal of the AT-MP project (Algebraic Topology and Mathematical Physics)," explains coordinator Muriel Livernet, "was to give our own and other international doctoral students the opportunity to interact with young people of different educational backgrounds, introducing them to wider points of view on their research subjects." AT-MP was one of two projects supported by Marie Curie at the mathematics department of the University of Paris.

"The Marie Curie Programme was essential for the success of the projects," says Livernet. "For one thing, French universities do not have any type of funding for pre-doctoral visits. Moreover, the Marie Curie Programme gave our projects a high level of visibility among students all over Europe."

Algebraic topology is a branch of mathematics in which tools from abstract algebra are used to study certain properties of figures such as circles, cubes, spheres and toruses. Topology and other mathematical disciplines, including group theory, can help to better understand symmetry in molecules and other objects.

"Invited Marie Curie Fellows had access to all the facilities of our department," says Livernet, "including office space, use of our computer system and the library. They attended seminars

corresponding to their fields of interest and interacted informally with faculty and other graduate students. Moreover, they experienced the highly charged academic life that exists in Paris, a veritable centre of mathematical thinking in Europe."

“The Marie Curie Programme gave our projects a high level of visibility among students all over Europe.”

Advanced research in a stimulating environment

Marie Curie Fellow Ramón Flores benefited in more ways than one. "The experience was very positive for me,"

he says, "both socially and professionally. I enjoyed four months devoted to intensive research in mathematics, and I got to know a lot of people from different countries at the university."

Previously a PhD student at the Autonomous University of Barcelona, Flores finished his thesis in Paris and worked on two research papers. He now teaches as an Assistant Professor in Barcelona. "I felt really enriched after the experience," he says. "This kind of action is very valuable in promoting research in Europe."

Experience most appreciated

Rubén Sánchez-García was first encouraged to apply for a Marie Curie Fellowship by his thesis supervisor at the University of Southampton. "I was keen to spend some time abroad and to

visit a maths department with a good research team in my field,” he explains. “I most appreciated the opportunity to spend some time at a different university, learning from other people’s research activities and interests, and also seeing how other universities organise themselves.

“Learning to work in a new language was a challenge for me, but I am pleased to say I am getting along well now and feel very comfortable within the department and with the people here.”

Sánchez-García’s fellowship is still running and he says he thinks it will play a significant part in his future research career. “It is giving me time to finish my PhD and to look for a new job in academia. I am also thinking about new research projects.

“This kind of action is not only valuable but essential in helping to provide a common and more coherent framework for research activities in Europe, which otherwise depend on the specific procedures or legislation of each country.”

European perspective crucial

“The project has certainly been useful in promoting mutual recognition of degrees,” says Muriel Livernet. “Beyond the formal equivalence of PhDs in different countries, the fact that students have spent some time at university in another country, interacting there with other students, researchers and professors, does encourage some homogenisation of requirements and criteria for the granting higher degrees.

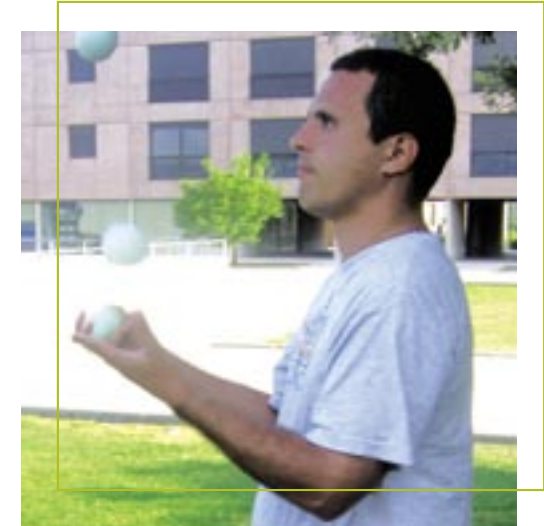
“The support of the European Commission has been essential in terms of funding and visibility. Our present contract, which concerned two research teams in our department, will come to

“This kind of action is not only valuable but essential in helping to provide a common and more coherent framework for research activities in Europe.”

an end in the fall of the next academic year. We now plan to apply for new Marie Curie funding, extending our participation to six research teams working within the mathematics department of our university.”



Rubén Sánchez-García



Ramón Flores

Algebraic Topology and Mathematical Physics (AT-MP)

Type of project:

Marie Curie Training Site

Host institution:

Université Paris 13

Community’s financial contribution:

€96 800

Project duration:

January 2002 – January 2006

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WENTECH

Type of project:

Marie Curie Industry Host Fellowship

Host institution:

HR Wallingford

Community's financial contribution:

€220 248

Project duration:

48 months

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STAYING HIGH AND DRY

Coastal and water management gets a boost from Marie Curie

With support from the Marie Curie Programme, HR Wallingford, a renowned international research organisation is making progress on a number of coastal and water-related issues, including the development of new guidelines for exposed jetties and risk assessment for flood and coastal defence systems.

HR Wallingford, an independent company based in Oxfordshire, England, specialises in consultancy and research in civil engineering, hydraulics and the water environment. Its Marie Curie Programme coordinator, Celine Grand, says the organisation is always looking to exchange knowledge and capabilities with similar European research institutes. "Marie Curie has given us a very good opportunity to welcome and train researchers working on water-related subjects from different European countries," she says.

Over the past four years, HR Wallingford has welcomed a total of four Marie Curie Fellows within the framework of its WENTECH project. "Our Fellows each got the opportunity to work in small teams with our staff," explains Grand, "led by one of our key experts. Close working relationships between fellows and experts were privileged, not only at HR Wallingford but also among our project partners."

Advanced research in an important field

Under WENTECH, research has been undertaken in three main areas:

■ **Guidelines for the hydraulic design of exposed jetties** – Fellows worked on physical and numerical models, attended and presented papers at various international conferences and participated in the production of a book published in September 2004.

■ **Risk assessment for flood and coastal defence systems for strategic planning** – This work led to a robust framework for strategic long-term flood risk assessment. A Marie Curie Fellow co-authored conference and journal papers, one of which, published in the *Water & Maritime Engineering Journal*, was awarded the Robert Alfred Carr Prize in 2004.

■ **Post-project appraisal of Sustainable Drainage Systems** – One Fellow helped to write two published reports and is the first author of a paper to be presented at a major international conference later this year.

“Marie Curie has given us a very good opportunity to welcome and train researchers from different European countries.”



Modern jetties are now having to be built in exposed locations requiring new designs

A prime opportunity

“For people working in my field,” says Marie Curie Fellow Giovanni Cuomo, “HR Wallingford represents an ‘excellence institute’, one of the most prestigious places to carry out research on exposed jetties. During my first interview, I was shown some of the HR lab facilities and, by the end of the visit, I was wondering if I would ever be able to cope with not getting the position. Luckily, I didn’t have to face that challenge.”

Defining the problem – ‘exposed jetties’

Coastal trade activities rely on jetties for the shifting of marine cargo. Traditionally, these facilities are constructed in naturally sheltered locations or are protected by artificial breakwaters.

Recent years have seen demand increase for the development of large single-use industrial terminals, especially for the loading and unloading of liquid natural gas (LNG) and liquid petroleum gas (LPG). These terminals require deep water, but are often located in remote areas where there is no existing infrastructure, no wave shelter, and where the construction of new protective structures would not be cost effective.

Thus, modern jetties – and/or approach trestles that carry delivery lines – are now having to be built in such exposed locations, requiring new designs and better understanding of the dynamics of wave-current-structure interaction.

Experience both personal and professional

“My activities were mainly focused on wave-induced loads on suspended deck structures such as jetties, piers and offshore

platforms,” explains Cuomo. “If you’ve ever seen a wave breaking against a seawall or smacking the underside of a jetty deck, then you know what I’m talking about.”

On a personal level, Cuomo had to adjust to a new country and new living arrangements. “In Rome,” says the Italian, “I lived on my own, but when I moved to Oxford, I started off sharing a house with six other chaps. It took me a while to learn how to share my space and my life with others, not to mention the language problem, but things worked really well and we’re all very close friends now.”

“Because a substantial part of my activity has been carried out abroad, in another European country, I had the opportunity to apply for and receive the title of ‘European PhD’, which enhances one’s visibility in extra-European countries,” he adds.

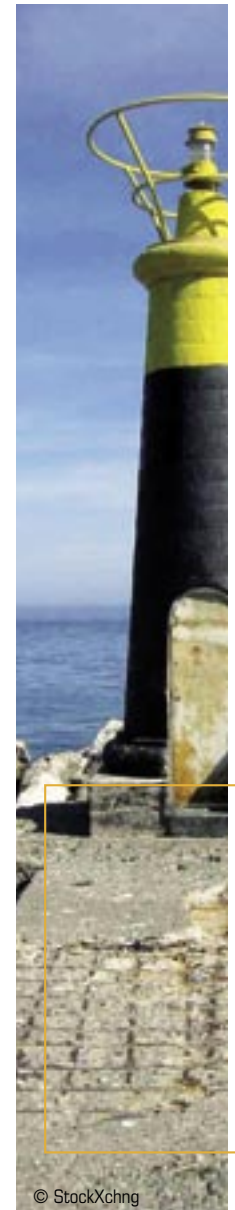
Since completion of his Marie Curie Fellowship, Cuomo has maintained an active collaboration with UK colleagues and has been invited to take part in new research projects in Europe, the USA and Japan. “This would hardly have been possible without the Fellowship,” he suggests.

Marie Curie makes the right connections

“The Marie Curie Programme is well known in the scientific community,” says HR Wallingford’s Celine Grand. “Working as a Marie Curie Fellow is a very good opportunity. All of our Fellows were conscious of the fact that the programme gave them access to knowledge and training they might not have had in their own countries.”

“This kind of action not only promotes European research, but also human development,” concludes Cuomo.

“This kind of action not only promotes European research, but also human development.”



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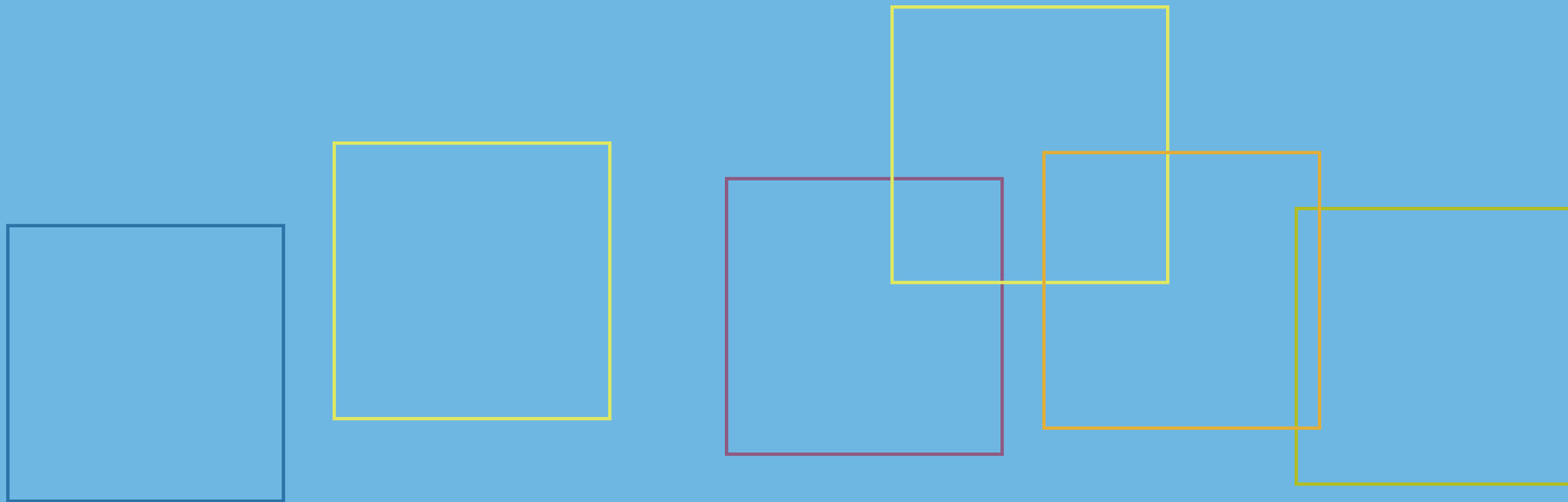
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