

Editorial

Science Entrepreneurs

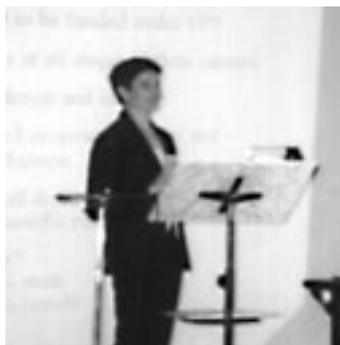
Technology start-ups are booming and they are critical in stimulating growth in new sectors such as biotechnology and IT. For many young scientists, who realise the commercial potential of their research, setting up their own science-based company is an intoxicating vision. To bring this vision closer to reality MCFA News is providing a forum for exchanging ideas and experiences on all aspects of setting up or expanding a science-based business.

In this issue, Marie Curie fellows, who have moved from the bench to become science entrepreneurs in biotechnology, share their experiences with readers of the MCFA News. We learn about their motives in making the move, the excitement they have experienced in discovering a new world which exists outside academic research, the buzz of working in a multidisciplinary team and the sense of fulfilment from seeing one's research being turned into a useful and commercially successful product.

In the following issues we intend to focus on technology-start ups in other sectors and on topics such as incubation centres, intellectual property rights protection, patent information and venture capital. We look forward to receiving your contributions for the next issue.

Maziar Nekovee and Norbert Glaser

Maziar Nekovee m.nekovee@qmw.ac.uk is a Research Fellow at the Centre for Computational Science, Queen Mary and Westfield College, University of London and the Editor of MCFA News.
Norbert Glaser nglaser@epo.org is a Patent Examiner at the European Patent Office in Munich and MCFA Board member responsible for Technology Transfer and Sponsorship.



Laure Ledoux, Chair of the MCFA

Half way through its second year of existence, it is a good time to recapitulate on MCFA activities since the AGM, while looking ahead towards the second part of 2000.

Activities at national level have been very much alive, with several groups organising meetings, often with the presence or the active contribution of National Contact Points (Ireland, Germany, Portugal, UK and Spain). Links with partners at national level are starting to develop. The German group organised a two-day conference in Stuttgart with the University of Stuttgart, the German National Contact Point and the Ministry of Science, Research and the Arts of the state of Baden Württemberg. In the UK, the annual meeting was organised in Edinburgh to coincide with an event organised by the British Association for the Advancement of Science **Building Bridges to Science**, at which a number of UK fellows participated. Funds are still available for the next six or seven months, and we very much encourage further applications for national activities. The national coordinators workshop in Nice next July will be a good opportunity to review, plan and coordinate these activities.

The MCFA was involved in organising international scientific events.

The Intellectual Property Rights symposium in Munich, a collaboration of the MCFA, the European Patent Office and Max Planck Society for the Advancement of

Report from the Board

The MCFA: Participating in European Science and Policy

by Laure Ledoux

the Sciences was held at the Max Planck Gesellschaft in Munich; the event attracted 70 participants, including a large representation from the European Patent Office (EPO). The symposium addressed current challenges in research, intellectual property protection and technology transfer.

The Innovation in Biosciences workshop, organised in conjunction with Unilever Research Colworth, aimed to stimulate innovative ideas in biosciences and the exchange between frontline research in academia and industry. Paper and poster presentations provoked a lively and stimulating debate among the 30 participants, which included Marie Curie fellows, other young researchers, and Unilever researchers. Following the success of these events, we very much encourage other members to get involved in the organisation of scientific conferences and suggest themes for future events.

Another highlight in the scientific life of the Association was the completion of the first issue of the *Annals of the MCFA*. Thanks to tremendous work by many of you, the first selection of 24 research papers by Marie Curie fellows is available on the Web, representing a snapshot of frontline research across disciplines and European countries. Paper copies are soon to be published through the European Commission.

The MCFA has been active within the European scientific community, building up contacts and useful partnerships. The Association was represented at the European

Science Foundation general assembly, at the UNESCO General Conference last November, and at the EC Women and Science conference on **Making Change Happen** in April. The MCFA has been invited to the Joint Research Centre alumni event in June in Varese, Italy, and other international scientific organisations meetings. As events of this type multiply, we will be asking more and more whether non-board members are interested in attending, as for the INES (International Network of Engineers and Scientists for Global Responsibility) conference on **Challenges for Science and Engineering in the 21st Century** on 14-18 June in Sweden, where two MCFA members will represent the Association. MCFA representation at international events not only helps disseminate awareness of MCFA objectives, but also contributes to making the MCFA a recognised partner in the global scientific community. References to MCFA in the news have a

Contents

European Research Area	p.2
Careers in Science	p.3-4
Research at MPI	p.6
Research Focus	p.7
MCFA Local Groups	p.8
Discussion Forum	p.9
Diary of Events	p.11
What is the MCFA ?	p.11

similar effect, such as the article in EUROSCIENCE newsletter in December 1999, and the article "Fellows find Ideas and Inspiration" in Science Nextwave, following the **Challenges and Opportunities for Young Scientists** conference.

With current membership slightly over 2,200, the Association represents a significant proportion of young and mobile researchers, and can contribute usefully to European science policy. An online survey of MCFA members provided information on issues of concern to young mobile researchers. The survey results were incorporated into a letter to the Commissioner for Research, Mr. Philippe Busquin, as a reply to the EC White Paper "Towards a European Research Area." and are reported in a separate article in this issue. Furthermore, following an initiative of the Austrian MCFA group, the Association expressed a diplomatic concern at the situation arising from recent political developments in Austria and the

reaction of the EU, and the possible impact on the mobility of scientists towards and from Austria, through an open letter to the Commissioner for Research, the President of the European Commission, the President of the European Council, and the Ministers of Science in all the European Union member states. The letter and a sample of the replies we received are available on the Website.

Autumn 2000 promises exciting events, which we hope will attract many of you. On 4-7 October the **Investing in Europe's Human Research Potential** conference takes place in Crete, organised by the Foundation for Research and Technology - Hellas (FORTH), with support from the MCFA. This is part of a series of EC sponsored events on Marie Curie fellowships such as the previous Rostock, Toulouse and Sneekster events; the objectives are to debate issues concerning international co-operation and mobility of researchers, and to provide a

forum for exchange between young and senior researchers, and administrators.

On October 7-9, the MCFA co-organises with UNESCO a Forum for Young Scientists, as a satellite event to the conference on **Science and Technology in Europe** organised by the Council of Europe, on 9-11 October, in Gdansk, Poland. This will provide a unique opportunity for young scientists to interact directly with parliamentarians and government officials involved in science policy. Finally, the MCFA scientific event preceding the AGM will be organised in conjunction with the European Science Foundation, and hosted by the Max Planck Institute in Stuttgart. The main

theme will be **Competitive European Research: the Vision of Young Scientists**, and will aim to discuss issues around what makes European science attractive and competitive in young scientists' eyes. This will be open to non-MCFA members and should provide a very interesting discussion forum with other young scientists, in direct interaction with representatives of major research institutions. More information on this and the above mentioned events will be available on www.mariecurie.org/src/meet/meet.htm

We look forward to seeing many of you at these events, to help shape the future of European science.

Laure Ledoux, L.Ledoux@uea.ac.uk, Chair of the MCFA, holds an ERSC research post at the Centre for Social and Economic Research on the Global Environment (CSERGE) at the University of

East Anglia, working primarily on biodiversity and the interface of science, economics and policy. She previously carried out a Marie Curie fellowship in the Environment Department, at the University of York.

Towards a European Research Area

MCFA Comments on the EC White Paper

by Wolfgang Maser, Winfried Meining, Dagmar Meyer and Marco Valentini

Editor's Note

Earlier this year the European Commission published a white paper entitled 'Towards a European Research Area' stressing the need for better integration of European research to improve Europe's competitiveness in the 21st Century. Commissioner Busquin invited direct feedback on 5 specific questions and the MCFA replied to those questions most relevant to young, mobile researchers. The response was jointly formulated by the MCFA board and national co-ordinators, on the basis of case histories and an online survey among MCFA members. The following is a shortend version of this response. Commissioner

Busquin's White Paper can be found at: <http://europa.eu.int/comm/research/area.html> and the full text of the MCFA feedback at: www.mariecurie.org

Mr. Busquin's communication argues that national public research efforts are too "compartmentalised" between Member States, lacking coherence and integration. Do you have personal experience of such compartmentalisation? Is it time for Europe to have a true European research policy?

Many MCFA members have experience of such "compartmentalisation" especially for junior tenure jobs in academia. Often

European-funded research is considered "national" research. In several cases, despite EU financing, MC fellows had contracts that reserved the rights of the host institute to exploit their work.

These steps would contribute to a coherent and integrated national public research effort:

- Develop a European research policy like the Economic Monetary Policy
- Develop a European Scientific Infrastructure
- Enhance the mobility of researchers

An improvement of public awareness and dissemination of the results of European research will help to develop the concept of a European research area.

The communication on a European Research Area highlights the lack of mobility for researchers in Europe. Have you experienced problems of moving between countries in the European Union as a researcher? What are the main obstacles to the mobility of researchers?

The introduction of the EC Programmes has enabled thousands of researchers to work abroad. Their mobility clearly indicates a lack of integration in the employment, welfare and tax laws within the EU, which might jeopardise mobility towards specific countries.

Mobility is a conscious, motivated decision driven by excellent research facilities at the Host Institute and a desire for international experience. Although the grant is considered sufficient, problems exist with allowances, which are often taxed, and subject to deductions. Most fellows were equally treated in the host country; in some cases the fellows are not entitled to sickness or maternity benefits. Mobility with a family is a real problem. In several cases the partner had to interrupt her/his career and often did not go to the Host Country.

It appears that the MC fellowship had at least a short-term positive career impact. In several cases, fellows remained in the

Host Country or moved to another country, indicating either that the fellowship enforced mobility or that it was difficult to return home. Regarding academic positions in the Home Country, it is felt that: "usually, people who don't move, obtain better positions or permanent positions earlier".

Most former fellows are now employed in either Academia or the public sector, indicating that the fellowship programme scarcely promotes the exchange between Industry and Academia. Generally, academic qualifications and titles are acknowledged although sometimes a bureaucratic step is required to obtain official acknowledgement of academic titles.

A few suggestions to enhance mobility are:

- As mobility by itself, without a long-term plan, can create unemployment, the stay abroad should become a clear career advantage and a return home should be as possible as finding a job abroad.
- As mobility is higher among younger people, early-stage mobility should be supported - it is counter productive that complete funding for PhD training is no longer available within the MC Fellowship Programme.
- There is a satisfactory European mobility programme for "young" academic researchers but no corresponding initiative to enhance mobility of both industry and

senior academic researchers.

- Half of the participants in the MCFA survey lamented the lack of assistance and information from both the EC and Host Institute about taxation, social security and integration.
- Most former grant holders would have preferred employment as "European Postdoc or Civil Servants"; similar status is granted to staff at CERN.

Mobility will be further enhanced with: automatic recognition of EC academic titles and qualifications; introduction of an international dimension in academic careers; a clear European ruling that years of research in another country, have to be included in the total "years of seniority" that define the salary in European universities; standardisation of EU tax, welfare and employment laws; introduction of intensive language training; introduction of more facilities and assistance for families.

Should public R&D money be concentrated on areas which the private sector will not cover, e.g. fundamental research, or should public R&D spending be oriented towards obtaining clear results ?

Fundamental research produces clear results, which contribute to increasing community culture and knowledge and is the basis of possible, long-term technological and quality-of-life improvements. However as these results do not lead to a

clear, short-term economic return, there is a growing opinion that governments and government agencies should invest in basic research only if it is likely to generate direct and specific benefits such as wealth creation and improvements to the quality of life.

We believe that fundamental research is important in itself as:

- 1) It produces cultural advancement and contribution to knowledge.
- 2) It provides an excellent training in problem solving for researchers who work in applied research or development in industry.
- 3) With mobility of researchers it creates valuable links between researchers, which would not exist if all training took place in industry.
- 4) It generates immediate spin-offs
- 5) It sustains and fosters technological development.

New knowledge produced by fundamental research can lead to highly-profitable applications and to improvements to the quality-of-life, which were unforeseen when the underlying discoveries were made.

Once economic returns are anticipated, the private sector is generally better placed to undertake the necessary R&D. Governments can play their role by creating a suitable environment for private investments and stimulating investments in areas of public interest.

However, the situation is not entirely clear cut, since whether applied research will lead to direct profits is not always predictable. Furthermore, public funding of applied research on topics related to public policies such as the environment, or sustainable growth or issues affecting transport policy is obviously necessary.

Wolfgang Maser
wmaser@carbon.icb.csic.es
spent his MC fellowship at the University of Montpellier, and now works at the Institute de Carboquímica, Spain

Winfried Meining
(winfried.meining@csb.ki.se)
is the Board member responsible for Local Groups. His fellowship was at the Karolinska Institute in Stockholm, Sweden where he is now a Research Assistant. He teaches X-ray Crystallography at Södertörn University College.

Dagmar Meyer
meyerd@member.ams.org is a co-ordinator of the French National group and a current MC fellow at the LAGA Institut Galilee, University of Paris 13, France.

Marco Valentini
marco.valentini@mi.infn.it was a MC fellow at the FOM 'Rijnhuizen', NL and is now a Physicist / Lecturer at the University of Milano, Italy. He is the Board member responsible for promotion and publications and for the Annals.

Careers in science

Leaving the Bench to Become an Entrepreneur

by Jean Chatellier

I started to think of scientific entrepreneurship instead of the traditional science career path because I wanted to create a Company to exploit fully the commercial value of a platform of technologies, some of which I had co-invented during

my post-doctoral training. The poor chance of finding an academic job in my own country helped!

The setting up of a new Company is a team effort. I convinced my boss, Professor Alan Fersht; the 1997 Chemistry Nobel Prize winner Sir John

Walker (from the Medical Research Council Dunn Human Nutrition Unit, Cambridge, UK) and Dr. Fergal Hill (from the European Molecular Biology Laboratory, Heidelberg, Germany) to join our synergistic technologies and varied expertise, to set-up our Company, Avidis™. Then, we sought an infrastructure where both support for the founders and an attractive capitalist environment were combined. According to these criteria the Biopôle Clermont-Limagne (pro.wanadoo.fr/ biopole) in Saint Beuzire (France) was the most suitable.

Scientists seeking to exploit their

discoveries, by setting up new Biotechnology companies, face a difficult choice: spend time learning how to run a business on a lengthy, full-time course such as an MBA or take the risk and plunge in at the deep end, taking advice from consultants. I took another option, encouraged by Professor Michel Renaud, Vice-President of the University of Auvergne and founder of the Biopôle Clermont-Limagne.

I took a special training course run by Eurobiobiz (www.eurobiobiz.com; supported by the European Commission and Arthur

Andersen), which includes a dedicated software package (Biobiz™). This course enables scientists to understand the business planning that is required for starting-up a company.

During this training, I gained the skills needed to write a business plan, which would enable us to attract real interest from venture capitalists. Indeed, having decided the business model of our project (i.e. the marketing strategy to develop commercially the products arising from our technologies), I wrote its business plan. I submitted it to the "1st Capital-Innovation Competition" run by French venture capitalists, the Groupe SOFIMAC ("Société de Financement des PME du Massif Central"; www.sofimac.fr).

Our Company, Avidis, received the 1st prize in this competition and now aims to develop essential technologies for the industrial production of recombinant proteins. Its existing portfolio of innovative technologies enables us to produce native recombinant proteins. These proteins will be used for therapy, for developing treatments,

for studying protein function and for producing diagnostic tests and vaccines. The ability to manufacture proteins which at present are very difficult or even impossible to produce, in large quantities and in their native form, rapidly and inexpensively, will have an enormous impact in all sectors of Biology (Biotechnology, Nutrition, Pharmacy, Human and Animal Health Care and, in the near future, Nanotechnology).

Avidis is simultaneously a source of ideas and innovations for new products and a platform of technologies for their creation and development. The Research & Development arm will develop all the products derived from Avidis' proprietary technologies while the Service arm will use these products for clients' applications. Avidis is supported by the Medical Research Council and the Group SOFIMAC, which will lead the first round of funding with other international venture capitalists.

The formation of new companies drives growth in new sectors such as Biotechnology. Start-ups help to transfer technologies from acad-

emia to the market place. However, for scientists who are seldom familiar with management and finance, it is a new world. In Europe, budding entrepreneurs should look to the European Commission for help (www.europa.eu.int/dg12/biotech).

The opportunity to become an entrepreneur and to build their own Company will create new reasons for the more courageous and adventurous Marie Curie fellows to enjoy both Science and Life. The frustration of leaving the workbench or the sadness of not finding an academic job in their own country will be replaced by the excitement of a new world, and will open new avenues for the Marie Curie fellows to extend their talents.

Jean Chatellier
jc4@mrc-lmb.cam.ac.uk or
jean-chatellier@wanadoo.fr
obtained his Ph.D. in molecular Biology from the University Louis Pasteur in Strasbourg, France. He was a Marie Curie fellow at the Medical Research Council Centre for Protein Engineering in Cambridge, UK in the laboratory of Prof. Alan Fersht, the pioneer of protein engineering, from 1997 to 1999 where he worked as a post-doc on the mechanisms of the bacterial chaperonin GroEL. He is now the Chief Executive Officer of the start-up Company, Avidis™. For more information, visit his Web site at: www.mrc-cpe.cam.ac.uk/~jc4

Avidis™

Job Opportunities (Ref: Avidis/01/2000)

Avidis is seeking both Research Scientists and Laboratory Technicians. Highly motivated candidates should have a higher degree or equivalent experience and have extensive postgraduate practical experience in protein engineering, bacterial expression and protein purification, together with the ability to work as part of an international team. Salary will be in the range €25,000 - €30,000 p.a. depending on qualifications and experience. Further information can be obtained from the Scientific Chief Officer Dr. Fergal Hill, e-mail Fergal.Hill@EMBL-Heidelberg.de. Employees of the Company will have access to a performance-related share option scheme. Applications, including a motivation letter, a full CV and the names of three professional referees, should be sent by August 25, 2000, quoting reference Avidis/01/2000 to: Dr. Jean Chatellier, Chief Executive Officer, Avidis SA, Biopôle Clermont-Limagne, 63360 Saint Beauzire, FRANCE.

Careers in science

Building an Institute on the Nanoscale

by Wim Meijberg

The most difficult step to take in developing a career in science often is the step immediately after finishing a postdoc. The number of (permanent) positions in academia is small, and the mobility of those who hold them is generally low, forcing many young scientists to look for employment elsewhere. Starting up a new business is of course one possibility, joining a company or research institute, either firmly established or just started, is another; this last possibility is the focus of this article.

BiOMaDe (Bio-Organic Materials and Devices) officially started on January 1st of this year, after a period of preparation lasting sev-

eral years. It is a research institute currently employing around 25 scientific staff from the fields of biology, chemistry and physics, whose mission statement is to 'develop and exploit new technologies relating to the field of molecular nanotechnology in its broadest sense'. In layman's terms this means that research is focused on the development and methods of production of very small structures (a nanometer is a million times smaller than a millimeter) that have been designed to perform certain tasks.

Multidisciplinary research teams are working on projects ranging from e.g. the development of polymeric solar cells to targeted drug

delivery in the human body. Many of the projects are related to and/or based upon ongoing work in the Science and Medical Departments of the University of Groningen, and in many cases close collaboration between the two institutions exists. Indeed, the university is one of the main investors, together with 3i Group, Generics and NOM (Investment and Development Company for the Northern Netherlands); in addition public funding has been attracted.

Why would a young scientist, trained in academia, be attracted to working for a start-up like the one described above? The answer to this question will vary of course, from case-to-case and person-to-person, and therefore I can only really speak for myself. Working at BiOMaDe is a good opportunity to stay involved in hands-on research, and use the skills that have taken such a large investment (in terms of effort, time and money) to develop. The approach towards research is somewhat different from acad-

mia, with emphasis not only on fundamental science, but also on (commercial) application of knowledge.

To some this may seem a disadvantage but in my experience it is refreshing and helps to focus thoughts. The development of basic knowledge into a useful application very often requires interdisciplinary collaboration, so we are forced to look over the boundaries of the particular scientific field that is our specialism. This not only broadens scientific experience, but also offers a chance to further develop general skills (communication, management, administration etc.) in a professional environment. On the other side of the coin, there is the obvious fact that jobs strongly depend on the success of the organisation. This of course also goes for established institutes and businesses, but to a lesser extent, since they are usually better equipped to survive periods when business is slow.

continued on page 11



unique insight

management consulting

Come and meet fellow students and researchers from across Europe for a weekend in Budapest – and be challenged by the world's most advanced business thinking. McKinsey & Company, a leading global management consulting firm, wants to introduce you to a career creating solutions that make a difference.

We're looking for 40 individuals who are interested in learning how to analyse and solve a business case and gaining insight into McKinsey's role in helping organisations achieve world-class performance. Want to be one of them? You need to be a post-graduate or a postdoc. – in any discipline, graduating before 2002.

You will have had little exposure to business but will be able to display a proven track record of excellence in your field. Please send us your application: a cover letter demonstrating your leadership and initiative, and a CV, by email to LN-insighteurope2000@mckinsey.com. We need to receive it by 18 August 2000, and we will notify invitees by 11 September 2000. All expenses will be paid. For full application details, please visit our website.

 insight europe 2000

www.mckinsey.com/insighteurope2000

Research & Development

Manufacturing & Supply

Commercial

Information Systems

plc

Post-doctoral Fellowships

Stevenage, UK

Glaxo Wellcome is one of the world's leading healthcare companies. Of our 55,000 employees, over 9,000 work within our research and development function and our on-going commitment is reflected in our annual R&D budget of £1.2 billion. We presently have a number of Marie Curie Industry Host Fellowships available in:

- Natural Products Discovery (Ref: SS/PR/Marie Curie/Natural Products)
- Synthetic Organic Chemistry (Ref: SS/PR/Marie Curie/Synthetic Organic Chemists)
- Analytical Chemistry (Ref: SS/PR/Marie Curie/Analytical Chemists)
- Rheumatoid Arthritis (Ref: SS/PR/Marie Curie/Arthritis)
- Asthma (Ref: SS/PR/Marie Curie/Asthma).

For details on the roles, please refer to www.pharmiweb.com/glaxo

The positions will be for two years, and will provide invaluable training and experience within a leading industrial research organisation. Should you wish

to be considered for any of the above positions, you will need to meet the EU's eligibility criteria which specifies that:

- Candidates must be nationals of an EU member state, or a state associated with the European Framework Programme, or have resided in the EU for at least five years.
- Candidates must NOT be UK nationals or people who are residing in the UK.
- Candidates must not have held a Marie Curie Fellowship/Research Training Grant or Fellowship for a period not exceeding four years.

For further information, please visit the Marie Curie Industry Host Fellowships Human Potential Programme website at www.cordis.lu/improving/src/mcf/brochure.htm

Interviews will commence the end of July. Please apply by sending a copy of your cv and covering letter to Sally Speirs, Human Resources, Glaxo Wellcome, Medicines Research Centre, Gunnels Wood Road, Stevenage, Hertfordshire SG1 2NY, UK or email sas60650@glaxowellcome.co.uk by 5 July 2000. Please quote the appropriate reference.

Leading the fight against disease

GlaxoWellcome

Max Planck Institute for Metals Research and Institute for Physical Metallurgy

Within the 5th Framework Programme of the European Community, the Max-Planck-Institut für Metallforschung (MPI-MF) has been selected as a **Marie Curie Training Site**. The following Doctoral training opportunities are offered:

Material Properties of Small Scale Structures of Interfaces and Surfaces

Contact : Professor E. Arzt eduard.arzt@po.uni-stuttgart.de
Professor E.J. Mittemeijer mittemeijer@mf.mpi-stuttgart.mpg.de

X-Ray Diffraction Studies of Advanced Materials

Contact: Professor H. Dosch dosch@physix.mpi-stuttgart.mpg.de

Microstructural Imperfections in Materials; X-Ray Powder Diffraction

Contact: Professor E. J. Mittemeijer mittemeijer@mf.mpi-stuttgart.mpg.de

Structure and Composition of Internal Interfaces by Quantitative Electron Microscopy

Contact: Professor M. Rühle ruehle@hrem.mpi-stuttgart.mpg.de

Max Planck Institute for Metals Research at Stuttgart

www.mpi-stuttgart.mpg.de

The Max Planck Institute for Metals Research, which was originally established as a Kaiser-Wilhelm-Institute in Berlin in 1921, was moved to Stuttgart in 1934, and became a Max-Planck-Institute in 1948. Research of the Institute is focused on synthesizing advanced metallic, ceramic and composite materials, characterizing their structure to the atomic and microscopic level and investigating their physical properties, as well as the theoretical clarification of their electronic, atomic and microstructural features. The properties of materials are controlled by their microstructure, and therefore the Institute has taken a special interest in the thermodynamics and kinetics of phase transformations which control structural modifications that lead to the desired properties. In addition to studying materials in

the equilibrium state, emphasis is being increasingly placed on tailored systems such as thin layers, as well as amorphous and nanocrystalline materials – materials that are not in thermodynamic equilibrium. Efforts for example directed towards improving the strength and formability of high-temperature alloys and intermetallics (for turbine applications), understanding the atomic processes at the interface joining dissimilar materials (e.g. metal/oxide or solid/liquid systems), and in thin film epitaxy, and materials behaviour at the microscopic level (e.g. microelectronics, micro-mechanical systems). For ceramics, entirely new applications are anticipated once their tolerance to defects can be successfully improved. In the case of precursor ceramics, this concerns the architecture of new complex

materials, including nanocrystalline materials, specialty fibres for reinforced materials, oxidation-resistant, wear-resistant, and functional layers, and materials with defined porosity. Finally, in the biomimetic synthesis of new materials and forming of new structures, the biomineralization observed in nature is imitated. Here the goal is the "cold" production of ceramics, such as in the growth of extremely thin oxide films for fuel cells.

Innovative high-performance soft and hard magnetic materials and giant-magnetostrictive materials are being created from nanocrystalline and multilayered systems. The development of new high-temperature superconductors and the study of their current-carrying capacity holds out the prospect of the loss-free transmission of electric energy. Here the development of suitable compositions and microstructures is decisive.

The Institute's approach to research is interdisciplinary and spans the range from fundamental projects to applications-oriented problems, with due consideration of both international develop-

ments and practical requirements such as systems compatibility, reliability, durability, environmental impact and recyclability. The Institute combines theoretical and experimental approaches, involving both classical and state-of-the-art experimental methods. Examples of the research tools available include high-brilliance synchrotron beam lines, neutron diffraction, high-resolution electron microscopy, top level X-ray diffraction and surface analytical techniques, materials testing at the microscopic level, abinitio calculations in electron theory and molecular dynamics, computerized constitution analysis, and thermodynamic and kinetic investigative methods.

A professional college for training state-certified metallographers is affiliated to the Institute. At the end of 1999 the Institute employed about 235 staff members, including 75 scientists and it also hosted 140 junior scientists and visiting scientists. It currently incorporates 4 Marie Curie Training Sites. For further details please see the above advertisement.

Research Focus

Configurable Computing (Or, what to do with soft computer hardware)

by Markus Weinhardt

Traditionally, there are two options to implement a computing system, which vary largely in terms of flexibility and performance. The first option is to use general-purpose microprocessors (such as the Pentium chips found in most personal computers). They are very flexible since a program (software) determines which operations are performed. Also, high-level programming languages and sophisticated development environments make it relatively straightforward to develop applications. But microprocessors are relatively slow since they execute most operations sequentially. The second option is the use of custom hardware circuits, or ASICs (application-specific integrated circuits). ASICs are tuned to perform a specific task very fast. This is mainly achieved by performing operations in parallel and avoiding the program

third option: large, fast FPGAs (field-programmable gate arrays). As opposed to ASICs, the functionality of FPGAs is not determined in the factory. They are rather configured or programmed in the end product. To achieve this flexibility, FPGAs contain arrays of configurable logic blocks, programmable connections between the blocks, and input/output blocks for external communication (see Figure A). The logic blocks can be configured to perform any basic binary operations on its inputs, such as AND, OR, XOR etc. and the results of these operations can be stored in registers and wired to the inputs of any other blocks. Arithmetic operators like adders, comparators, and counters are built by combining several logic blocks. Thus arbitrary digital circuits can be implemented in FPGAs, and they can be reconfigured within

milliseconds at any point during use. FPGAs blur the boundary between software and hardware: they approach the performance of ASICs while maintaining the flexibility of programmable processors. Configurable Computing is the relatively new field of research, which explores the use of configurable hardware, mainly in the form of FPGAs. There are many promising application areas for this technology. FPGAs allow "field hardware upgrades" for devices with fast changing standards, like cable set-top boxes or mobile phones. One can also imagine novel appliances like a mobile phone, which reconfigures itself into an MP3 audio player. And a standard microprocessor and FPGAs can be combined to form hybrid computers in which the FPGAs act as flexible coprocessors. Figure B shows a typical architecture with a coprocessor board containing FPGAs and local memory supporting them. A coprocessor can, for instance, perform hardware data encryption at one point in time, and then be instantly reconfigured for image processing. In general, the coprocessor performs computation intensive, repetitive parts of an application, which would be slower on the microprocessor. This approach is therefore called "hardware acceleration". Even hybrid chips, which contain both a microprocessor and configurable hardware, are already commercially available.

However, there are many problems to overcome in order to make Configurable Computing a mainstream technology. Most specific to the particular FPGA device. Therefore so-called synthesis tools have been developed to simplify FPGA circuit generation. They generate the circuit structures from higher-level, device independent descriptions. Several researchers take this even further, aiming to synthesize hardware directly from a software programming language like C. This means that the user describes the desired functionality of a system, not its structure, and the tool automatically determines which hardware operators are needed. This approach opens Configurable Computing to software developers without hardware design experience.

My Marie Curie fellowship project "Multi-level Synthesis and Optimisation for Reconfigurable Hardware" involves the use of C programs as well as lower-level specifications. It concentrates on hardware acceleration on hybrid computers. It is useful to specify entire applications for these computers as software programs, and to automatically generate coprocessor configurations for those program parts which can exploit the configurable hardware. This approach - called hardware/software codesign - allows experimenting with different hardware/software partitionings, i.e. allocations of program parts to software (on the microprocessor) or hardware (on FPGAs).

I devised a technique called "Pipeline Vectorization" which adapts vectorization - a method originally developed to simplify the programming of supercomputers - for configurable hardware. It synthesizes pipeline circuits (which efficiently perform many operations in parallel) from suitable software program parts. The design flow is outlined in Figure C. Using a prototype compiler implementing this technique, we accelerated image and signal processing programs significantly, using a standard PC

importantly, "programming" an FPGA is not as simple as programming a microprocessor: it essentially means designing a digital circuit, i.e. a structural description of operators and wires. But directly stating what operators need to be configured into the FPGA and how to connect them is a very tedious and error-prone process, and is spe-

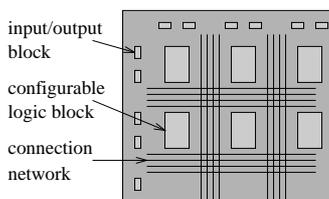


Figure a: FPGA Structure

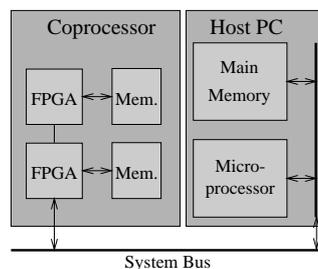


Figure b: Hybrid Computer

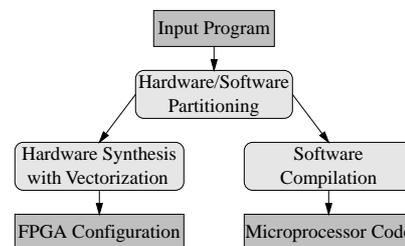


Figure c: Design Flow

decoding overhead. But ASICs are inflexible since they cannot be programmed for other tasks. Examples of ASICs are custom graphic chips for personal computers, which can paint pictures on the screen much faster than a general-purpose processor can.

Recently, a new development in integrated circuits has offered a

and an off-the-shelf FPGA coprocessor board. Other aspects of my project include the automatisisation of the hardware/software partitioning and the use of run-time reconfiguration, i.e. reconfiguring FPGAs within an application to overcome hardware resource constraints.

References:

General:
J. Villasenor and W. H. Mangione-

Smith: "Configurable Computing", Scientific American, June 1997
IEEE Computer magazine, Special Issue on Configurable Computing, IEEE Computer Society Press, April 2000

My work:

M. Weinhardt and W. Luk: "Pipeline Vectorization for Reconfigurable Systems", Proceedings Int. Symposium on

FPGAs for Custom Computing Machines 1999 (FCCM'99), IEEE Computer Society Press, 1999
M. Weinhardt and W. Luk: "Pipeline Vectorization", submitted to IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (for pre-print see www.doc.ic.ac.uk/~mw8/#publ)

Markus Weinhardt
m.weinhard@computer.org
is a Marie Curie fellow at Imperial College, London, where he is working as a post-doc on Configurable Computing. He received a Doctor of Engineering degree in Informatics from the University of Karlsruhe, Germany.

MCFA local groups

A Day at the National Contact Point

Camilla Lauren-Määttä visited the UK National Contact Point

The UK National Contact Point for Marie Curie Fellowships is located in the Office of Science and Technology (OST) at the Department of Trade and Industry in London. Within the OST office, the International Directorate is responsible for planning, co-ordinating and managing UK involvement in the European Union's science and technology activities including the European Union's Fifth Framework Programme. The directorate is divided into four sections called Europe I, containing the National Contact, Europe II, Europe III and The Rest of the World.

I meet up with Paul Wright and Jane Grady from Europe I in the big glass building where they work, centrally located in Westminster. In all, there are five people employed on Europe I, which also has responsibility for other areas of work aside from the Improving Human Potential (IHP) Programme. Jane and Paul are both civil servants and Paul, who is on loan from the Department for Social Security for two years, is the UK's National Contact Point. If you have contacted the UK National Contact Point, you will probably have spoken to Paul.

Most of Paul's work consists of replying to enquiries, for

instance by phone or email. Every university also has a European Liaison Officer of some kind as well as people dealing with the administration of fellowships. As a consequence, most of the day-to-day problems are sorted out locally, but research fellows usually turn to the National Contact for more specific problems relating to working and earning in the UK. The Contact Point also has its own web-site: (www.dti.gov.uk/ostinternational).

In 1999, the National Contact Point had 1,000 enquiries, and Paul expects an increase this year. He attends information meetings at the European Commission (EC) in Brussels a couple of times per year, but most of his contacts with the EC are by telephone. During an ordinary working day, two thirds of his time is spent dealing with enquiries. Typically, researchers want to know what is available or how to fill in an application form. Also, researchers coming to the UK may have practical problems relating to taxation or difficulties with their supervisor. In addition, they are worried about exchange rates, about the amount of money that the university is getting or the fact that they will have to pay National Insurance contributions.

Although Paul's main role is to provide information, he has also produced a model contract for use between institutions and fellows, which can be downloaded from the Contact Point's website. There is no requirement for institutions to use the contract, but it has been approved by the EC contract and legal staff. In addition, fellows can ask Paul to check whether obligations set out in the institution's contract with the EC are fulfilled. However, any disputes are for the fellow to take up with the institution, and then with the EC. As a complement to MCFA's Welcome Pack, Paul has also produced his own document on taxation and social security matters and he can also advise fellows about who to contact at their university or at the EC if they are having problems.

I asked Paul about the confusing fact that some fellows are paying tax in Britain, while others are not. He replied that tax in the UK is very different from most other European countries. The written contract is only one part of the picture. The Inland Revenue, the Ministry responsible for taxation matters, will look at the way a person does his work, how he is supervised and how the contract is set out in order to determine his/her tax liability.

Most fellows pay tax, but there are circumstances when fellows can be exempt from tax. For example, one fellow may not be required to pay tax because his or her work conditions are like those of a student (i.e., he/she has a contract of training, not a contract of employment).

Another fellow may choose to pay tax in his home country, if he has another income at home. A very independent fellow may be self-employed; in which case his tax arrangement will be totally different. Altogether, there are no rigid regulations and most cases will be looked at according to individual merits based on past practice and case law. However, the allowances paid to fellows are designed to take into account the tax and social security costs and fellows in UK should be receiving a similar amount to that of a UK national, with the same experience, working in the UK.

Paul also receives enquiries about the use of the Commission's allocation to the host institution (1200 euros a month for lab-based work or 900 euros for non-lab-based work). The host is granted an allocation to cover its administration costs, overheads, etc., the inevitable extra costs of hosting a fellow and running his/her project. The way in which this host's allocation is spent is up to the host to decide. Much of this money may be used in administration costs, but a host may also be able to dedicate some of it more directly towards the project. If fellows feel that the host's allocation could be spent in a particular way, they should approach their supervisor, department or host's administrative offices.

In addition to dealing with enquiries made to the Contact Point, Jane has attended a series of seminars round the country, most recently at Brighton and Sheffield Universities. At the

seminars, she has been talking about the IHP Programme with emphasis on Marie Curie Fellowships. The information is aimed at academic staff responsible for research fellows or projects, as well as at research fellows themselves.

Every country arranges its National Contact Point in a completely different way. The UK Contact Point is quite restricted in its resources compared to, for example, the German and the Irish Contact Points, which have several employees and more time to spare on promotional work. However, the UK Contact Point's resources are suitable for the amount of work that they do. The UK Contact Point cannot arrange to attend seminars more frequently than about once a month and prefers to attend regional meetings instead of separate meetings at each university. For example, the seminar in Brighton had representatives from several universities in SE England.

The UK is the most popular destination among Marie Curie Research Fellows, with about a third of all research fellows going there. Most fellows come from France and Germany, probably due to geographical and historical reasons. The overall

interest for the UK is probably a sign both of the high standard of British research institutions and research fellows' wish to improve their English. According to Paul, however, UK researchers are reluctant to participate in the fellowship scheme and take-up by them is low. Only 82 out of 1540 applications (5.6 %) came from UK researchers in the last round. He thinks that a proper two-way exchange is important and that UK researchers both have skills to bring abroad and benefits to gain from participating. The EC is also trying to encourage equal opportunities for men and women, and the goal is that 40 % of the applications would come from women. This figure was first achieved in the last round of applications.

Apart from advice about individual Marie Curie fellowships, Paul also offers advice on other IHP activities including research training sites - a list of new training sites has recently been officially proposed. IHP also provides funding to support access to research infrastructure by paying for additional running costs needed to keep research facilities open to visiting researchers. The system is very well supported and oversubscribed. Examples of infrastruc-

tures that have been supported are the "shaking table" facilities at Bristol University, which can be used to mimic grand geological events such as earthquakes, and special collections at the Natural History Museum. A research infrastructure can even be a specific habitat, such as a stretch of coastline, or access to a database.

IHP also funds Euro-conferences and Summer-conferences with a European dimension. The European dimension is mainly about bringing European researchers together and the content does not have to be specifically European. Also within IHP, the new Marie Curie Industry Host scheme aims at involving industry in European research collaboration. The first call mainly attracted big international companies such as pharmaceutical and electrotechnical giants. The lack of smaller companies has been criticised, but Jane points out that the proposals submitted were judged on their merits and only those which could provide high quality training, be they large or small companies, were funded.

Of the total budget for the Fifth Framework, 9 % (1280 million €) goes to the IHP Programme, including Marie Curie

Fellowships. No figures are available for UK alone, but the popularity of UK as a host country indicates that the UK benefits from the influx of researchers from other European countries. The Europe I section does not have much direct contact with British research councils, but funding from national research councils does go to EU citizens on a "fees only" basis. The National Contact Point does not have the resources to follow up former Marie Curie research fellows' careers, but the EC is about to launch a large study of fellowship programmes. Ultimately, this might show whether the money invested on research fellowships is well spent.

Camilla Lauren-Määttä
c.lauren@ic.ac.uk is a post-doctoral Marie Curie fellow studying clonal diversity in worms, at the Centre for Population Biology, at Imperial College's campus in Silwood Park, Ascot, UK. She obtained her Ph.D. in zoology at the University of Turku, Finland.

Discussion forum

Marie Curie (Fellowship Programme) Goes to her Country of Origin!

by Andrzej Sitarz

Introduction

The extension of the European Union to Central and Eastern European countries, though difficult and treated with caution both by the EU and the candidate countries, has taken its first step in the new 5th Framework Programme for Research and Technological

Development. For the first time the nations, which are kept in the anteroom of the EU were invited to participate fully in one of the European programmes. I hope that this is more than symbolic: as new technologies and scientific advancement will shape the future of the continent, the participation of all potential EU members shall be

of great advantage. It should therefore be in the vital interest of the European Union to support science and R&D also in the candidate countries, especially since science and education have suffered immensely from the harsh economic reforms of the last decade, where these reforms were quite often enforced to comply with the EU requirements.

Marie Curie fellowships and the entire IHP programme are targeting the most valuable assets we have: people.

What are the hopes ?

It is generally believed that the opening of the European Research Programmes will tight-

en the existing links and create new ones between researchers in both Eastern and Western Europe. Even more important is that the research centres in Central Europe will be able to offer their excellence for training and research to their Western partners. So far, the obvious difficulty has been the lack of money: it is rather difficult to attract Ph.D. students, postdocs or visiting professors, when one can only offer approximately 5-10% of their western salary or scholarship. For us, European mobility not only opens a new window and gives us a chance of work in the best research institutes: it also gives us a chance to survive. It is rather difficult to spend a lot of time on research and be motivated to do so, with a less than moderate income.

Although it is rather naive to think that the participation in this Programme alone may enforce the change in our internal policies on education and research, some influence will eventually be visible.

What are the problems ?

Of course the main problem is, that despite participating in the 5th framework programme on an equal basis with other EU countries, we still are not in the EU - and therefore we are not treated as EU citizens. This has some profound legal as well as financial consequences: on average, a Marie Curie fellow from a non-EU country will need to waste much more time on bureaucratic and legal matters (visa, residence permit for the fellow and his/her family, driving license etc.) and will need to spend much more on it, than his/her EU colleague.

It may also happen that he/she will not be entitled to certain allowances (for family, for instance) or that his/her spouse will not have the right to work in the host country. Can this be helped? Not unless we are given a stamp "to be treated as an EU citizen" (in all the languages, of course!) in our passports, I'm afraid. Or - just another solution - we are given the full worth of our fellowships, not what remains after it is stripped by the social insurance in the host country, and which we are unlikely to benefit from. But would anybody in Brussels care to do something about it ? I would welcome any remarks and possible solutions.

First results

The May 1999 deadline statistics can only help to estimate the participation of associated countries: the programme was not well known there at that time (it is still far less advertised than in the EU) and one can expect that the April 2000 call will have more applicants from Central and Eastern Europe. However, even from these preliminary data it seems a bit surprising that all of the associated countries contribute only 5% of the applicants (66 out of 1,457) (to compare: Germany alone had 10.8% and the UK 5.6%) - and more than half of them were from four leading Central European states: the Czech Republic, Hungary, Poland and Slovakia. Only 3.9% of the selected applicants (24 out of 617) - to compare with 12% for Germany and 5.5% for the UK - come from the CEE associated states, so the success ratio is slightly lower than for EU applicants. Only a few associated countries were chosen as the host country by 2% of the applicants, which is comparable with preferences for Austria (1.3%), Belgium (2.1%) or Greece (2.6%). However, less than 1% of the selected applicants will eventually start their fellowship there (actually only in the Czech Republic and Poland) - which is less than any other single EU country share.

How not to waste all these efforts ?

Of course this question is likely to appear in every European debate on research support and

probably many answers have already been suggested. From our perspective, the most important problem is how not to waste our human potential. Marie Curie fellowships give a good chance but they are only for 2 years and after that time we will be back to our old problems. Or will we have a chance to benefit from the return fellowships ?

For many of us, who will remain active in science and pursue our careers, the question arises whether we will also be able to benefit later from the EU support. Is it all a "one shot"- "fire and forget" matter, or will the EU - as does the Humboldt Foundation, for instance - support us also in the future, for instance for short visits and conferences?

Another important question: what is the Marie Curie fellowship actually worth? Does it help? Does it matter? This may also be important for some of us who will choose other options in life: will someone need to use their abilities? Will Europe need them ?

Our participation in the 5th Framework Programme is not a form of aid - we are paying our contribution, although I must admit that this is rather small at the beginning - and probably in the first years of the programme we will not be able to benefit from it to any great extent. It might be a subject of another discussion whether a new "aid" programme, addressed specifically to the Central European region, should be created. However, neither the participa-

tion in the European Programme, nor any aid programme, will solve our own problems with the under-financing of education and research, though both may facilitate the necessary changes.

We know that we will decide our own future but we also know that the attitude and the assistance of the European Union shapes our decisions. Marie Curie was not born in the EU. Her maiden name was Sklodowska and she was Polish-born and, well, in less than x years [take the mean value of years as estimated by the EU politicians until Poland joins the EU (when they speak to their own nations) divide by 2 (then you get what they say when they speak to us) and add 1 - that would approximate x] - she will be from the EU. Nevertheless the Marie Curie fellowships were not originally for us. However, this has changed now but we will have to wait to evaluate the impact of this fact.

Andrzej Sitarz
sitarz@if.uj.edu.pl
comes from Cracow, Poland. He has a MSc in Theoretical Physics and in Mathematics from Jagiellonian University, Cracow; after studying at Oxford and Cracow, he completed a Ph.D. in Physics, in Cracow in 1993. Following 2 years at Johannes-Gutenberg Universitat, Mainz and a year at Pierre et Marie Curie Université in Paris, Andrzej is a Marie Curie fellow, doing research in Mathematical Physics at Université Paris-Sud, Orsay.

Biobiz - www.eurobiobiz.com

Biobiz is a training program recognised, endorsed and funded by the European Commission DG Research advanced practical workshops. More than 110 people have already attended the workshops and 12 have started companies

Do you want to become a successful Biotech Entrepreneur ? Need to prepare a Business Plan ? Join the next workshops:

For workshop programme: <http://europa.eu.int/comm/dg12/biotech/biocour1.html>

To register, contact: Michel Lepers, michel_lepers@compuserve.com and specify that you are a member of the Marie Curie Fellowship Association.

For further information, please contact: Stéphane Hogan, Quality of Life programme, European Commission Research DG: stephane.hogan@cec.eu.int

London	4-6 July 2000
Berlin	18-20 July 2000
Cambridge	1-3 August 2000
Tel Aviv	5-7 Sep. 2000
Stockholm	26-28 Sept 2000
Eindhoven	19-21 Sept. 2000
Lyon	3-5 October 2000
Lisbon	17-19 Oct. 2000
Vienna	21-23 Nov 2000

continued from page 4

Nobody wants to be there when things go seriously wrong, so perhaps the most important factor of all in deciding to join a start-up is that you believe in the concept, the philosophy, the people you are going to work with and the product of the new organisation. Once you have decided that you do, then there are many reasons to join and no real reason not to!

From my personal (still limited) experience, the main differences between my day-to-day working environment in academia and at

BiOMaDe is the contact with scientists from different backgrounds and the confidentiality with respect to results, necessary to protect the patent position of the organisation. Things that you have always regarded as common knowledge, are often not so common in other fields of science, and therefore a lot of attention and effort is focused on communicating concepts, ideas and results effectively to a diverse audience within BiOMaDe. On the other hand, there is the need to protect intellectual property (otherwise we will all be out of a job soon!), and therefore a certain restraint in

communicating to the outside world is mandatory. This is something I have never had to contemplate before, but is inherent when working in an environment that ultimately depends on the market for its success. The most striking

difference, however, is the dynamics and excitement, the continuous buzz of being involved in building up an organization, resulting, hopefully, in the creation of a new, viable, research institute of high quality.

Wim Meijberg
w.meijberg@chem.rug.nl
obtained his Ph.D. in Biochemistry from the University of Groningen, NL and recently finished a 2- year MC fellowship at Imperial College, London, where he worked on folding processes of membrane proteins. He currently holds a

position as project leader at BiOMaDe, working on applications of channel proteins. BiOMaDe is a start-up organization whose core interest is in development and commercialisation of molecular nanotechnology. For more information and job vacancies, see www.biomade.nl.

Diary of events

2nd MCFA National Co-ordinators Workshop 21-23 July in Sophia Antopolis, France

Investing in Europe's Human Research Potential 4-7 October in Crete, Greece. EC, Greek government, MCFA and the Greek MCFA group.

Information from:
iehrp@iesl.forth.gr or
www.mariecurie.org

The Pan-European Conference on Science and Technology: Prospects for the 21st Century 9-11 October in Gdansk, Poland with the Council of Europe. European Young Scientist's forum co-organised by the MCFA on 7-9 October. Information from www.mariecurie.org

2nd Annual Thematic Conference, in collaboration with ESF.

Competitive European Research: the Vision of Young Scientists, and 3rd AGM 3-5 November at the Max Planck Institute in Stuttgart. Information from www.mariecurie.org

EU/MCFA Workshop for Scandinavian Marie Curie fellows at University of Copenhagen (Denmark) 4-6th September 2000. For more details contact: Dr. Ana M. Cerdeño amct@sanger.ac.uk and/or Dr. Wolfgang Kerner wolfgang.kerner@cec.eu.int

MCFA News

Editor

Maziar Nekovee (London)

Associate Editor

Jennifer McClarey (Brussels)

Editorial Committee

Norbert Glaser (Munich)
Sabine Kröner (Berlin)
Camilla Lauren-Määttä (London)
Laure Ledoux (Norwich)
Christina Line (Oxford)
Oliver Schwickerath (London)

MCFA News is published by the **Marie Curie Fellowship Association**, but the views and opinions expressed in this publication do not necessarily reflect those of the MCFA.

Letters and other contributions are welcomed and should be submitted to the editor m.nekovee@qmw.ac.uk and a copy to mcfa2@mariecurie.org

Letters may be shortened and edited for clarity. Please include a full postal address in your e-mail and mention as subject "MCFA News".

Advertising

Contact Jennifer McClarey mcfa2@mariecurie.org at our office in Brussels

Copyright 2000, Marie Curie Fellowship Association.
www.mariecurie.org

Lay-out and printing

SKI touch
71, Deschanel avenue
1030 Brussels
www.skitouch.be

What is the MCFA ?

The Marie Curie Fellowship Association (MCFA) is the representative body of all former and current holders of a Marie Curie fellowship. Marie Curie fellowships are research and mobility training grants awarded to scientists from EU countries by the European Commission. The Association was initiated in November 1996 by the European Commission, in recognition of the enormous potential of Marie Curie fellows as future scientific leaders, and in acknowledgement of the need for an interdisciplinary European network of young scientists.

The MCFA is a non-profit organisation, governed by an elected administrative board, with national groups in all EU member states. MCFA members span the biological, physical, and social sciences and are represented in both acad-

emia and industry. The major aims of the Association are to:

- help advance science in Europe and increase the appreciation and understanding of science by the general public
- create a clear and visible identity for Marie Curie fellowships
- establish a structured interface between fellows and the world of research and industry
- develop and foster the international dimension of Marie Curie fellowships

Membership benefits :

- national and international scientific meetings
- an electronic careers network and an interface between the members and potential employers
- assistance and advice for current fellows on issues related to their fellowships and integration in the host country

- feedback to the EC on the implementation of the fellowship programmes
- a strong voice for young European scientists within the science community

If you are a current or former holder of a Marie Curie fellowship, you are eligible to join the MCFA; your registration details can be completed and submitted electronically on our Web site.

Further information

For further information consult the Association's Web site: www.mariecurie.org or contact our European office:

Marie Curie Fellowship Association
Rue du Champs de Mars, 1A
B-1050 Brussels
BELGIUM

Tel:+32 2 511 0678
Fax:+32 2 511 5055
e-mail mcfa@mariecurie.org



SmithKline Beecham

Marie Curie Industry Host Fellowships

We are delighted to be able to offer an excellent opportunity to carry out high quality research within a world-leading drug discovery environment.

In recognition of our excellent reputation for high quality research and our on-going commitment to in-house research training, SmithKline Beecham has been awarded a number of European Commission funded Marie Curie Industry Host Fellowships.

The Fellowships have been awarded in the following research areas:

- Biology and genetics of bone disorders.
Two fellows. (ref: F0034)
- GSK3 mediated signal transduction cascades in CNS disease.
One fellow. (ref: F0036)
- Microchannel approaches to the combinatorial synthesis of small organic molecules.
Two fellows. (ref: F0041)
- Elucidation of membrane protein structure using transition metal binding sites.
One fellow. (ref: F0027)
- Expression cloning of novel stress activated non-selective cations.
Two fellows. (ref: F0029)
- Beta-cell protective gene identification: Potential novel targets for diabetes therapy.
Two fellows. (ref: F0042)
- Proteins, which modulate neuronal cell death.
One fellow. (ref: F0028)
- Functional studies of cyclic nucleotide-gated channels on neuronal growth cones.
Two fellows. (ref: F0043).

Full details on individual projects and vacancies may be found on:

http://www.cordis.lu/improving/src/hp_mcf.htm, under "Vacant Positions for Researchers in Marie Curie Hosts", by entering project title in free text search.

The successful candidates will be based at our impressive UK Research facilities 25 km north of London at New Frontiers Science Park, Harlow. Here they will benefit from a full range of state-of-the-art research facilities and highly competitive salary. Relocation allowance will also be provided.

Under the conditions governing these grants, the following eligibility criteria apply:

Applicants must have a doctoral degree and be nationals of EU Member State or an Associated State or have proof to have resided in Member States for at least 5 years prior to their selection by the company. At the time of selection, fellows may not be employed by the company or an affiliated organisation, and may not have been employed in research in any industrial or commercial company for more than one year following completion of their university studies (graduate level). The age limit at the time of selection is 35 (allowances for childcare or military service may be given). Duration of training will be 24 months. More details about the eligibility criteria may be found on:

http://www.cordis.lu/improving/src/hp_mcf.htm

To apply, please send your CV quoting the appropriate reference on the letter and envelope to: UK Academic Liaison, SmithKline Beecham plc, H24/130, NFSP-North, Harlow, Essex, CM19 5AW, United Kingdom or email, quoting the appropriate reference number in a subject line to: uk_academic_liaison@sbphrd.com