Marie Curie Actions

Where innovative science becomes success
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Cataloguing data can be found at the end of this publication.
doi 10.2777/97959

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Science would stand still if young people never dared to become researchers: seeking the training they need, the skills they need, and the networks they need to push the boundaries of human knowledge. But the career of young researchers has traditionally been tough and full of hurdles, for instance, due to job insecurity or difficulties in reconciling professional and family life.

The Marie Curie programme, since renamed the Marie Skłodowska-Curie programme in recognition of the scientist’s full name, has been working towards lowering these hurdles since 1996 by providing financial support to young researchers wanting to expand their horizons through a period of work in another European country. It has encouraged researchers to work together, fostered pan-European collaboration and built upon EU cultural and social diversity. In short: Marie Skłodowska-Curie Actions (MSCA) put individual researchers at the centre of policy and seek to address many of the issues they face.

Being a programme based on fellows, MSCA aim to support the professional development of those who decide to become scientists. Many of the criteria demanded from applicants, besides excellent science, are conceived to help fellows mature and grow. The opportunity to build experience and obtain scientific and transferrable skills enlarges their curricula vitae, demonstrates their flexibility and increases their employability.

This book profiles some of the Marie Skłodowska-Curie projects financed under the Sixth Framework Programme for Research and Technological Development and Demonstration (FP6). During the training period (2003-2012), funding was provided for almost 14,500 fellows coming from 121 Countries. The book therefore presents only a limited selection of the outstanding accomplishments of this multidisciplinary international research programme.

The 30 projects showcased on the pages that follow demonstrate, however, what the whole MSCA world - research fellows, project coordinators and participants, organisations, mentors - was able to achieve at the beginning of this century by investing in research and innovation.

The European Union’s next research framework programme, Horizon 2020, will build on the experience gathered so far, helping Europe’s brightest and most creative minds extend the frontiers of knowledge by strengthening activities, including Marie Skłodowska-Curie Actions, that support researchers’ careers and mobility.

Marie Skłodowska-Curie researchers all have extraordinary stories to tell. We hope the successes illustrated here will inspire others to follow in their footsteps.

Máire Geoghegan-Quinn, Commissioner for Research, Innovation and Science.
Among the various elements that contribute to the progress in knowledge and technology, mobility and training of researchers have undoubtedly a key role.

Science and technology appeared on Earth 2.6 million years ago, when first Homo habilis learnt how to modify stones for making tools. This knowledge spread around the world and it has never stopped to evolve faster and faster. With the Industrial revolution of the 19th century the face of the western world changed dramatically: in only 150 years, technology advanced more that in all the previous years. By the end of the 20th century, the digital revolution has changed the world in a period shorter than a human life.

Science and technology evolved during the centuries, and so did the researchers, the global scientific community. For a researcher the exposure to different work environments, new methods, new ideas, and new discoveries is essential. When Marie Sklodowska-Curie moved to France she did not know that she would have been the first person honoured with two Nobel Prizes, in physics and chemistry. But that is the key.

The Marie Curie Actions (MCA) were launched in 1996. A mobility programme dedicated to the development of researchers career throughout Europe, one of the initiatives towards the creation of the European Research Area. The idea behind is very simple: the researchers should have a stable career, with decent employment conditions; they should have access to the necessary training and information for increasing the level of professionalism and giving them more power in a highly competitive and demanding world.

Today they are well known among researchers as one of the most prestigious schemes to support mobility of scientists across and outside Europe.
During the last 16 years Europe has witnessed the largest amount of mobility of researchers, creation of consortia, development of training schemes, improvements in the working conditions of fellows, and biggest quantity of scientific results in every branch of knowledge ever produced in the history of European science, and Marie Curie Actions (MCAs) were certainly among the key drivers.

Over two million years ago, by hitting one stone against another, our ancestors obtained a tool that improved their life. Today, a scientist can operate complex software for massive data analysis needed to search for the Higgs particle, as the researchers included in the ARTEMIS Marie Curie funded project.

We are currently witnessing the end of the last projects that have been supported by MCAs within the 6th Framework Programme for Research and Technology Development (MC FP6). Thousands of persons (academics, students, private entrepreneurs, stake holders) have been involved in 4,065 research projects funded by the European Commission with a budget of approximately 1,900 million euro. This investment in researchers contributes to many actions that underpin the emergence of a knowledge-based society in support of the Innovation Union. The scientific community, the enterprises, the stakeholders and the EU institutions have cooperated constructively to produce high quality outcomes that will impact our way of living.

Overall 561 consortia and 1,603 institutions from Member States, Associate Countries, and Third Countries, have got funding and trained around 14,500 fellows for participating in the research projects.

The large quantity of MC FP6 projects has resulted in new scientific data that has pushed forward the frontiers of knowledge. It has produced hundreds of technical developments, new methods for the treatment of diseases, progresses in social sciences. Thousands of young researchers moved throughout Europe and beyond and obtained high quality training.

On one side, the programme has allowed research institutions of less favoured regions of Europe to create networks with the most prestigious European universities and centres of excellence, allowing them to benefit from their installations, facilities, and the know-how of their staff, fostering the transfer of knowledge. On the other side, Member States with strong research capacities have benefited of the important flows of researchers mobility created by MCA. All the above-mentioned trends have grown conspicuously in Europe since the beginning of Marie Curie Actions in the 6th Framework Programme, contributing to structuring the European Research Area.

Being at the end of MCAs in FP6, this seems the moment to draw lessons from the efforts made by those who have been involved, bringing the result of their research before the scientific community and the general public.

The participants of the Marie Curie programme have contributed to write the most recent pages of the history of European science. A whole library would be necessary to include all their inputs. Therefore we can show here but a selection of success stories. No doubt that not all are present, but, all the present stories are a contribution to the success of MCA. They account for less than 1% of the total projects funded through the programme. Not all the contributions that deserved to be presented have been included and the choice was difficult. The criteria used for gathering these stories tried to take into account the diversity of MCAs such as geographic, thematic, as well as the different actions included in the programme.

Hence, the reader will discover how a MC FP6 project led by a scientist from Coimbra University, BICEP, has opened the door for creating a company that is making profit in the middle of the economic crisis and despite the recession. How? By devising ways to compare complex information processing systems.

One will also learn how projects contributed to the challenge of ageing in a healthier way by providing useful knowledge for fighting against diseases. The team of Canceromics established a world-class laboratory to develop unprecedented technologies for cancer profiling and analysis. The reader will find out how they came up with microarray technology for the rapid functional analysis of all genes and their role in cancer.

Those who are expecting to know more about the contribution of the programme to the different fields of knowledge, and in particular, those interested in social sciences, will be able to follow the steps of the members of the HEEAL project, which have obtained remarkable results through a highly multidisciplinary research. Their investigation, bringing together archaeology, ethnology, and natural sciences, has contributed to the knowledge of the long-term historical ecology of East Africa from pre-colonial times to the present, taking into account historical, anthropological, and environmental issues.

Diving into the pages of this book, the reader will discover that the future is already here. See how the 3D Anatomical Human project has made a reality of a series of techniques for tackling musculoskeletal problems that several years ago were only seen in science-fiction movies. The results of Bioseal project show how researchers try to make it possible to continue having a comfortable life being respectful of the environment, and how ecological products can be economically worthy.

The examples mentioned are only six out of the 30 projects collected for this publication. The success stories may help to learn how the ever accelerating world of science and technology is ready to go fast through the 21st century, how the persons who participated in Marie Curie projects in FP6 are the main actors of the contemporary history of European science, throwing the arrow of time towards the future, and paving the way for the next chapter, the recently launched new Programme for Research and Innovation: Horizon 2020.

http://ec.europa.eu/research/mariecurieactions/
Ground-breaking research redefines economic analysis

What economic and non-economic factors determine an individual’s well-being? And how can these be applied when assessing the convergence of Europe’s regions in terms of performance? These were the key questions addressed by Professor Luisa Corrado under the EURECON project - “Regional convergence clusters across Europe: methodological issues and empirical evidence”.

The project undertaken from 2005 to 2007 at the University of Cambridge and supported by the Marie Curie Actions looked at the economic and non-economic determinants of well-being across Europe and asked what level - individual, regional or national - matters most for individual well-being and whether the key underlying drivers differ within and between these different levels.

The results revealed a more varied set of drivers underlying individual well-being across regions in Europe than previously assumed. For certain non-economic variables, regional factors have a very significant effect of an individual’s position.

“Increasing interest in moving beyond just economic indicators to gauge national performance.”

“More importantly my research did find disparities both in income and subjective well-being both across nations and across regions in Europe. If economic cohesion is to be achieved across European regions then just targeting economic variables is not enough. Paying greater attention to subjective well-being at the regional level could have significant implications for social intervention and even for economic policy”, she suggests.

For the research achievements of the EURECON project Professor Corrado was awarded the Marie-Curie Excellence Award in 2008 and she was commended by the jury as “an outstanding young researcher who is working in a field of great interest to the public, a model candidate for the Marie Curie Award”.

The results of the EURECON project, particularly the research on the determinants on individual well-being, received widespread media coverage worldwide provoking a lively debate in professional circles.

With articles published in leading academic journals such as The Economic Journal, Journal of Regional Science, the Journal of Economic Geography, Regional Studies and many more, the project results have received great visibility in the research community. “Without the Marie Curie Fellowship I would have never been able to achieve such remarkable results – both in terms of visibility and of quality of the research output”, Professor Corrado says. “The fellowship gave me for the first time total autonomy and the opportunity to achieve leadership in my research area”.

The success of the project and the mobility afforded under Marie Curie Actions helped secure her current position as Associate Professor at the University of Rome Tor Vergata, Faculty of Economics (Department DEDI). The EURECON project has also given her the opportunity to establish long term collaborations with several research centres in Cambridge. She has been appointed Research Associate at the Centre for International Macroeconomics and Finance (CIMF), the Centre for Microeconomics (CReMic), and associate of Cambridge Finance (CF), an interdisciplinary research centre at the University of Cambridge.

Her ground-breaking work continues with particular focus on more fundamental research questions regarding cross-country and interpersonal comparability in subjective well-being and developing a statistical framework for such research which can feed into public policy responses.
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