

# Annual Report on the ERC activities and achievements in 2009

Prepared under the authority of the  
ERC Scientific Council



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EUROPEAN COMMISSION

**Annual Report on the ERC  
activities and achievements in 2009**

ERC  
European Research Council



European Research Council  
Executive Agency

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**Highlights - 2009 in review 11**

**Assessing Impact 17**

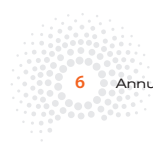
**Advancing the Frontier 25**

**ERC Scientific Council and Executive Agency 35**

**Outlook for 2010 14**

**Annexes 43**

**Table of Content**





## Commissioner's Introduction

It is with a real feeling of pride that I share with you this year's ERC Annual Report showcasing the achievements of the ERC in 2009. I am particularly proud that the ERC has rapidly established a worldwide reputation for excellence as illustrated by the many statements and speeches made by key political and scientific stakeholders.

The numbers speak for themselves. Since its launch in 2007, the ERC has handled more than 15,000 applications, set up a peer review system involving some 80 panels, 800 panel members and 2,000 peer reviewers. Nearly a thousand proposals have been selected for funding - of those, 835 grant agreements have been signed for a total of 1.3 million euros.

A brand new organization has been created from scratch, with the enthusiasm and devotion of the ERC Scientific Council and my predecessor Commissioner Janez Potočnik, by numerous staff from the European Commission, from national organisations and, with time, from the newly recruited ERC Executive Agency staff. I want to thank the staff of Directorate General for Research for their tireless and valuable contributions.

I warmly thank the entire Scientific Council, and in particular its founding President, Professor Fotis Kafatos, who has accompanied the ERC from the cradle and devoted much of the last three years to this outstanding organisation before passing the leadership to Professor Helga Nowotny. Thank you also to both of the ERC Secretaries General for their assiduous and pioneering work invested in developing the scientific strategy and leadership in helping getting the ERC where it is. As for the ERC Executive Agency staff, I am proud of these 262 people, recruited from 20 Member States so far. Fears that we would not get the best people were quickly proven to be unfounded.

The ERC represents a wonderful opportunity for the very best of Europe's researchers. But it is much more than that. Funding frontier research is the most effective way of bringing great ideas to life and the best way of advancing knowledge. It is by investing in knowledge that Europe can ensure its future prosperity and respond to the challenges of global competitiveness. Investing in excellence, is investing in our very capability to seize the opportunities of tomorrow's world. It is our ability to widen and deepen this capability which will define the fate of Europe's economy, society and our very place in the world. Tomorrow's economic blue skies need today's blue sky research.

The contribution of the curiosity-driven research funded by the ERC in addressing them is undeniable. I am confident that the ERC will continue to pursue excellence, and to involve and inspire the brightest and the best of our researchers across Europe.

**Máire Geoghegan-Quinn**  
*European Commissioner for Research,  
Innovation and Science*







## Personal message from the ERC President

In its short life the ERC has already achieved some remarkable accomplishments. About 400 publications acknowledging ERC funding have appeared in high impact scientific journals in 2008 and 2009. Close to 1000 individual research teams have already been funded by ERC, a great contribution to training the next generation of researchers. The high number of excellent but unfunded ERC proposals elicited additional national funding from research funding organisations in France, Switzerland, Italy, Spain, Sweden, Hungary, Norway, and the region of Flanders. The ERC peer review system is greatly recognised and already highly respected by the entire scientific community.

These impressive results have been attained thanks to adherence to a few fundamental principles: a pan-European competition for talents based on individual excellence only, as evaluated by peer-review; funding bottom-up frontier research through calls that encourage risk-taking research, promote interdisciplinary and provide flexibility and portability of funds.

The success of the ERC has been made possible thanks to the close collaboration between its constituent parties: a governing Scientific Council, with its 22 members who have set up and continue to monitor and adapt the strategic priorities of the ERC and who have put in place the peer review evaluation structure; and an Executive Agency of 262 experienced, dedicated and enthusiastic staff who have provided critical support in the peer-review process, implemented the ERC strategy and executed the financial operations. Ernst-Ludwig Winnacker, who was the Secretary General until the end of his term in June 2009, and his successor, Andreu Mas-Colell, have worked tirelessly towards a seamless and integrated organization.

In all this process, the enlightened political support from the European Commission, through its President and Commissioner Janez Potočnik, has been invaluable. The Director General of DG Research José Manuel Silva Rodríguez and his staff have provided their precious cooperation and assistance towards autonomy.

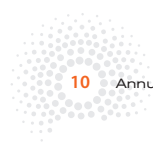
Finally, let me mention the synergy of several key players, such as national funding agencies, EUROHORCS, national governments and others and the overwhelming trust and dedication from the scientific community in Europe and beyond.

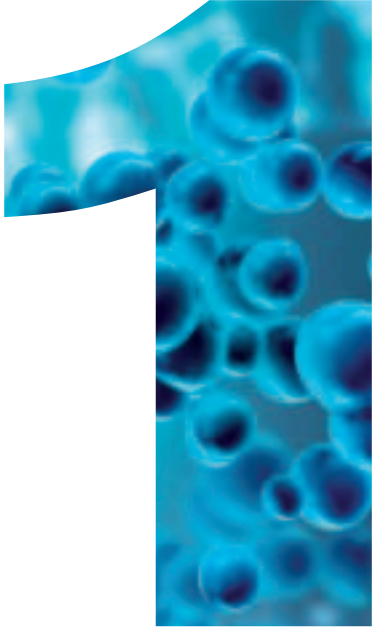
This report, prepared by the ERC Scientific Council, shows the main achievements of the ERC in 2009. But it also suggests that major challenges are ahead.

2009 has been the year when an independent high level Panel has carried out a review of the ERC's structures and mechanisms with the full involvement of the ERC's Scientific Council. The next steps towards long-term sustainability of the ERC include the need to further adapt rules and regulations to its mission, integrate the ERC governing structures, rise up to a higher level of professionalization and, if necessary, prepare for long term structural changes. The Scientific Council, from its part, is committed to do its best to meet these objectives, while continuing to work hard to fulfill the ERC's unique mission, a fundamental contribution to the transformation of Europe into a world-leading knowledge society.

**Prof. Helga Nowotny**

**ERC President and Chair of its Scientific Council**





# Highlights - 2009 in Review

## 1.1 Mission

The European Research Council (ERC) marks a new approach to investing in frontier research in Europe. Funded through the European Community's Seventh Framework Programme for research (FP7) as the implementation of the "Ideas" Specific Programme, the ERC aims to enhance the dynamism, creativity and excellence of European research at the frontier of knowledge.

Projects are funded on the basis of proposals presented by individual researchers on subjects of their choice including interdisciplinary and high-risk projects. There are no thematic priorities. Proposals are evaluated on the sole criterion of excellence as judged by international peer review. There are no restrictions on the nationality of the principal investigators to be funded by the ERC, but they must carry out their proposed work primarily within the European Union or its associated countries.

## 1.2 Main Achievements in 2009

The "Ideas" Specific Programme budget, implemented by the ERC, is €7.5 billion over a period of seven years. It represents around 15% of the entire FP7 budget (see Figure 1).

In the implementation of the programme in 2009, commitments of €794.5 million (global commitment) and payments of more than €221.4 million were fully executed, representing 100% of the operational credits of the "Ideas" Specific Programme for 2009. Around 2.2% of the executed budget of around €845 million was spent on administration.

In response to the two 2009 calls for proposals, the ERC received over 4,000 grant proposals and made 488 new awards to individual investigators at around 220 universities and other public and private institutions throughout the EU and associated countries. More than 3,900 proposals evaluations were conducted, involving 800 reviewers organised in 25 different panels and around 2,000 external reviewers.

More than 50% of the grants were signed within 4 months after the end of the evaluation. However, the granting process lasted on a few occasions only 26 days. The reason for delays in granting are mainly related to requests for a later starting date, a complicated ethical review or a change of host institution.

### Growing number of ERC grant holders

The ERC schemes have been well received by the research community. More than 15,000 proposals for funding were received in the first four calls of the ERC Starting and Advanced Grant schemes since 2007 and more than 900 frontier research projects were up and running in prestigious research institutions in Europe by the end of 2009 (see Figure 2).

Figure 1 - Annual budget evolution 2007-2013

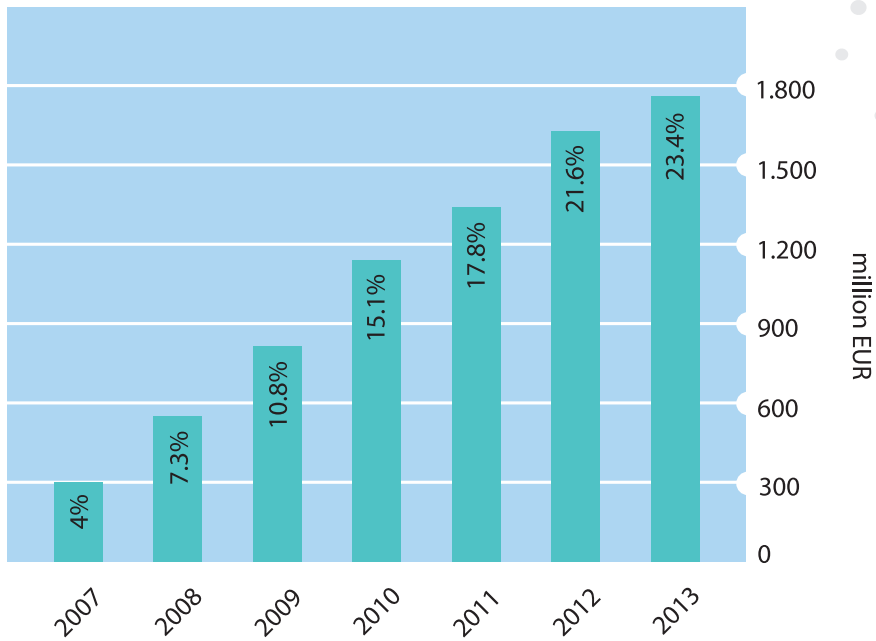
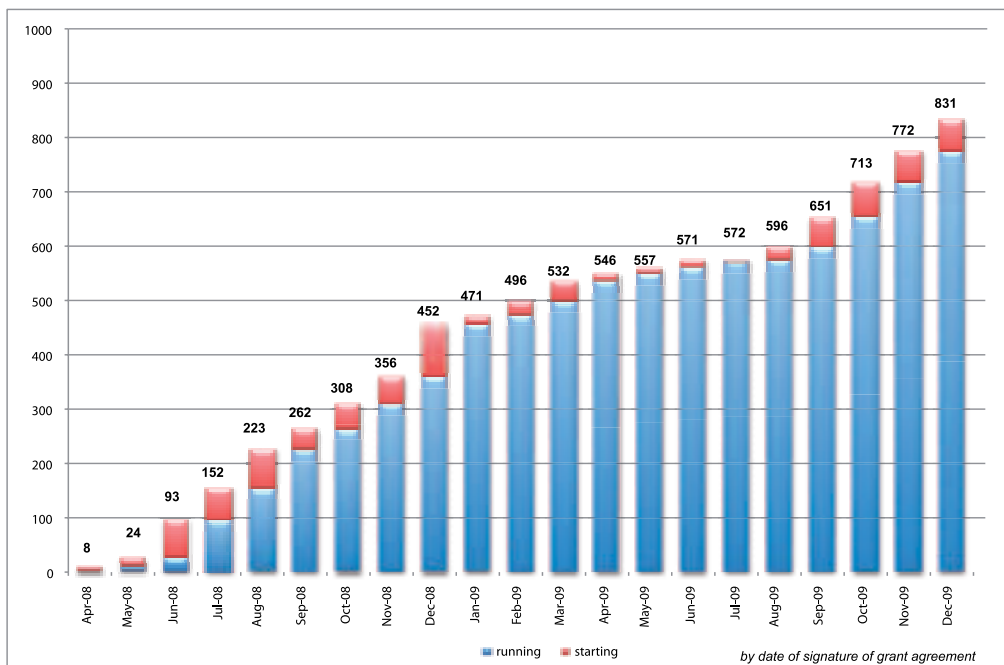


Figure 2 - Evolution of number of ERC funded projects



## The continuous transition to an effective and efficient organisation – Reaching administrative autonomy

The efficient operation of the second Advanced and Starting Grant calls during 2009 underlines the successful organisational development of the ERC Executive Agency, created to implement the Ideas programme as an integrated constituent of the ERC.

The Agency staff increased in 2009 up to 262 members, a new organisational structure was established and the Agency moved to a new building in September 2009. The substantial progress made in further developing administrative procedures led *inter alia*, to a significant reduction of the time to pay and the time to grant.

This year, the Agency became autonomous. The transition has been progressive and the ERC Executive Agency, which was already legally established by the Commission in December 2007 (Decision N°2008/37/EC), reached administrative autonomy on 15 July 2009.

Since autonomy, the Agency is responsible for all aspects of administrative implementation and programme execution as provided for in the Work Programme. In particular, it implements the evaluation procedures, peer review and selection processes according to the principles established by the Scientific Council and ensures the proper financial and scientific management of grants.

### “ERC – The future starts today”

On 24 September 2009 the ERC Executive Agency was officially inaugurated with an event addressed by Tobias Krantz (Swedish Minister for Higher Education and Research, representing the Presidency of the EU), Janez Potočnik (European Commissioner for Science and Research), Herbert Reul MEP (Chair of the European Parliament’s ITRE Committee), Prof. Fotis C. Kafatos (President of the ERC and Chair of its Scientific Council) and Dr Jack Metthey (Director *ad interim* of the ERC Executive Agency) and attended by invited stakeholders and ERC staff.





**ERC Review Panel with the ERC President and the European Commissioner.** From left to right: ERC President Fotis Kafatos, Yves Mény, Fiorella Kistoris Padoa Schioppa, Lars-Hendrik Röller, Vaira Vike-Freiberga, Commissioner Janez Potočnik , Elias Zerhouni, Lord David Sainsbury


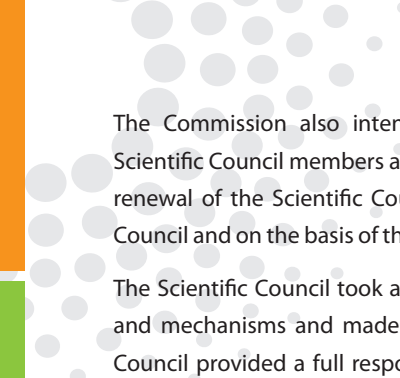

### 1.3 A review of the ERC structures and mechanisms

Between February and July 2009 a comprehensive Review of the ERC's structures and mechanisms was undertaken by an independent panel of experts appointed by the European Commission, to take stock of the ERC achievements and to give advice on the direction it should take for the future. This Review was foreseen in the "Ideas" programme as part of the 7<sup>th</sup> Framework Programme.

The overall conclusion of the Review, conducted by eminent representatives of the science and policy domains from the EU and US, was that the launching of the ERC represents a remarkable success for a novel and essential instrument for European science. Nevertheless, concerns were expressed about the long-term sustainability of the scheme, and the need to further adapt the governance structures and mechanisms, administrative rules and practices to the ERC's mission.

The European Commission, in a communication issued in October 2009 in response to the Review, set out the strategy and proposed actions for the next phase of the ERC, building on the recommendations made in the ERC Review Panel's report.

These actions include: recruiting the Agency's Director as a distinguished scientist with solid managerial and administrative experience; integrating the ERC's communication strategy to achieve a clear vision, seamless coverage, reinforced transparency and reduce the risks of conflict of interest; clarification of the roles of the Agency and the Scientific Council and exploration of the possibilities of offering honoraria to members of the Scientific Council attending Scientific Council plenary meetings (in recognition of their personal commitment, particularly the Chair and the Vice-Chairs).



The Commission also intends to establish a standing independent Identification Committee for future Scientific Council members as recommended by the ERC Identification Committee of 2009 to ensure the staged renewal of the Scientific Council. This Identification Committee will work in consultation with the Scientific Council and on the basis of the criteria and methodology already established and endorsed by the Review Panel.

The Scientific Council took a very close interest in the work of the independent Review of the ERC structures and mechanisms and made a series of contributions to its deliberations. On 25 August 2009 the Scientific Council provided a full response (available on the ERC's website) to the final report of the Review Panel. The recommendations for legal, financial, procedural and administrative improvements of the ERC operations were generally considered positively and particular attention was paid to proposals aimed at adapting the administrative regime better to meet the ERC's mission and to the need to consider further its legal structure. Certain measures recommended by the Review Panel, such as making public the summarized minutes of the Scientific Council plenary meetings, and the establishment of a permanent committee of the Scientific Council dealing with conflicts of interest issues and one on the selection of evaluation panelists, were implemented immediately by the Scientific Council.





*The ERC's mission is to fund long-term frontier research,  
where outcomes and impacts can be unpredictable*

The results of ERC-funded research might not be visible before a few or several years, or at all. Discoveries can be generated in unrelated areas and serendipity could play a major role. Nevertheless, the ERC is expected to assess the range of direct and indirect, short and long term impacts expected from its activities. Assessing these impacts is intrinsically retrospective and is best carried out using the qualitative opinion of experts. This will be done, as announced in the Monitoring and Evaluation Strategy adopted by the Scientific Council in June 2009. However, an initial internal analysis is already able to provide a preliminary assessment of some direct and derived socio-economic impact of ERC-funded research.

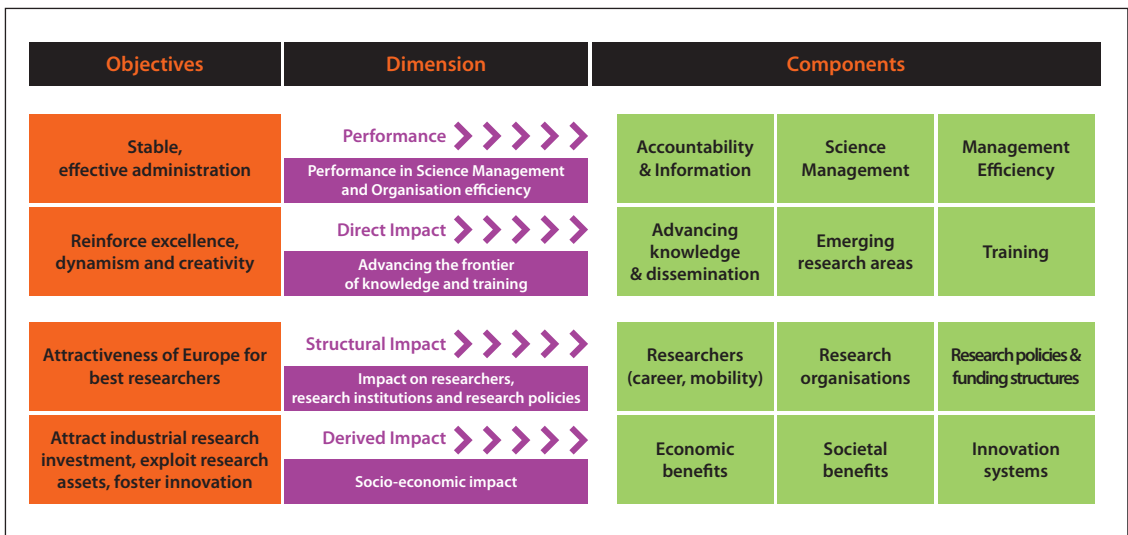
## 2.1 Monitoring and Evaluation of performance and impact

The ERC Scientific Council is entrusted also with the task to “monitor quality of operations and evaluate programme implementation and achievements and make recommendations for corrective or future actions”.

In June 2009 the Scientific Council adopted an “ERC Monitoring and Evaluation Strategy”, outlining the approach that the ERC will take to monitor the performance of its operations and the impact of its funding activities. The Strategy provides a plan on how the Monitoring and Evaluation (M&E) activities of the ERC will be initiated, implemented and given due follow up with the aim to generate a broad and integrated understanding of the ERC’s performance and impact. This will enable the Scientific Council to take necessary measures for optimising its scientific strategy and maintaining or improving the quality of the operations and overall performance. It will also provide all interested parties with timely, relevant and reliable information on ERC activities and their impacts.

Taking into account the mission of the ERC and the funding policies developed by the ERC Scientific Council, four evaluation dimensions have been identified around which the ERC M&E activities will be organised. The four dimensions, corresponding to four objectives of the “Ideas” Programme, are schematically represented in the Figure below in relation with a series of components around which M&E activities will be organised.

Figure 3 - Monitoring and Evaluation (M&E) Framework



## ERC Monitoring and Evaluation Framework

The ERC M&E Strategy will be implemented through a series of descriptive reports, analysis and studies addressing key components of the dimensions of this Framework. The outputs will be periodical or *ad-hoc* briefings and reports, which accurately inform on ERC performance and impact, and provide a sound empirical basis for assessment of the objectives attainment and – when appropriate – make recommendations for optimisation. In addition to devoting the Agency's internal resources to deliver the strategy, the ERC will largely rely on external expertise to perform studies, analysis and descriptive reports. This will be done mainly through the "Coordination and Support Actions" instrument (CSAs).

### **Four projects supported under the "Coordination and Support Actions" instrument of the 7<sup>th</sup> Framework Programme started in 2009. The first results are expected by the end of 2010.**

**"EURECIA"** develops a conceptual framework to analyse the impact of the ERC on researchers, research organisations, funding institutions and policy structures. *The two-year project has eight participants and is coordinated by the Manchester Institute of Innovation Research.*

**"MERCi"** analyses the impact on the career development, the host institutions, the research structures and the research output. *The five-year project is coordinated by the Humboldt University in Berlin.*

*The three-year "DBF"-project provides a bibliometric monitoring for the peer review process of the first Starting and Advanced Grant calls. Project Members are the Austrian Research Centres and the CNRS-Institute for Scientific and Technical Information in Nancy.*

Finally, **"ERACEP"** identifies emerging research areas and analyses to what extent the ERC grants cover and contribute to these research areas and thus intends to investigate whether ERC's basic mission to "stimulate scientific excellence" can be reached. *The project members of this five-year project are the Fraunhofer Institute ISI in Karlsruhe and the University of Leuven.*

## 2.2 "Advancing knowledge and dissemination" - A snapshot of results from ERC-funded projects

In addition to the wider and longer-term monitoring of the programme via the four projects, the Scientific Council is already monitoring the output of the first few hundreds of projects funded by the ERC. Among the early accomplishments ascribable to the ERC, an exploratory exercise shows that over 400 articles acknowledging ERC funding, published in 2008 and 2009 in peer-reviewed journals were recorded in public bibliographic databases. These articles document the scientific impact of projects funded by the ERC mainly through 2007 and 2008 grants and present a selection of scientific advances made in ERC-funded research.

Although not representative of the entire ERC-funded research, these results stand as testimony to the rich diversity of investigator-driven research projects funded by the ERC.

They include examples of advances in fundamental understanding of cell activities and discoveries with the potential to be translated in the medium-term into applications in cancer surgery or development of prostheses.

However, more importantly, institutional and journals press releases describing the results point at the future work that the researchers will undertake.

## Examples of Success Stories



### SCIENTISTS PRODUCE A GROUND-BREAKING NEW MATERIAL: GRAPHANE

**ERC Grantee:** Konstantin Novoselov

**Host institution:** University of Manchester, United Kingdom

**Project Title:** Physics and Applications of Graphene

**Domain:** PE

**ERC Call:** ERC-Starting Grant 2007

*Since its discovery in 2004, Graphene has quickly become one of the “hottest topics” in physics and materials science. A one-atom-thick crystal with unusual highly conductive properties, it is tipped for a number of future applications in electronics and photonics.*

In January 2009, the researchers who led the group that discovered graphene reported in Science on the discovery of a new material. Having found that graphene reacts with other substances to form new compounds with different properties, they used hydrogen to modify graphene into a new material: the two-dimensional crystal graphane.

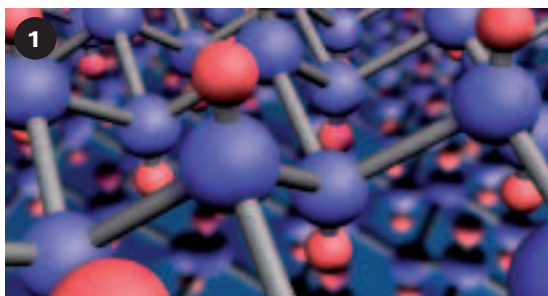
The addition of a hydrogen atom on each of the carbon atoms in the graphene forms the new material without altering or damaging the distinctive one-atom-thick ‘chicken wire’ construction itself.

However, instead of being highly conductive, like graphene, graphane has insulating properties. According to the researchers, the findings demonstrate that the material can be modified using chemistry; clearing the way for the discovery of further graphene-based chemical derivatives finetuning its electronic properties.

This discovery “has opened up the increasingly rich possibilities in the development of future electronic devices from this truly versatile material,” says grantee Konstantin Novoselov, one of the authors.

1 • Graphane crystal. This novel two-dimensional material is obtained from graphene (a monolayer of carbon atoms) by attaching hydrogen atoms (red) to each carbon atoms (blue) in the crystal.

2 • Strain in graphene opens up a pseudomagnetic gap.



**Source:** Press release of the University of Manchester: 30 Jan 2009 <http://www.manchester.ac.uk/aboutus/news/archive/list/item/?id=4353&year=2009&month=01>

**Original Publication:** Elias, DC; Nair, RR; Mohiuddin, TMG; Morozov, SV; Blake, P; Halsall, MP; Ferrari, AC; Boukhvalov, DW; Katsnelson, MI; Geim, AK; Novoselov, KS Control of Graphene’s Properties by Reversible Hydrogenation: Evidence for Graphane (2009) Science, Vol 323, p. 610



## NEW PERSPECTIVES ON CANCER SURGERY: IDENTIFYING MALIGNANT TUMOR CELLS IN REAL-TIME

**ERC Grantee:** Zoltan Takats

**Host institution:** Justus-Liebig-Universität Giessen, Germany

**Project Title:** Development of mass spectrometric techniques for 3D imaging and in-vivo analysis of biological tissues

**Domain:** LS

**ERC Call:** ERC-Starting Grant 2007

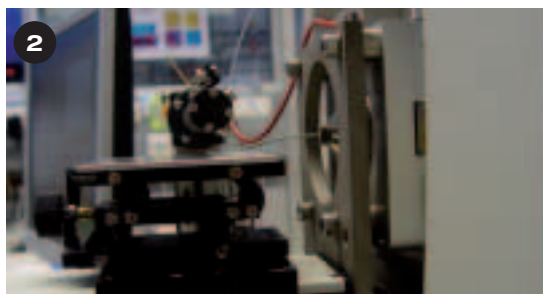
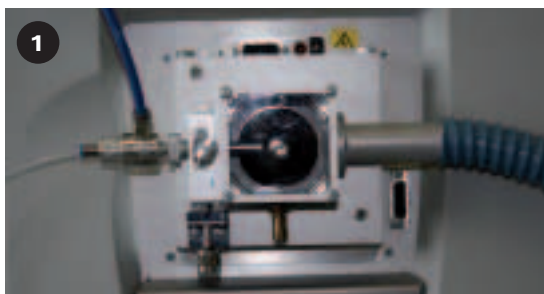
*Instead of the classic scalpel, surgeons can also operate with an electroscalpel. A significant advantage to this technique is that while a cut is being made, blood vessels are closed off and hemorrhaging eliminated. Now another advantage may be added as well: a German-Hungarian research team has developed a mass-spectrometry-based technique by which tissues can be analyzed during a surgical procedure.*

The new method called rapid evaporation ionization mass spectrometry (REIMS) can unambiguously identify and differentiate between healthy and malignant tumor tissues. With this method, the surgeon can receive virtually real-time information about the nature of the tissue as he cuts it. This opens new vistas for cancer surgery in particular: the method helps to precisely localize the tumor during surgery and to delimit it from the surrounding healthy tissue. REIMS also provides information about whether the carcinoma is in an early or advanced stage.

Until now, precise histological examination of the removed tissue has followed after tumor surgery, and has required several days. If it reveals that the tumor has not been completely removed, a second operation is needed. The new method may spare patients this second surgery in the future.

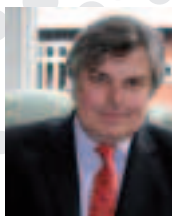
1 • Photo of DESI imaging source with 3d moving stage.

2 • Setup for REIMS method with electrosurgical unit (middle), ion transfer system and mass spectrometer (left).



**Source:** Press release of the Wiley 37/2009 <http://www3.interscience.wiley.com/journal/26737/home/press/200937press.html>

**Original Publication:** Schafer, KC; Denes, J; Albrecht, K; Szaniszló, T; Balog, J; Skoumal, R; Katona, M; Toth, M; Balogh, L; Takats, Z In Vivo, In Situ Tissue Analysis Using Rapid Evaporative Ionization Mass Spectrometry ANGEW CHEM INT ED 10.1002/anie.200902546 (2009)



## GAS TANK OF THE FUTURE TAKES A STEP CLOSER

**ERC Grantee:** Martin Schröder

**Host institution:** University of Nottingham, United Kingdom

**Project Title:** Chemistry of Coordination Space: Extraction, Storage, Activation and Catalysis

**Domain:** PE

**ERC Call:** ERC-Advanced Grant 2008

*Chemists have taken us a little further along the road to a hydrogen economy with a fuel-tank material that might one day replace the automobile petrol tank.*

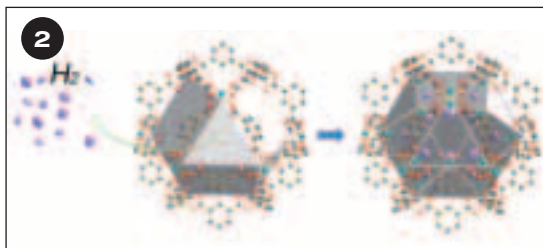
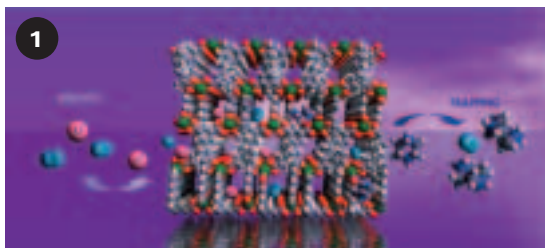
Researchers at the University of Nottingham in the UK and General Motors in US, have come up with a sponge-like material that can hold 10% of its own weight in hydrogen gas.

The need for effective hydrogen fuel tanks is a major barrier of an hydrogen economy. A litre of liquid hydrogen contains just a quarter of the energy of a litre of petrol, which means higher costs for storage and transportation. Its energy density, however, can be increased if hydrogen gas is squeezed into a porous material able to hold hydrogen like a sponge does water.

1 • View of structure of porous polyhedral framework and adsorption of hydrogen

So far, though, such materials have not been able to store enough energy to provide a realistic alternative to a car's petrol tank. The previous best attempts, using a carbon structure, can hold around 6 to 7.5% of their weight in hydrogen. The latest candidate material is a combination of copper atoms and organic molecules called a "metal-organic framework" by chemists. The metal-organic frameworks (MOF) are a relatively new class of porous materials surpassing significantly the adsorption capacity of established materials. They have huge potential in materials for energy storage for example hydrogen or methane.

2 • Modulation and control of hydrogen storage via cation exchange



**Source:** The new scientist

<http://www.newscientist.com/article/dn16632-gas-tank-of-the-future-takes-a-step-closer.html>

**Original Publication:** Yan, Y; Lin, X; Yang, SH; Blake, AJ; Dailly, A; Champness, NR; Hubberstey, P; Schroder, M Exceptionally high H<sub>2</sub> storage by a metal-organic polyhedral framework CHEM COMMUN 10.1039/b900013e (2009)

## 2.3 ERC-funded “bottom-up” research fits into place with the “socio-economic grand challenges”

The “Derived Impacts” dimension of the ERC performance, i.e. economic and societal benefits, should not be seen as coming unpredictably in the far future. The history of the last century has shown that the breakthroughs from publicly funded frontier research will come regularly and reliably even if we cannot predict the direction they will take. The ERC is aiming to fund exactly the major breakthroughs which would have large economic and societal benefits.

Scientists engage with society and are aware of societal concerns like health, education or better jobs, as well as global challenges like energy management, aging population, and climate change.

Indeed, tackling these concerns calls for open exploration of radically new ideas. But to allow radical transformation to emerge, researchers need to be given the freedom openly to explore novel unconventional ideas and innovative approaches. That is why bottom-up research based on free and open enquiry is very important for innovation.

Coherently with its mission, the ERC does not indicate priority areas and leaves it to scientists to identify new prospects and directions in any field of research. It is, however, already evident that the breakthrough research that the ERC supports fits into place within the economic, technological and societal challenges.



### Project: FUEL-PATH

**ERC Grantee:** Felice Cervone

**Host Institution:** Università La Sapienza – Roma, Italy

**Domain:** LS

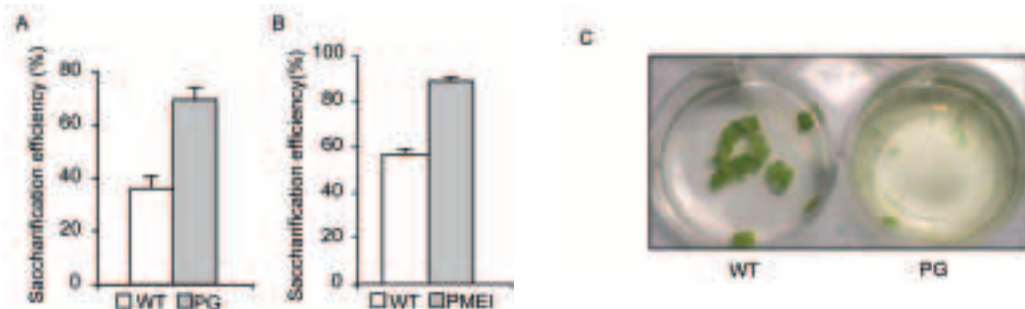
**ERC Call:** ERC-Advanced Grant 2008

**The challenge:** Widespread sustainable exploitation of biomass resources, aiming to ensure at least 14% bio-energy in the EU energy mix by 2020

**Available technology:** A key process for biomass utilization is the initial degradation of cell walls into fermentable sugars (saccharification); this is hindered by the wall recalcitrance to hydrolysis.

**ERC-funded project:** provide new knowledge on plant cell wall and innovative biotechnological solutions for biomass utilization. The aim is to improve the plant saccharification characteristics by mimicking a strategy successfully used by phytopathogenic microorganisms.

Increased enzymatic saccharification of Arabidopsis plants expressing a fungal polygalacturonase (PG) (A), or an inhibitor of plant pectin methylsterases (B). In both cases, plant biomass is more easily degraded (C).





**Project: MESOLIGHT**

**ERC Grantee:** Michael Grätzel

**Host Institution:**

Ecole Polytechnique Fédérale Lausanne, Switzerland

**Domain:** PE

**ERC Call:** ERC-Advanced Grant 2009

**The challenge:** improve the competitiveness of the photovoltaic technology and facilitate its large scale penetration. Establish photovoltaics as a competitive and sustainable energy technology contributing up to 12% of European electricity demand by 2020.

**Available technology:** Semiconductors that conventional cells use assume both functions of light harvesting and charge-carrier transport simultaneously, imposing stringent demands on purity and entailing high material and production costs.

**ERC-funded project:** generation of electric power by mesoscopic solar cells, able to separate the functions of light harvesting from charge-carrier transport. The target is to increase the photovoltaic conversion efficiency from currently 11 to over 15 percent rendering these new solar cells very attractive for applications in large areas of photovoltaic electricity production.



© courtesy of G24 Innovation



**Project: NOVCAT**

**ERC Grantee:** David Milstein

**Host Institution:** Weizmann Institute of Science, Israel

**Domain:** PE

**ERC Call:** ERC-Advanced Grant 2009

**The challenge:** the long term potential of hydrogen as a clean, sustainable fuel is underpinned by the design of efficient systems for splitting water into hydrogen and oxygen, driven by sunlight.

**Available technology:** Systems that exist today are very inefficient and often require additional use of sacrificial chemical agents. In this context, it is important to establish new mechanisms by which water splitting can take place.

**ERC-funded project:** the PI's team has demonstrated a mechanism for the formation of hydrogen and oxygen from water, without the need for sacrificial chemical agents, through individual steps, using light. The project aims at enhancing the understanding of the fundamental steps involved in this process. The research is expected to lead to the creation of an efficient catalytic system.



Unit cell of a water-activated ruthenium pincer complex





*The ERC has developed two core grants:  
the ERC Starting Independent Researcher Grant  
("Starting Grant") and the ERC Advanced Investigator Grant  
("Advanced Grant").*

**Advancing frontier research**

The ERC "Starting Grants" address the gap in funding opportunities for researchers in the early stages of their careers. Through this scheme researchers are supported in establishing or consolidating their own team with a view to a transition from working under a supervisor to becoming independent researchers.

"Advanced Grants" are intended to support innovative, ambitious research projects by investigators who have already established themselves as exceptional independent research leaders.

Both types of grants operate without pre-defined thematic priorities and without any nationality restrictions for the principal investigator or the members of his/her team. The only restriction being that the research is performed in the EU or one of the FP7 Associated Countries.

### 3.1 ERC Starting Grants

The second ERC Starting Grant call was published with deadlines in Autumn 2008 and an indicative budget of €295.8 million. In total 2,503 proposals were received, distributed by domain as follows: 1,112 in the Physical Sciences, 927 in the Life Sciences and 464 in Social Sciences and Humanities which were evaluated in 2009. With the total budget increased to €325 million thanks to contributions of the countries associated to FP7 it became possible to select 244 proposals for funding.

In July 2009, the 2010 ERC Starting Grant call was published with deadlines between October and December 2009 and an indicative budget of €528 million. In total 2,873 proposals were received distributed by domain as follows: 1,205 proposals in Physical Sciences and Engineering, 1,030 in Life Sciences and 638 in Social Sciences and Humanities (See Figure 4).

### 3.2 ERC Advanced Grants

The 2009 ERC Advanced Grant call was published in November 2008 with deadlines in Spring 2009 and an indicative budget of €489.5 million. As demand was expected to be high, the Scientific Council had decided that the first two Advanced Grant calls (2008 and 2009) would be linked, making available to applicants a cumulative budget of over €1 billion. For this reason, a Principal Investigator could be associated with only one proposal submitted to either of these two calls. The 2009 call still attracted 1,584 applications, 244 of which were selected for funding. Further proposals may be funded depending on the availability of third country receipts (see Figure 5).

The 2010 ERC Advanced Grant call was published in October 2009 with deadlines between February and April 2010 and an indicative budget of €590 million.

### 3.3 From 2007 to 2009: three years of ERC calls

By the end of 2009 and since the start of the "Ideas" programme in 2007, the ERC had launched in total 6 calls for proposals:

- Four calls were completed (Starting Grant 2007 and 2009; Advanced Grant 2008 and 2009), i.e. the evaluation process had been concluded and the results had been communicated to applicants and other stakeholders.
- The deadline for submission of proposals of the Starting Grant 2010 call had passed and the evaluation process was on-going.
- A call for Advanced Grant 2010 was launched at the end of 2009 with deadlines in Spring 2010.

The charts show the evolution of the **number of applications** received in the four first completed calls and the fifth call for which evaluation process was still on-going at the end of 2009.

Figure 4 - **Starting Grant**

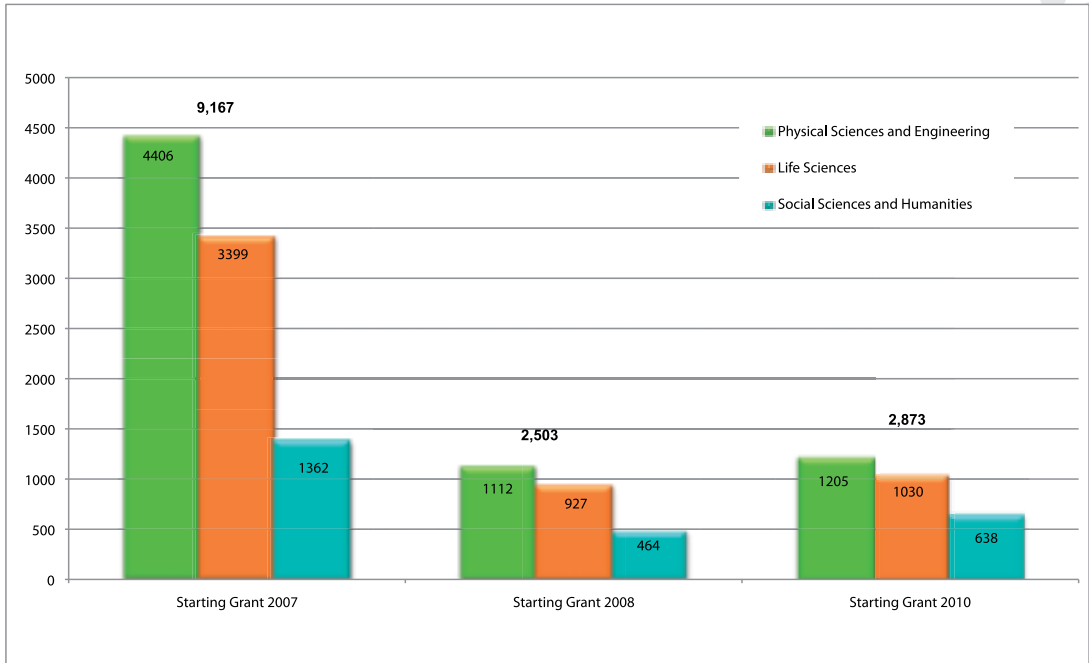
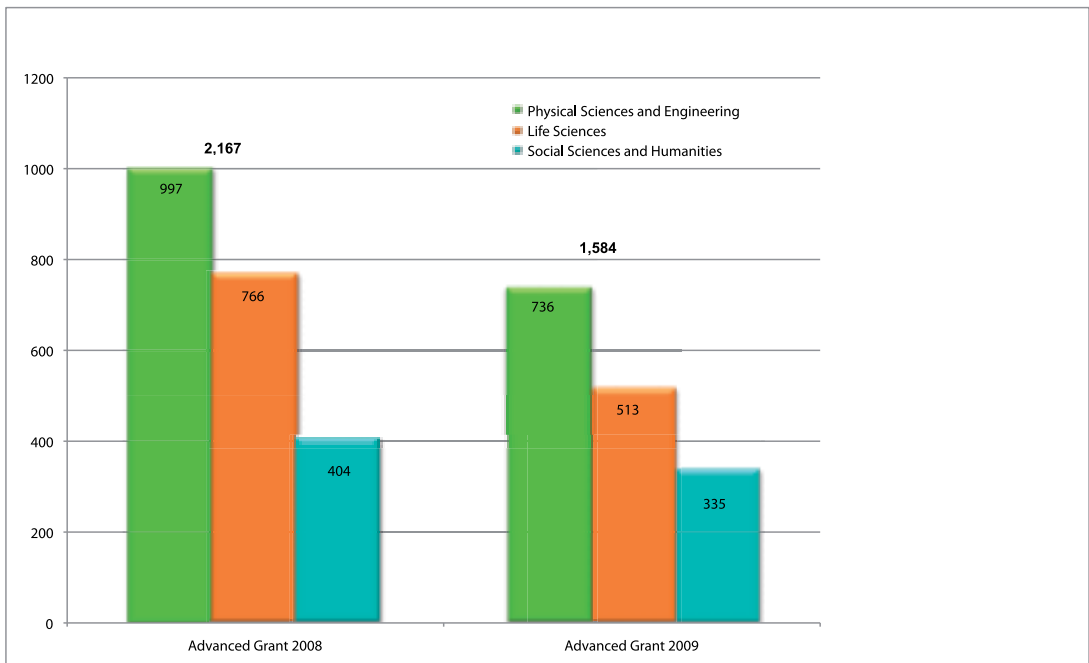


Figure 5 - **Advanced Grant**



In the Starting Grant scheme, the first call (Starting Grant 2007) resulted in a very large number of applications (9,167). The second and third calls resulted in 2,503 and 2,873 applications respectively. Arguably, the sharp decline of the number of applications is explained partly by the changed application procedures between the first and subsequent calls. Whereas in the Starting Grant 2007 call applicants were asked to submit a relatively short pre-proposal, in the following calls the application procedures required a full proposal to be submitted at once. In addition, a set of “benchmarks” related to the profile of the applying Principal Investigator was established, reducing the pool of potential applicants by discouraging non-competitive submissions. The novelty of the scheme is an additional factor which may contribute to explain the much larger number of applications in the first ERC call, while the lower success rate in the first call might partially explain the drop in participation in the following calls.

For the Advanced Grant, 2,167 applications were received for the first call and 1,584 for the second call.

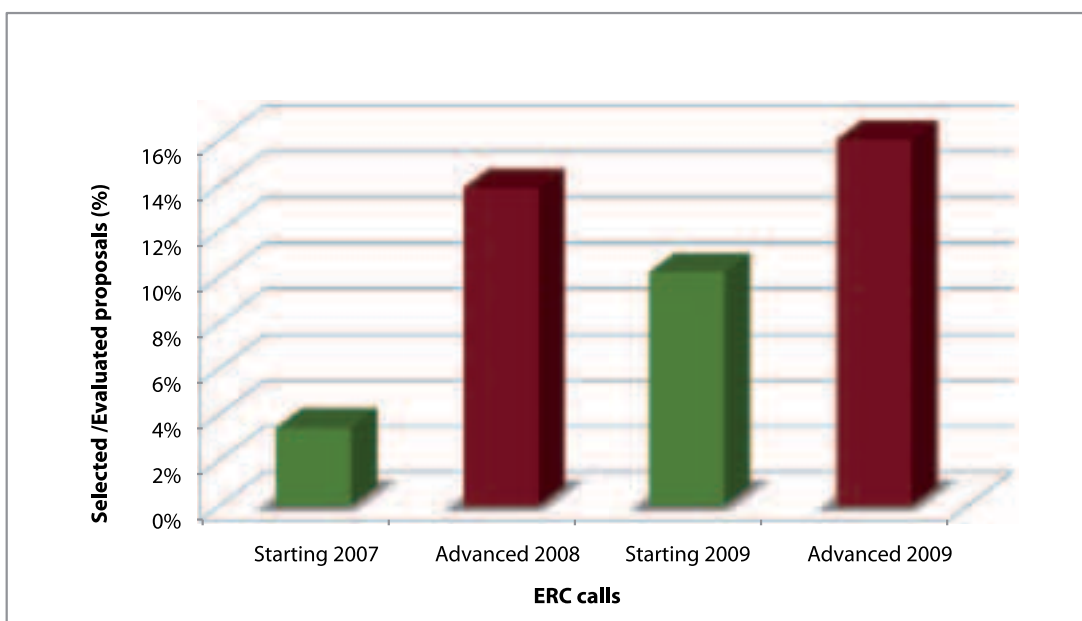
### Success rate

The ERC supports investigator-driven frontier research through a competitive review process greatly recognised and highly respected by the entire scientific community, based on the sole criterion of scientific excellence. For each ERC call, approximately 2,800 members of the science, engineering and social science & humanities community participate in the excellence review process as panellists and external reviewers.

In 2009, the percentage of proposals selected through this process over the total number of proposals evaluated was considerably higher than in the first two calls in 2007 and 2008. The success rate of the Starting Grants increased from 3.4% in 2007 to 10.2% in 2009 and the rate of the Advanced Grants rose from 13.9% to 16% (see Figure 6).

On average, the 2009 Starting Grants amounted to around €1.3 million each, while the Advanced grantees received around €2 million each, representing a slightly higher average amount per grant compared to the past and a corresponding lower number of grants.

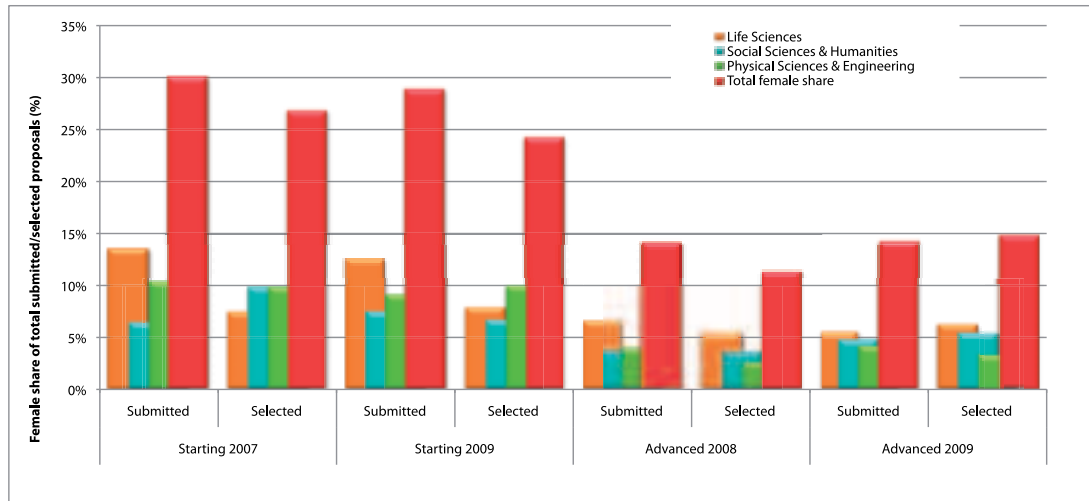
Figure 6 - **Success rate (four ERC calls)**



## Gender distribution of ERC grants

The gender distribution differs between the two schemes; looking at the first four ERC calls, around one third of the Starting Grant proposals and one seventh of the Advanced Grant proposals were submitted by women researchers. The proportion of women applicants is found to be low, but on par with the population balance of women researchers in faculty positions in Europe. Among the selected Starting Grant proposals, between one fourth and one fifth had women principal investigators. For the Advanced Grants calls the proportion of selected women principal investigators staid close to one seventh.

Figure 7 - Female applicants in shares of total numbers, and their distribution over the ERC domains



## Successful host institutions

The majority of the 543 Starting Grant holders of the first two calls are hosted by host institutions located in the EU, while 13% have a host institution in an FP7 Associated Country. For the first two Advanced Grants calls, the share of host institutions from Associated Countries is significantly higher (18%).

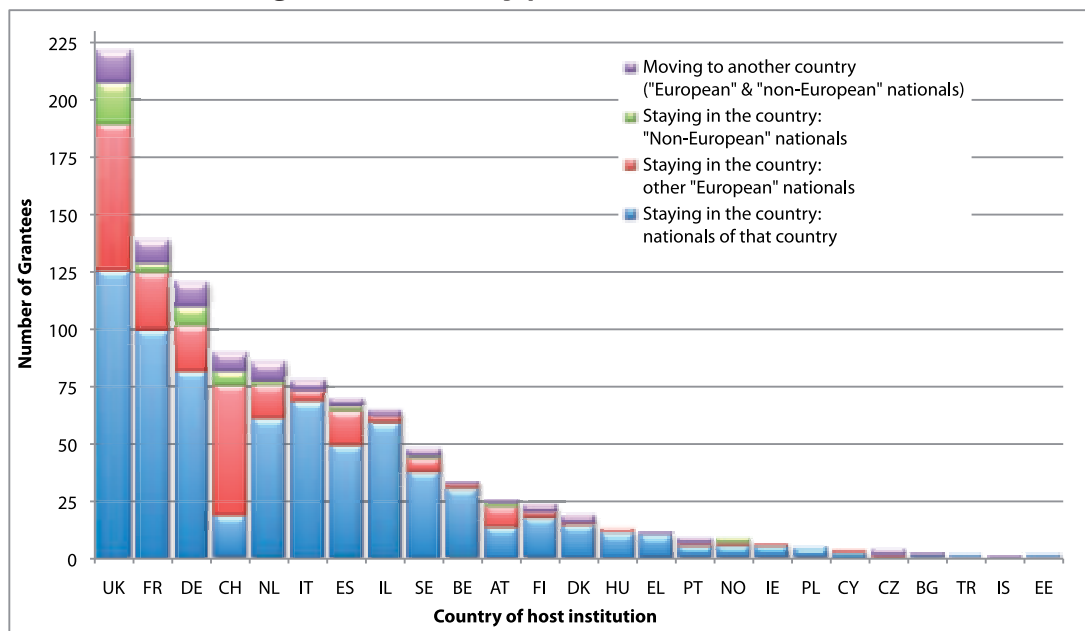
Figure 8 - Top 15 Host Institutions (Starting Grants and Advanced Grants 2007-2009)

Host Institution	Nr. of Grants	Domain
CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE	47	PE+LS+SH
THE UNIVERSITY OF CAMBRIDGE	27	PE+LS+SH
THE UNIVERSITY OF OXFORD	25	PE+LS+SH
ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE	24	PE+LS+SH
MAX PLANCK GESELLSCHAFT E.V.	23	PE+LS+SH
EIDGENOESSISCHE TECHNISCHE HOCHSCHULE ZUERICH	22	PE+LS
WEIZMANN INSTITUTE	20	PE+LS
IMPERIAL COLLEGE OF SCIENCE, TECHNOLOGY AND MEDICINE	20	PE+LS
THE HEBREW UNIVERSITY OF JERUSALEM.	20	PE+LS+SH
UNIVERSITY COLLEGE LONDON	19	PE+LS+SH
INSTITUT NATIONAL DE LA SANTE ET DE LA RECHERCHE MEDICALE (INSERM)	13	LS
UNIVERSITAET ZUERICH	12	PE+LS+SH
COMMISSARIAT A L'ENERGIE ATOMIQUE	12	PE+LS
KATHOLIEKE UNIVERSITEIT LEUVEN	12	PE+LS+SH
UNIVERSITEIT LEIDEN	11	PE+LS+SH

Until now ERC grantees rarely chose to move to a country different from where they were already conducting their research activities at the moment of submitting the proposal. In the period 2007-2009, around 9% of the Starting grantees and 5% of the Advanced grantees moved to a different country after obtaining their grant. Of these, 11 Advanced Grant holders and 19 Starting Grant holders moved from outside Europe.

The majority of the selected European nationals chose a host institution established in their home country, while 28% of the Starting Grant holders and 24% of the Advanced Grant holders are hosted in a host institution outside their home country. However, these patterns differ considerably between countries, e.g. the share of non-national grant holders in Switzerland and in the UK is above average when compared to other countries.

**Figure 9 - Distribution of grantees per country of host institution and according to their mobility patterns**



**Figure 10 - Distribution of grantees per nationality and tendency to work in or away from their country of nationality**

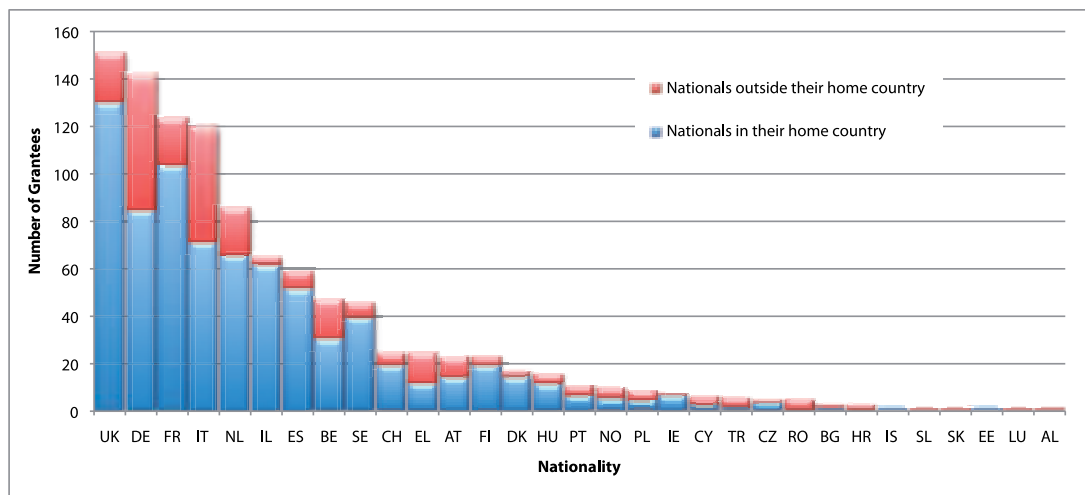
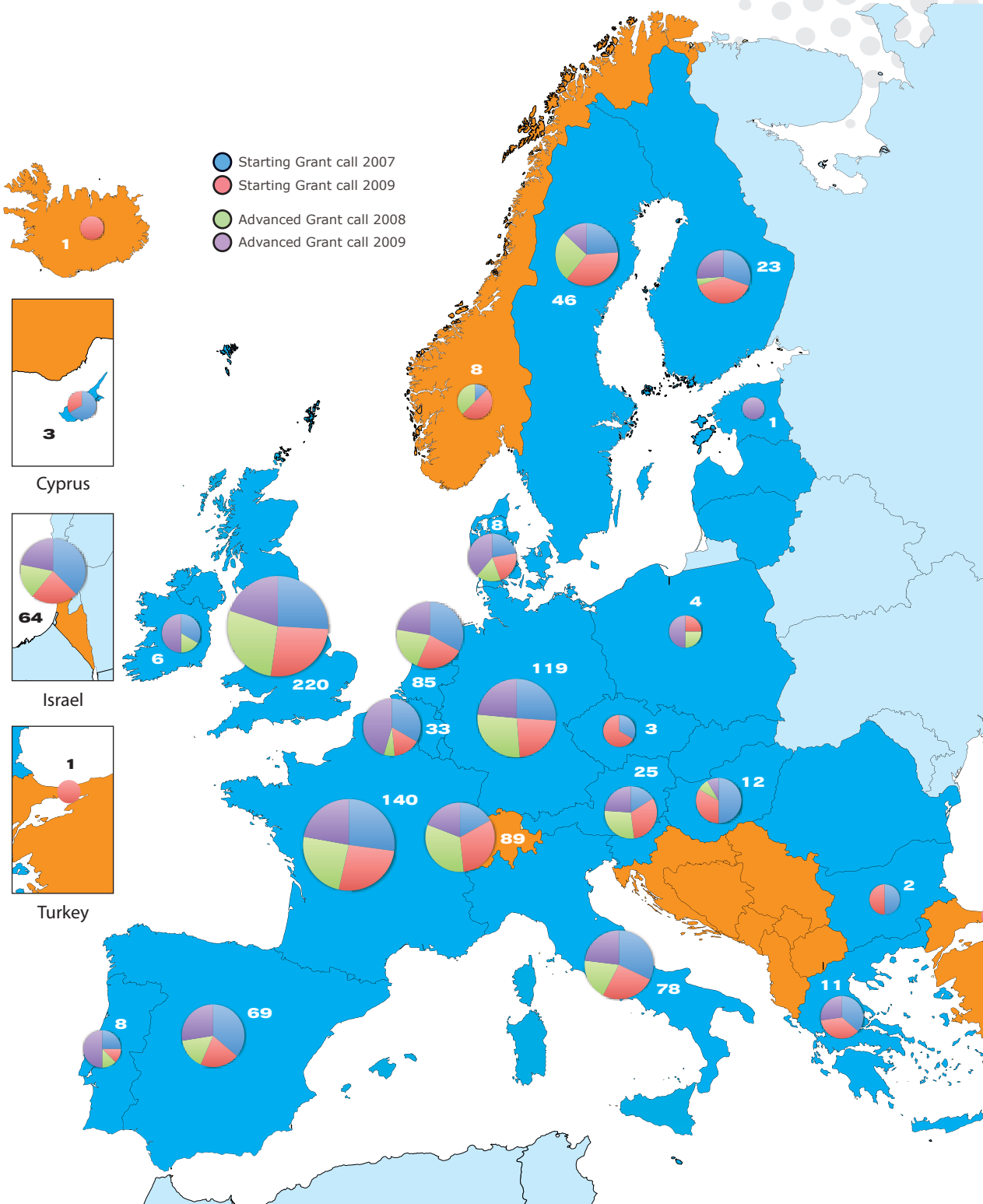


Figure 11 - ERC Starting and Advanced Grant Calls (2007-2009)  
by country of host institution





## Private host institutions

A very small percentage of the applications for ERC grants concerns projects to be hosted in a private environment. Only around 1.2% of the 6,253 proposals received in the ERC Advanced Grants 2008 and 2009 and Starting Grants 2009 were associated to private prospective host institutions. Eleven of them were successful, representing a success rate of 14%, which does not compare unfavourably with all other host institutions. However, they were associated to research centres of large multinationals or private research centres conducting translational clinical research. None of the applications involving SMEs, start-ups or spin-off companies was successful.

The eleven successful proposals were hosted by five host institutions, which participated with more than one proposal to the different ERC calls. This seems to demonstrate that private stakeholders' success did not happen by chance and that they can join the ranks of those who can host an ERC grant (see Figure 12).

## Attracting top researchers from outside Europe

The Starting Grant scheme proved more successful than the Advanced Grant scheme in attracting applications from outside Europe. The numbers of applications to ERC calls coming from non-European residents continue to be small and a limited number of them were successful, with most of them having their previous residence in the USA.

The Starting Grants seem to be an adequate instrument to attract young researcher for a research position in Europe, in particular if the host institutions can offer additional incentives, e.g. tenure track positions for the time after the grant is terminated, family support mechanisms, etc. In contrast, typical Advanced Grant holders have already a fixed position, are settled in their environment and scientific network, and thus less mobile (see Figure 13).



Figure 12 - Evaluated and selected proposals with a private Host Institution

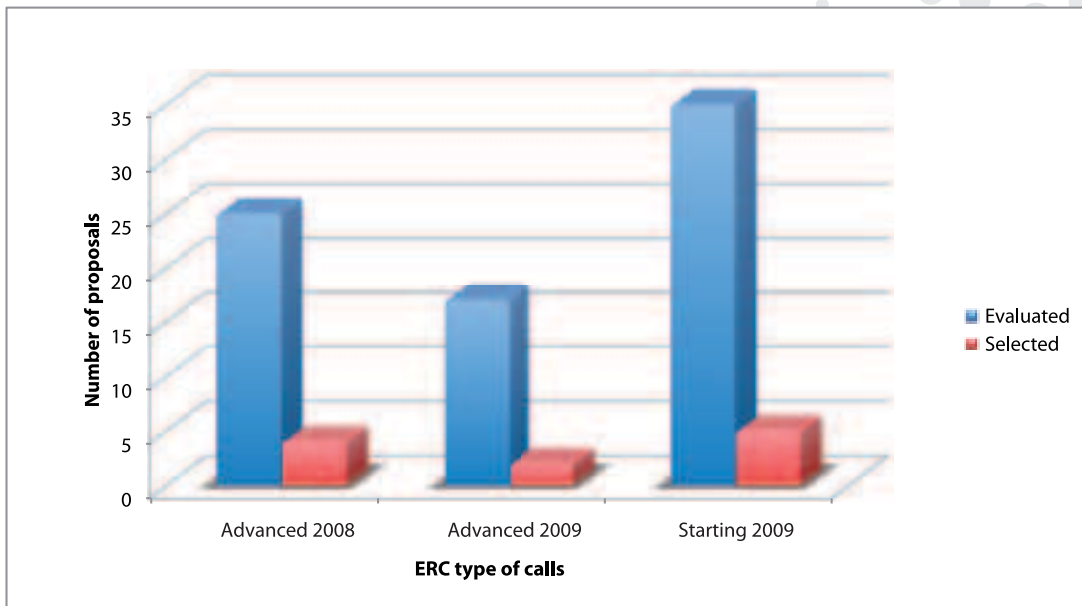


Figure 13 - Applications from researchers with non-European nationality

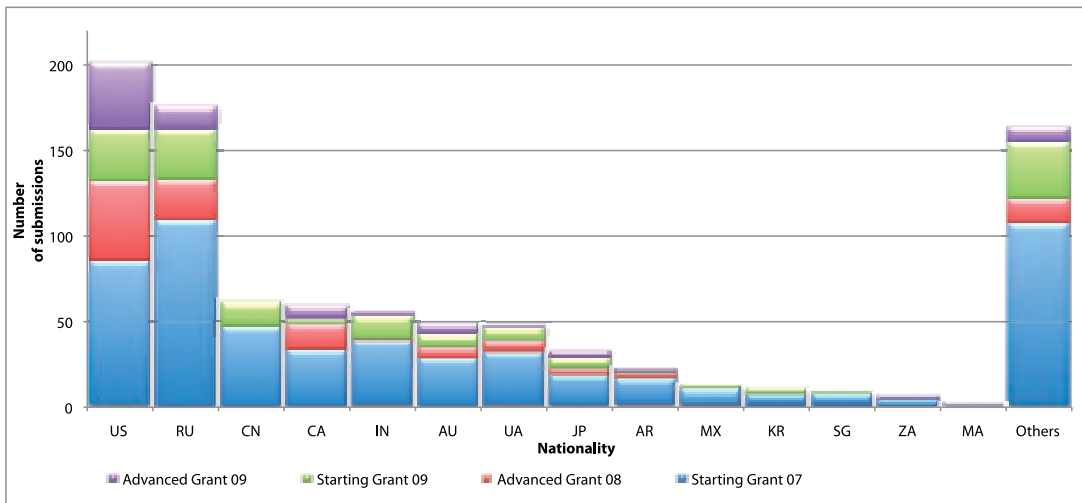
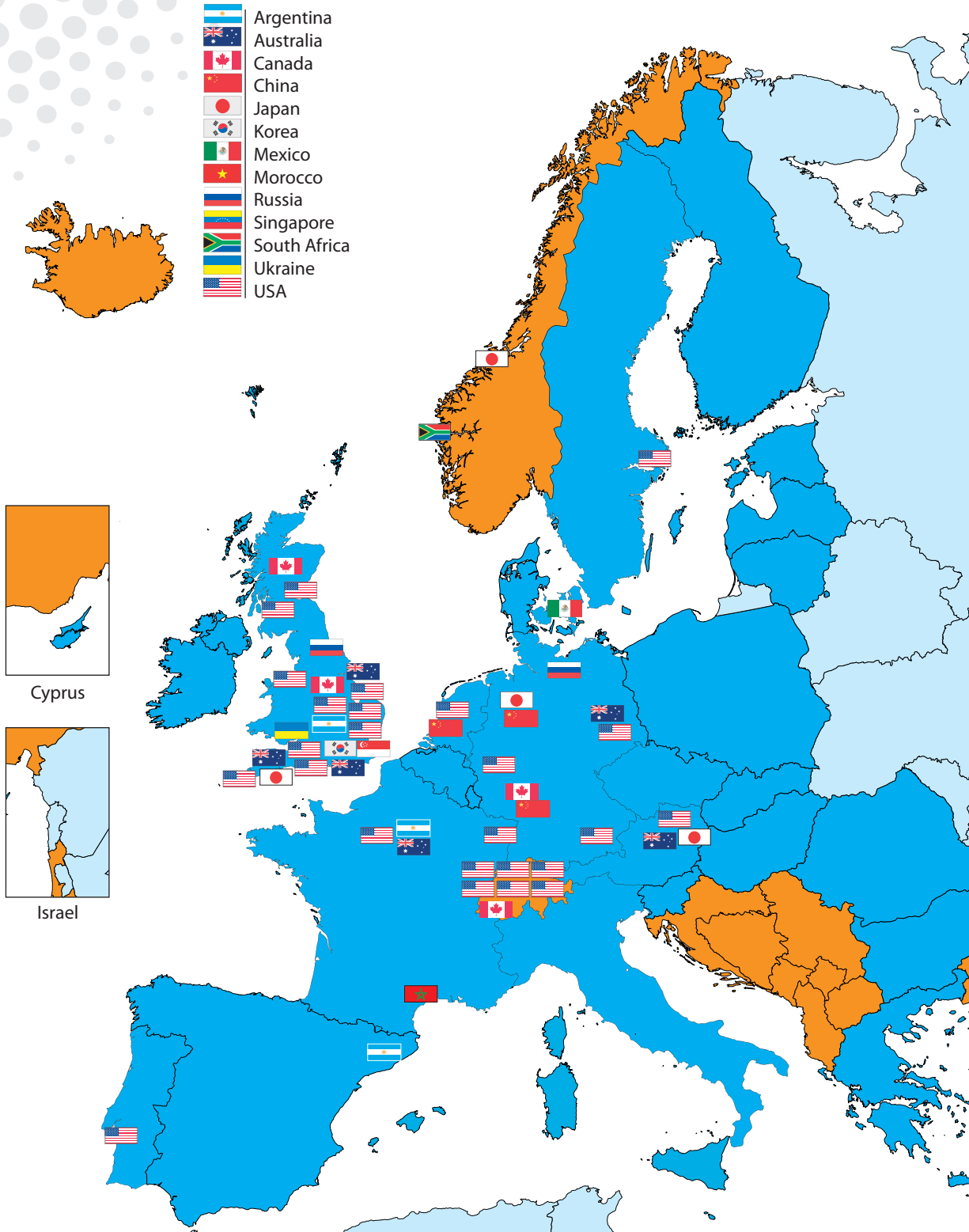
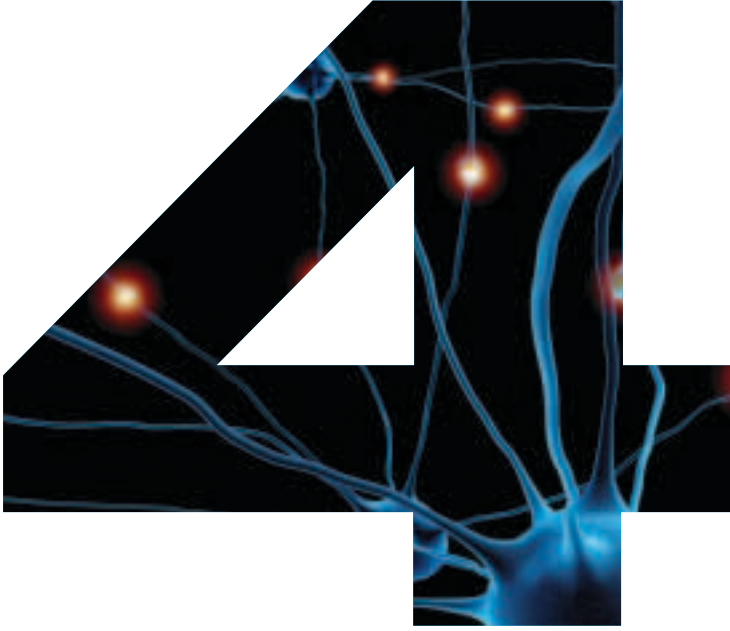


Figure 14 - ERC calls 2007-2009: Grantees with a non-European nationality





# ERC Scientific Council and Executive Agency

## 4.1 The ERC Scientific Council

The Scientific Council has the responsibility to establish the ERC's overall scientific strategy, the work programme and from a scientific perspective its positions on implementation and management of calls for proposals and evaluation criteria, peer review processes and proposal evaluation. It is made up of representatives of the European scientific community at the highest level, acting in their personal capacity, independently of political or other interests.

Twenty-two members were appointed by the Commission as founding members of the Scientific Council. These founding members were selected on the criteria set out in the Commission Decision of February 2007 (N° 2007/134/EC) establishing the ERC.

This includes the requirement that the Scientific Council's composition would show it to be authoritative and independent, combining wisdom and experience with vision and imagination and reflecting the broad disciplinary scope of research. Individual members are chosen on their undisputed reputation as leaders, independent and committed to research.

### Changes in membership



Prof. Dr. Cloetingh



Prof. Duarte



Prof. Moore

*During 2009 three members of the Scientific Council resigned on personal grounds: Professor Paul J. Crutzen, Professor Lord May of Oxford and Professor Manuel Castells.*

In January 2009, the "Identification Committee", set up by the Commission in order to identify new members to fill vacant posts in the Scientific Council and make recommendations on a method for future replacements of members, presented its proposals following consultations with the scientific community.

Based on the proposals, the Commission nominated Prof. Dr. Sierd A. P. L. Cloetingh (VU Amsterdam), Prof. Carlos M. Duarte (Spanish Council for Scientific Research, CSIC) and Prof. Henrietta L. Moore (University of Cambridge) as new members of the Scientific Council.

As to future appointments, the Committee proposed that approximately one third of the Scientific Council be renewed once every two years (implying a term that is ordinarily of six years, renewable) and that the Identification Committee be established as a standing committee to identify new members to fill vacancies as they arise.

## Meetings

The Scientific Council held regular meetings in 2009 across Europe, usually at the invitation of national authorities. Meeting in different cities of countries which are either EU Member or Associated Countries is a way of making the Scientific Council's presence felt in different places covered by the "Ideas" Specific Programme and is considered an important event both by the national authority as well as the local scientific and research community. In the year under review the Scientific Council met twice in Brussels (27 to 29 April and 12 to 14 October) and once in Istanbul (10 to 12 March), Warsaw (29 June to 1 July) and Rehovot (14 to 16 December).

In addition to plenary sessions, members of the Scientific Council meet in Working Groups (WGs) addressing specific issues. In 2009 the WGs on "Relations with Industry", "Open Access", "Third Countries Participation" and "Gender Balance" met in Brussels at various occasions. The WGs carry out analysis and contribute to the ERC scientific strategy in the areas covered by their mandates through proposals to be adopted by the Scientific Council in plenary.


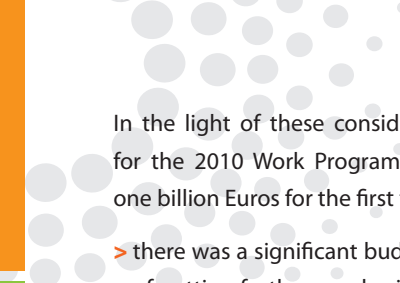

### In 2009 the Scientific Council set up specific Working Groups to:

- > ensure that the ERC is at the forefront of best practice regarding the gender balance of grantees;
- > explore suitable mechanisms to boost the participation of non-European researchers, particularly the BRIC countries, in the ERC schemes;
- > examine the ERC's relationship with the industrial/business sector;
- > develop position on open access.

## Strategic developments in 2009

The fundamental principle for all ERC activities is that of stimulating investigator-initiated frontier research across all fields of research, on the basis of excellence. The two current funding streams are expected to remain the core of the ERC's operations for the duration of the 7<sup>th</sup> Framework Programme. No fundamental changes in strategy were therefore identified in 2009.

However, the Scientific Council continuously monitors the operation of the existing schemes and considers how best to achieve its broader objectives "*...to reinforce excellence, dynamism and creativity in European research and improve the attractiveness of Europe for the best researchers from both European and third countries, as well as for industrial research investment...*".



In the light of these considerations and a rising budget the Scientific Council introduced several changes for the 2010 Work Programme which was adopted in July 2009. In particular and with a budget of over one billion Euros for the first time:

- > there was a significant budgetary strengthening of the Starting Grant scheme in line with the ERC's strategy of putting further emphasis on the Starting Grant following the impact of the first calls. That gives a roughly 50/50 split in the funding for both main schemes for the first time;
- > there was an extension of the "eligibility window" to 2-10 year post PhD in view of the budgetary strengthening of the Starting Grant, and the recognition of two streams of applicants: "starters" (2 to 6 years post-PhD) and "consolidators" (over 6 and up to 10 years post-PhD) during evaluation;
- > measures to increase attractiveness of the EU and the associated countries to researchers from outside Europe (additional funding available for Starting and Advanced grantees moving from outside Europe);
- > further efforts to take into account justified research career gaps and/or unconventional research career paths (especially for women researchers with increased extension of the Starting Grant eligibility window of 18 months per child born before or after PhD award);
- > progressive removal of the resubmission restrictions.

There were also fine-tuning measures to the grant schemes based on feedback from the applicants and panels such as a simplification of proposal structure (no self-evaluation), and clearer indications of expected commitment to the ERC-funded activity by the ERC Grantee of a Starting and Advanced grant project. All of these changes came into effect for the calls made in July and October 2009 to be granted in 2010.

In addition the Scientific Council devoted considerable time to discussing more long-term strategic matters, particularly at its meeting in Rehovot in December 2009. At this meeting there was a full session covering issues such as the possibility of introducing new schemes based on an analysis drawing lessons from the first three years of the ERC's existence. These discussions were scheduled to continue into 2010.

## 4.2 The ERC Secretary General



Prof. Mas-Colell

As of 1 July 2009, Prof. Andreu Mas-Colell took over the post of Secretary General of the ERC from Prof. Ernst-Ludwig Winnacker, who successfully completed his term of office.

Andreu Mas-Colell is Professor of Economics at Universitat Pompeu Fabra in Barcelona and Chairman of the Barcelona Graduate School of Economics.

In line with the “Ideas” Specific Programme, the selections of the two Secretary Generals, announced in 2006, were the outcome of a recruitment process conducted autonomously by the Scientific Council and based rigorously on relevant experience and scientific qualifications. Following an assessment and short-listing by an internal recruitment committee, the Scientific Council interviewed the leading candidates, held a vote and agreed on the final decision.

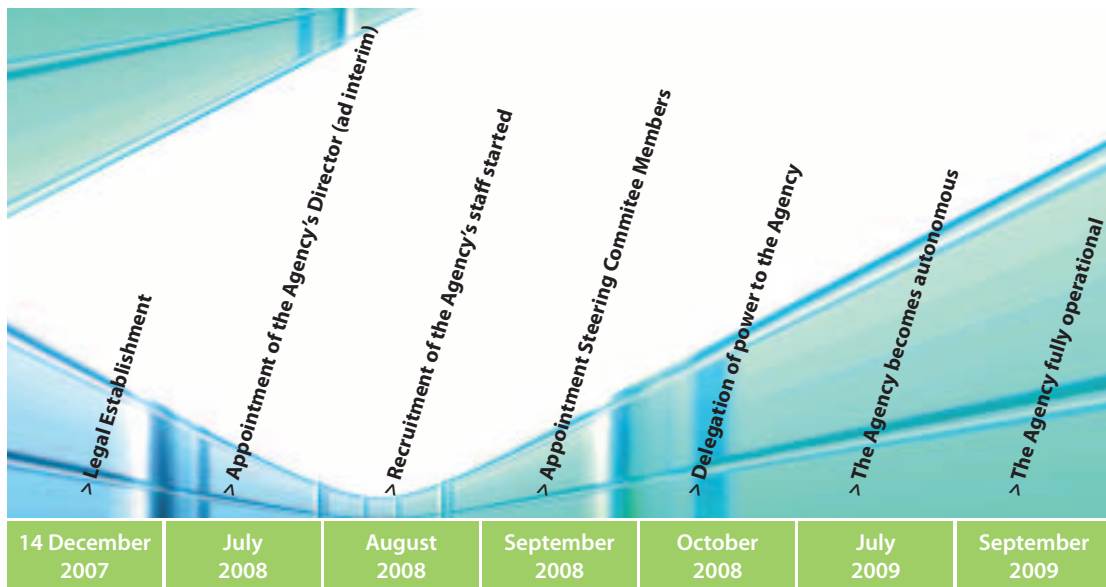
The ERC Secretary General has a key role in ensuring the integrated operation of the ERC, based on the strategy and programme of activities prepared by the ERC Scientific Council. He is a member of the ERC Board, working together with the Chair and two Vice-Chairs of the Scientific Council as well as with the Director of the ERC Executive Agency to oversee the implementation of the ERC strategy and work programme prepared by the Scientific Council.

## 4.3 The ERC Executive Agency

The Executive Agency implements the Seventh Framework Programme’s “Ideas” specific programme according to the strategies and methodologies defined by the independent ERC Scientific Council.

The Executive Agency operates on the basis of the powers delegated to it by the European Commission, which has the ultimate political responsibility for the implementation of the “Ideas” Specific Programme.

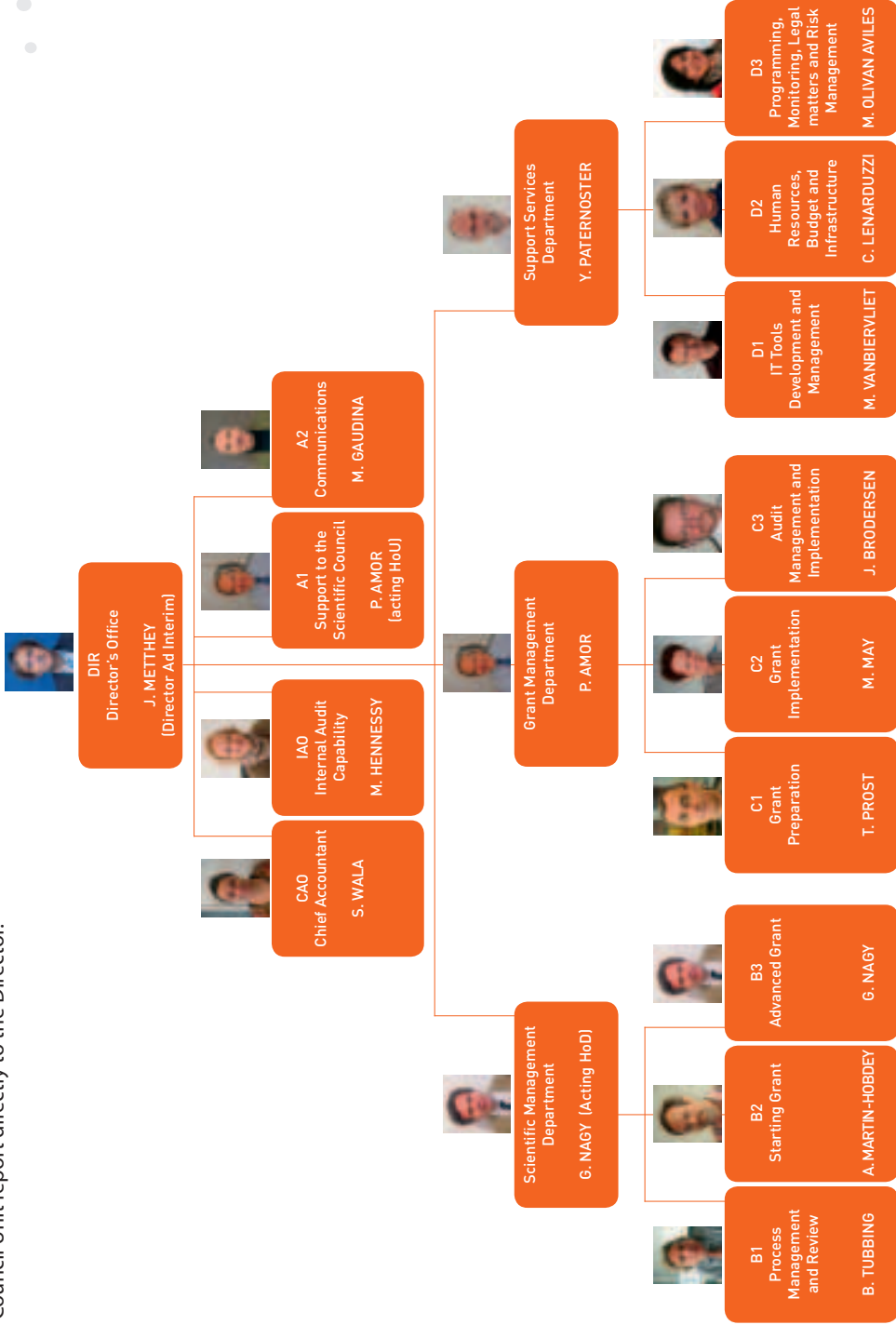
Figure 15 - Life of the Agency



## Structure

The organisational structure of the Agency follows its operational and horizontal objectives. It consists of six horizontal units (excluding the chief accountant) and six operational units managing the “Ideas” Programme. Independently the Accounting Officer, the Internal Audit Office, the Communications Unit as well as the Support to the Scientific Council Unit report directly to the Director.

For the operational budget of the “Ideas” Programme a Unit of payments and controls was established with the centralised responsibility for the financial management of the grant agreements (i.e. the operational budget appropriations).





## Staff and Recruitment

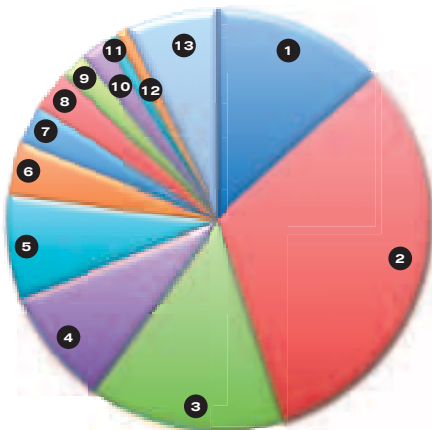
In the establishment plan, the 2009 budget provided for the recruitment of 100 temporary agents (TA) as well as a 170 contract staff (CA) and 30 Seconded National Experts (SNE). The figures below show an overview of the staff composition at the end of 2009.

### ERC Executive Agency

Statistics of December 2009 show that the Agency employs approximately 33% men and 67% women. At this stage of operation no specific analysis has yet been made as regards the level and grade of the staff vis-à-vis gender balance. At the end of 2009 the ERC Executive Agency employed nationals from 20 Member states.

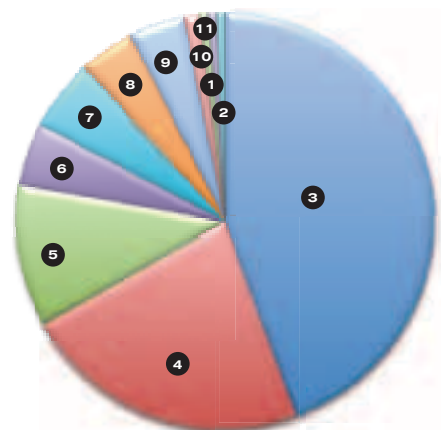
The ERC Executive Agency's staff is subject to the Staff Regulations and the Conditions of Employment of Other Servants of the European Communities.

Figure 16 - TA / SNE Staff composition by profile 31/12/2009 (total: 100)



- |  |   |
|--|---|
| 1 • Management TA-S • 13                 | 8 • Policy Analyst TA-E • 3                         |
| 2 • Research Programme Officer TA-E • 32 | 9 • Accounting Officer TA-E • 2                     |
| 3 • Financial Officer TA-E • 15          | 10 • Information and Communication Officer TA-E • 2 |
| 4 • IT Programme Officer TA-E • 9        | 11 • Statistical Officer TA-E • 1                   |
| 5 • Auditor TA-E • 8                     | 12 • Assistant to the Director TA-E • 1             |
| 6 • Administrative Agent TA-E • 4        | 13 • SNE • 7  |
| 7 • Legal Officer TA-E • 3               |   |

Figure 17 - CA staff composition by profile 31/12/2009 (total: 162)



- |                                |                             |
|--------------------------------|-----------------------------|
| 1 • Legal Matters • 1          | 7 • Communication • 9       |
| 2 • Policies • 1               | 8 • Human Resources • 7     |
| 3 • Administration • 72        | 9 • Document Management • 7 |
| 4 • Finance • 36               | 10 • Audit • 2              |
| 5 • Project Management • 18    | 11 • Accounting • 1         |
| 6 • Information Technology • 8 |                             |

### The ERC Steering Committee

The Commission exercises its supervisory responsibilities over the activities of the ERC Agency through a Steering Committee. The Agency's Steering Committee is made up of three Commission officials and is chaired by the Director-General of DG Research. But uniquely, the ERC Executive Agency Steering Committee also has two external members, Professor Mathias Dewatripont representing the ERC Scientific Council and Dr. Catherine Cesarsky, a leading member of the European research community. In addition the ERC Secretary General and the ERC Executive Agency Director are observers. This membership is designated by the Commission Decision of 2008 to ensure coherence with the specific ERC governance structures.

## 4.4 Communication

The 2009 communication strategy put particular emphasis on increasing the ERC visibility on the global scene and on raising awareness of the opportunities offered by ERC calls at the international level. Events with researchers, press activities, publications, audiovisual products and the development of the ERC website are the main activities undertaken by the ERC to reach its main communication objectives.

In 2009 the ERC ensured its presence and involvement in major international research conferences and exhibitions as well as career fairs and workshops outside its member countries. It participated in several US based conferences and events such as the 175<sup>th</sup> Annual meeting of the American Association for the Advancement of Science (AAAS) which took place in Chicago; the European Researcher's Get Together meeting co-organised by Euraxess Links US and Swissnex; and the 3<sup>rd</sup> edition of the International Career Fair in San Francisco.

The ERC is enlarging its established networks outside Europe with the help of Scientific Counsellors based in various EU Delegation offices as well as of Euraxess Links officers, liaison offices and delegations of national research funding organisations and research ministries.



Throughout 2009, the Executive Agency ensured timely information to all the relevant parties, including the media. In events with ERC participation, press interviews with the ERC leadership and grantees were systematically organised. This was the case at the AAAS 2009 in Chicago and at the "Research Connection" conference in Prague, where media briefings were organised as well as a visit to grantees' laboratories. In addition, press releases were produced for each ERC important step, such as the autonomy of the Executive Agency, the election of the new Secretary General, the results of the 2009 calls and the Review of the ERC's structures and mechanisms. As a result of a permanent dialogue with journalists and its media activities, some 20 major articles on the ERC were published in the press and the organisation was mentioned in a very high number of others.

Regular meetings with the ERC National Contact Points were organised in Brussels to update them on the ERC work programme and calls, and to answer their questions.

In 2009, the Executive Agency delivered also a number of information products such as its 2008 Annual Report, a flyer on "Funding top research leaders for Europe", ERC Fact Sheets, and a brochure on "The Scientific Council of the European Research Council". Furthermore, a set of 8 posters were created with the objective of establishing a clear corporate image outside the ERC headquarters.

The very first ERC audiovisual product was delivered in 2009. The film outlines the ERC strategy, mission and funding available to young researchers, and presents seven Starting Grantees of the first ERC call for proposals.

To complete the information delivered by the ERC, particular attention was devoted to the ERC website. New categories were created, such as a "Funded projects" section, with an updated list of all the ERC projects funded since 2007. New web pages with agendas and minutes of the ERC Scientific Council meetings were also inserted in the site.

# 5

Outlook for 2010

The Scientific Council will continue to consider to what extent, and in what directions, it should seek further to develop its activities, so as better to achieve its goals. With the Agency now autonomous and the independent Review of the ERC structures and mechanisms completed, the ERC can move forward with renewed vigour to meet its high ambitions.

In the words of the Commission Communication responding to the independent Review of the ERC structures and mechanisms: "After a successful "pioneering phase", the ERC is now entering with confidence the second stage of its development. On the basis of early evidence, the ERC is set to become an important and stable part of the European research landscape and in order to reach its full potential, it will also need the support of the other institutions and stakeholders."

**In light of the Review, the Commission intends to put into effect a two-fold strategy to:**

- > take immediate and short term action to implement the recommendations of the Review and other necessary technical improvements to the ERC's operating methods which can be achieved within the framework of its own competences, be these at Commission or Agency level; and
- > address, in a medium term perspective, concerns associated with the underlying rules and regulations, by bringing forward proposals to the Council of the EU and the European Parliament to modify the financial and administrative rules and make them more consistent with the needs of frontier research.

The year 2010 will therefore see key changes coming out of the Review including those related to combining the roles of the Agency's Director and ERC Secretary General into a single post and establishing a standing, independent Identification Committee, as already mentioned in the section of this Report dealing with the Review process.

*The Scientific Council has repeatedly stressed both the requirement for stability of the grant schemes and the need for constant review and optimisation (an "experimental" and "learning" organisation). The Scientific Council will continue to monitor the operation of the existing schemes and consider how best to achieve its broader objectives into 2010 when the thousandth ERC grant will be awarded.*



**Annexes**

## Panel Chairs of the ERC Peer Review Panels ERC Starting Grant Panel 2009

### Life Sciences

- LS1 Molecular and structural biology and biochemistry  
**Panel Chair: Erik Boye**
- LS2 Genetics, genomics, bioinformatics and systems biology  
**Panel Chair: Janet Thornton**
- LS3 Cellular and developmental biology  
**Panel Chair: Kai Simons**
- LS4 Physiology, pathophysiology and endocrinology  
**Panel Chair: Ole Peterson**
- LS5 Neurosciences and neural disorders  
**Panel Chair: Anders Björklund**
- LS6 Immunity and infection  
**Panel Chair: Philippe Sansonetti**
- LS7 Diagnostic tools, therapies and public health  
**Panel Chair: Giulio Cossu**
- LS8 Evolutionary, population and environmental biology  
**Panel Chair: Ilkka Hanski**
- LS9 Applied life sciences and biotechnology  
**Panel Chair: Lars Walloe**

### Social Sciences and Humanities

- SH1 Individuals, institutions and markets  
**Panel Chair: Torsten Persson**
- SH2 Institutions, values, beliefs and behaviour  
**Panel Chair: Michel Wieviorka**
- SH3 Environment and society  
**Panel Chair: James Vaupel**
- SH4 The human mind and its complexity  
**Panel Chair: Gretty Mirdal**
- SH5 Cultures and cultural production  
**Panel Chair: Glenn Most**
- SH6 The study of the human past  
**Panel Chair: Jacques Revel**



## Physical Science and Engineering

PE1 Mathematical foundations

**Panel Chair: Jean-Pierre Bourguignon**

PE2 Fundamental constituents of matter

**Panel Chair: Massimo Inguscio**

PE3 Condensed matter in physics

**Panel Chair: Mikko Paalanen**

PE4 Physical and analytical chemical sciences

**Panel Chair: Robert Schlögl**

PE5 Material and synthesis

**Panel Chair: Jay Siegel**

PE6 Computer science and informatics

**Panel Chair: Cornelis van Rijsbergen**

PE7 Systems and communication engineering

**Panel Chair: Palle Jeppesen**

PE8 Products and process engineering

**Panel Chair: Erkki Leppävuori**

PE9 Universe science

**Panel Chair: Guido Chincarini**

PE10 Earth system science

**Panel Chair: Katherine Richardson**

## Panel Chairs of the ERC Peer Review Panels ERC Advanced Grants 2009

### Life Sciences

- LS1** Molecular and structural biology and biochemistry  
**Panel Chair: Joel Sussman**
- LS2** Genetics, genomics, bioinformatics and systems biology  
**Panel Chair: Anna Tramontano**
- LS3** Cellular and developmental biology  
**Panel Chair: Elisabeth Knust**
- LS4** Physiology, pathophysiology and endocrinology  
**Panel Chair: Christopher Marshall**
- LS5** Neurosciences and neural disorders  
**Panel Chair: Riitta Hari**
- LS6** Immunity and infection  
**Panel Chair: Luke O'Neill**
- LS7** Diagnostic tools, therapies and public health  
**Panel Chair: Dimitrios Boumpas**
- LS8** Evolutionary, population and environmental biology  
**Panel Chair: Carlos Manuel Duarte**
- LS9** Applied life sciences and biotechnology  
**Panel Chair: Regine Kahmann**

### Social Sciences and Humanities

- SH1** Individuals, institutions and markets  
**Panel Chair: Bengt Holmstrom**
- SH2** Institutions, values, beliefs and behaviour  
**Panel Chair: Cynthia Fuchs Epstein**
- SH3** Environment and society  
**Panel Chair: Susan Fainstein**
- SH4** The human mind and its complexity  
**Panel Chair: Michel Denis**
- SH5** Cultures and cultural production  
**Panel Chair: Erika Fischer-Lichte**
- SH6** The study of the human past  
**Panel Chair: Alain Dewerpe**





## Physical Science and engineering

PE1 Mathematical foundations

**Panel Chair: Rolf Jeltsch**

PE2 Fundamental constituents of matter

**Panel Chair: Elisabeth Giacobino**

PE3 Condensed matter physics

**Panel Chair: Laurens W.Molenkamp**

PE4 Physical and analytical chemical sciences

**Panel Chair: Claudine Noguera**

PE5 Materials and synthesis

**Panel Chair: Heinz-Dieter Fenske**

PE6 Computer science and informatics

**Panel Chair: Carlo Ghezzi**

PE7 Systems and communication engineering

**Panel Chair: Alessandro De Luca**

PE8 Products and process engineering

**Panel Chair: Viggo Tvergaard**

PE9 Universe sciences

**Panel Chair: Rolf-Peter Kudritzki**

PE10 Earth system science

**Panel Chair: Jean Jouzel**

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This report, prepared again this year under the authority of the ERC Scientific Council, sets out the ERC's activities and achievements in 2009. It will be disseminated widely to both the scientific community and other key stakeholders with the aim of building awareness and increasing the transparency of the ERC's strategy and operations.



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