EUROPEAN COMMISSION / Research & Innovation / 7th Framework Programme

# Annual Report on the ERC activities and achievements in 2010

Prepared under the authority of the ERC Scientific Council

RESEARCH & INNOVATION POLICY

European Research Council
Executive Agency

**EUROPEAN COMMISSION**

Directorate-General for Research and Innovation
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*European Commission, ERC Executive Agency*

EUROPEAN COMMISSION

# Annual Report on the ERC activities and achievements in 2010

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## Commissioner's Introduction

I am pleased to share with you the Annual Report on the European Research Council (ERC) activities and achievements in 2010. The report describes how the ERC is advancing frontier research, discovery and innovation, through investments in research awarded in a pan-European competition for excellence.

The ERC is dedicated to the support of frontier research across all fields of science, engineering and humanities. It funds the best ideas and most promising people, pushing further the frontiers of science to foster high-risk, curiosity-driven investments that will generate important discoveries and breakthroughs.

These investments in research are of fundamental importance to help ensuring Europe's global competitiveness and prosperity. The economic and financial crisis has confronted the European Union and many of its Member States with some of our biggest challenges in recent history. This is the impetus behind *the Europe 2020 Strategy for Jobs and Growth* approved by Member States earlier in 2010. It is an ambitious agenda designed to transform Europe into a smart, sustainable and socially-inclusive economy. Research and innovation are at the heart of this agenda, not only to getting the European economy back on track and millions of people back to work, but also to tackling the major challenges faced by our society.

Boosting the quality and scope of research in Europe is only the beginning of our ambitions. The *Innovation Union*, a flagship initiative within the Europe 2020 Strategy, aims to strengthen every link in the *Innovation Chain*, from the frontier or blue sky research to the successful transfer of such research into commercial products and services. The ERC provides a vital link in the *Innovation Chain*. It was set up to stimulate scientific excellence by supporting the very best and most creative scientists and researchers to be adventurous in their research and go beyond established frontiers of knowledge. This frontier research is very much part of the innovation picture – without it the pipeline of new and innovative ideas would rapidly run dry. ERC-funded ideas are expected to lead to social and technological innovation, which when successfully applied, could generate enormous economic and societal benefits for Europe.

Outstanding research the ERC supports includes, for example, the development of a unique device that allows people with severe disabilities to manoeuvre a wheelchair by inhaling and exhaling through the nose. The sniffing control device is relatively inexpensive and simple to learn to operate in comparison with other brain-machine interfaces. Or a pioneering intercontinental trip from Italy to China with a driverless car, an experiment that shows that it is possible to move goods between two continents with non-polluting vehicles powered by green energy and with virtually no human intervention. This endeavour could improve road safety in the future.

I am convinced that science, research and innovation have a bright future in Europe and will do much for Europe. I am convinced that the ERC has an incontrovertible role to play in making Europe's future brighter. And I am convinced that the future EU funding programmes for research and innovation must focus even more on raising scientific excellence, through strengthening the ERC.

**Máire Geoghegan-Quinn**

***European Commissioner for Research, Innovation and Science***

## Personal message from the ERC President

Since its inception in 2007, the ERC has established a growing and widely acknowledged reputation. Under its first six grant calls until 2010, it has funded more than 1,700 individual research teams all over Europe. Competition for ERC grants remains fierce. Although the ERC budget continues the foreseen increase, it does not match the rising numbers of applications. In the meantime, European universities and research institutions are using their ERC grants as a highly visible and smart benchmark system for comparison.

Within a very short period of time, the ERC has become a stronghold of the European Research Area (ERA). The ERC has attained this reputation thanks to adherence to a few fundamental principles: a pan-European competition for talents based on individual excellence only, as evaluated by the best available peer-review; funding bottom-up frontier research through calls that encourage innovative risk-taking, interdisciplinary research, and provide flexibility and portability of funds. The ERC peer review system is greatly recognised by the scientific community worldwide, as can be seen in the high acceptance rates of becoming a panel member.

This ERC Annual Report provides a glimpse into the main achievements of the ERC in 2010. Evaluation and granting procedures prove to run smoothly. The Scientific Council, the scientific governing body of the ERC, continued to unfold the strategic priorities and to monitor evaluation and granting of the submitted and selected projects. It is supported by the ERC Executive Agency and its more than 300 experienced, dedicated and enthusiastic staff, providing critical support in the peer-review process, implementing the ERC strategy and executing the financial operations. The ERC builds on the synergy of several key players, such as national funding agencies, national governments, and parliamentarians, both at national and EU level, and the overwhelming trust and support it receives from the scientific community in Europe and beyond.

2010 has also been a year of change. In February 2010, Fotis Kafatos stepped down as Chair of the Scientific Council and President of the ERC. His achievements in the first years of the ERC cannot be summarized in this preface. The Scientific Council remains grateful for his contributions. After his resignation, Fotis was unanimously elected Honorary President of the ERC.

In September, Secretary General Andreu Mas-Colell returned to his academic position at the Universitat Pompeu Fabra in Barcelona. During his time with the ERC, Andreu was tirelessly working towards a seamless and integrated organization. The term of the ERC's first Director (Ad interim), Jack Metthey, ended on December 31. Throughout his mandate, Jack's leadership in the ERC Executive Agency was crucial for making the ERC what it is today.

2010 saw the appointment of a new Commissioner for Research, Innovation and Science, Máire Geoghegan-Quinn. The Scientific Council had several personal encounters with the Commissioner and always received her full support. She made it clear from the beginning that, for her, the ERC is an absolutely essential part of European research policy. The same goes for the new Director General of DG Research and Innovation, Robert-Jan Smits, on whose understanding and commitment we can always count.

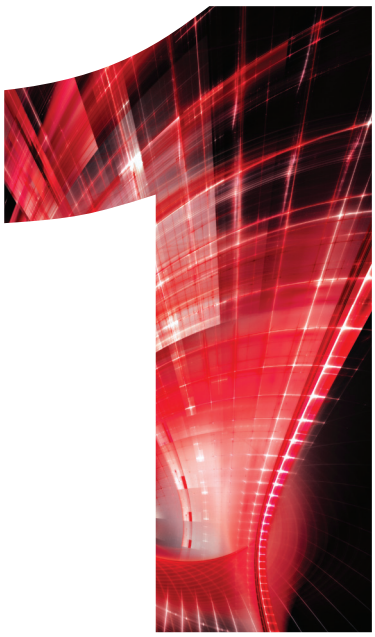
2010 has been a year of major scientific and technological advancements. Many of our grantees (as well as many of our panel members) received major awards in science, technology and scholarship. We are especially proud, however, that Konstantin Novoselov, an ERC Starting Grantee, was awarded the Nobel Prize 2010 in physics.

2010 has also been a year when it became obvious that major challenges still lie ahead. The discussion on the next Research Framework Programme has just begun. For the Scientific Council it is clear that the ERC needs to be strengthened both financially and organisationally in substantial ways. The Director General of DG Research and Innovation is currently chairing a Task Force, which, in the full spirit of the mid-term review of 2009 and in collaboration with the Scientific Council, currently investigates several options for a more robust governance structure of the ERC. To make the ERC more independent while providing for long-term financial stability remains one of the aims when exploring the possibility of transforming it into an institution fully adapted to its vision and task.

The year 2010 has been a very promising one. The Scientific Council, for its part, is committed to continuously work hard to fulfil the ERC's unique mission. It will continue to make fundamental contributions to the transformation of Europe into a world-leading knowledge area, where frontier research can be the hotbed for innovation and the well being of its citizens.

**Prof. Helga Nowotny**

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



# Highlights - 2010 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 (FP7) as the implementation of the *Ideas* Specific Programme, the ERC aims at reinforcing excellence, dynamism and creativity in European research by funding investigator-driven projects of the highest quality at the frontiers of knowledge.

The EU-funded research under this Programme responds to the needs of increasing the attractiveness of Europe for the best researchers worldwide and for industrial research investment, as well as strengthening the EU capacity to generate new knowledge that will feed back into the economy and the society.

The ERC comprises an independent Scientific Council of 22 distinguished scientists, engineers and scholars that establishes and monitors the implementation of the ERC's scientific strategy and an autonomous Executive Agency that handles the operational management.

Two grant schemes designed by the Scientific Council form the core of its activities: Starting Grants (StG), supporting researchers at the early stage of their careers, with the aim of providing working conditions that enable them to become independent research leaders; and Advanced Grants (AdG), designed to support outstanding and established research leaders by providing the resources necessary to enable them to continue the work of their teams in expanding the frontiers of scientific knowledge.

By promoting excellence, the ERC has a fundamental role in reinforcing and making more coherent the whole chain of research and innovation, from blue sky research to market uptake. The curiosity-driven, competitive approach has allowed the *Ideas* Programme to fund a broad project-portfolio, including projects which address current grand challenges as well as fundamental questions, thus laying also foundations of solutions to future, unpredictable challenges the European society may face.

## 1.2 Main Achievements in 2010

The *Ideas* Specific Programme's budget implemented by the ERC is € 7.5 billion over a period of seven years. It represents around 15% of the entire FP7 budget .

In the implementation of the Programme in 2010, commitment credits of € 1.1 billion (global commitment) and payments of € 528 millions were fully executed, representing 100% of the operational credits of the *Ideas* Specific Programme for 2010. Around 2.2% of the operational budget was spent on administration.

### Growing number of ERC grant holders

The ERC schemes have been well received by the research community. Since its start in 2007 the ERC has launched six calls for proposals for the Starting and Advanced Grant schemes. The competitions yielded a total of over 20,000 proposals out of which more than 1,700 have been selected for funding through a rigorous peer review. By the end of 2010 more than 1,400 frontier-research projects (see Figure 2) were up and running in around 450 prestigious research institutions in Europe.

Figure 1 - **Annual budget evolution 2007-2013**

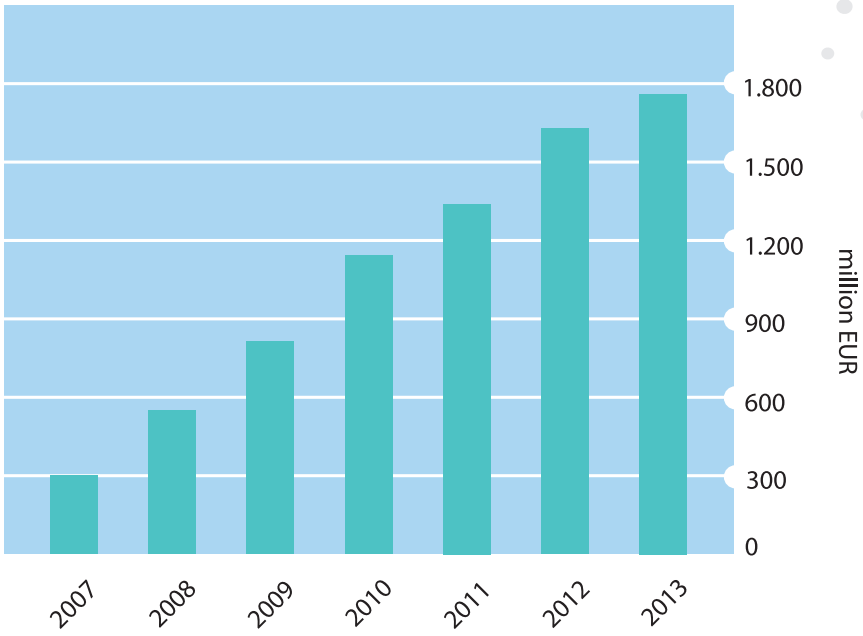
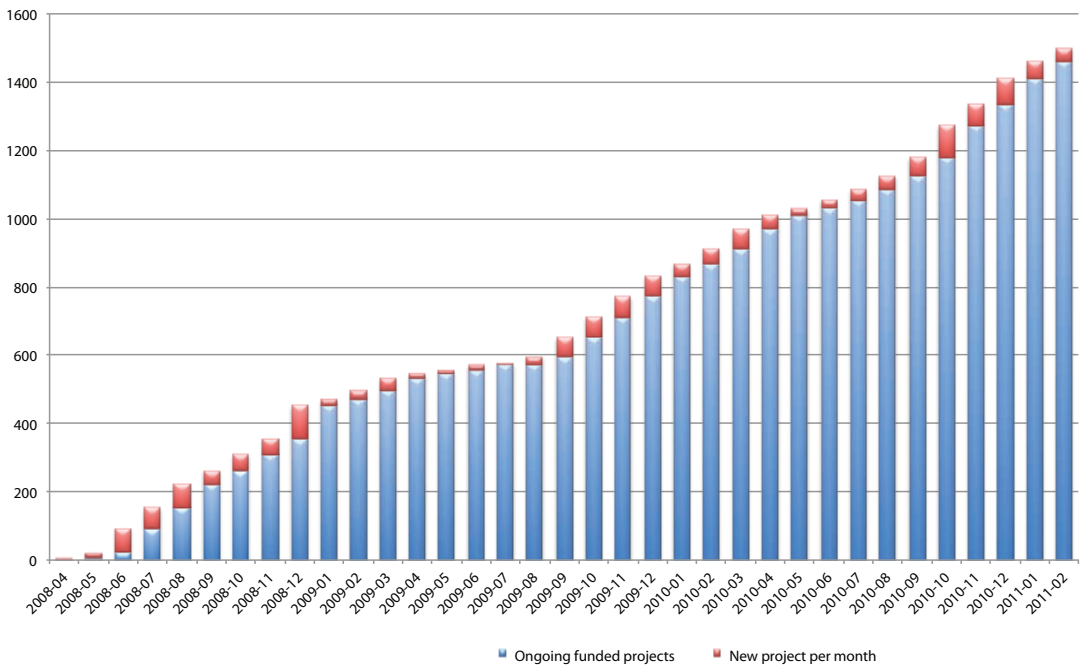



Figure 2 - **Evolution of number of ERC funded projects**



In response to the two 2010 calls the ERC received a total of 4,882 proposals, corresponding to a 20% increase compared to 2009 and 702 new awards were granted to individual investigators hosted by universities and other public and private institutions throughout the EU and associated countries, for a total budget of € 1.1 billion. More than 4,700 proposal evaluations were conducted, involving more than 650 panel reviewers organised as usual in 25 different panels per call and around 1,800 external reviewers.

The efficient operation of the Advanced and Starting Grant calls during 2010 underlines the successful organisational development of the ERC Executive Agency, created to implement the *Ideas* Programme as an integrated constituent of the ERC and whose staff increased up to 316 members at the end of the year.

The Agency managed to consolidate its key performance indicators for time to grant with 50% of the grants signed within 109 days after the end of the evaluation for Starting Grants 2009, within 108 days for Advanced Grants 2009 and within 103 days for Starting Grants 2010 and set new standards with an average time to pay of 10.7 days for pre-financing and 17.1 days for interim payments.

As already in the past, also in 2010, ERC-funded projects deal with highly ambitious groundbreaking research across all scientific domains. The year 2010 marks the first time of an operational budget above € 1 billion and celebrates the 1,000$^{th}$ researcher funded by the ERC. More than 1,700 top researchers in Europe are or will soon be thriving and enthusiastically pursuing their innovative ideas at the frontiers of knowledge. Many ERC grantees have received prestigious international scientific prizes and awards in 2010 and the number of articles acknowledging ERC-funding published in peer-reviewed journals increased from over 400 in 2009 to around 1,200 in 2010.

The ERC has become an important agent of change. It benefits the European research system by setting the highest standards of scientific excellence in universities and research institutions which, in turn, will also attract industry eager to profit from excellent people and new ideas, thus, creating many new opportunities for society at large.

In order to strengthen the ERC's role in the innovation chain from frontier research to socio-economical benefits, 2010 has seen the development of a new ERC funding opportunity, which will be launched at the beginning of 2011. ERC grant holders will be given the opportunity to apply for additional funding to establish the innovation potential of ideas arising from their ERC-funded frontier research projects.

## The European Research Council celebrates its 1000th researcher funded

Just over three years after its launch, the ERC has reached a new milestone: by mid-2010 one thousand top researchers had been supported by the ERC to perform their innovative blue sky research throughout Europe. To mark the highly symbolic awarding of the thousandth ERC grant, a ceremony and media event took place in Munich on 24 June 2010. It was attended by key personalities from the political and research scene, including the EU Commissioner for Research, Innovation and Science Máire Geoghegan-Quinn, ERC President Professor Helga Nowotny and German Federal Minister of Research Professor Annette Schavan, Prof. Bernd Huber (Rector of the Ludwig-Maximilians-Universität München) in addition to the thousandth grant winner Professor Erika von Mutius (Ludwig-Maximilians-Universität München). She is an immunologist and paediatrician and her research aims at exploring new ways of tackling asthma and allergies.


From left to right: Prof. Dr. Erika von Mutius, Jack Metthey, Máire Geoghegan-Quinn, Prof. Bernd Huber

## THE 1000TH IDEA: WHERE ASTHMA BITES THE DUST

***ERC Grantee:*** Prof. Dr. Erika von Mutius

***Host Institution:*** Ludwig- Maximilians-Universität München, Germany

***Project:*** Host-environment interactions in the protection from asthma and allergies (HERA)

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

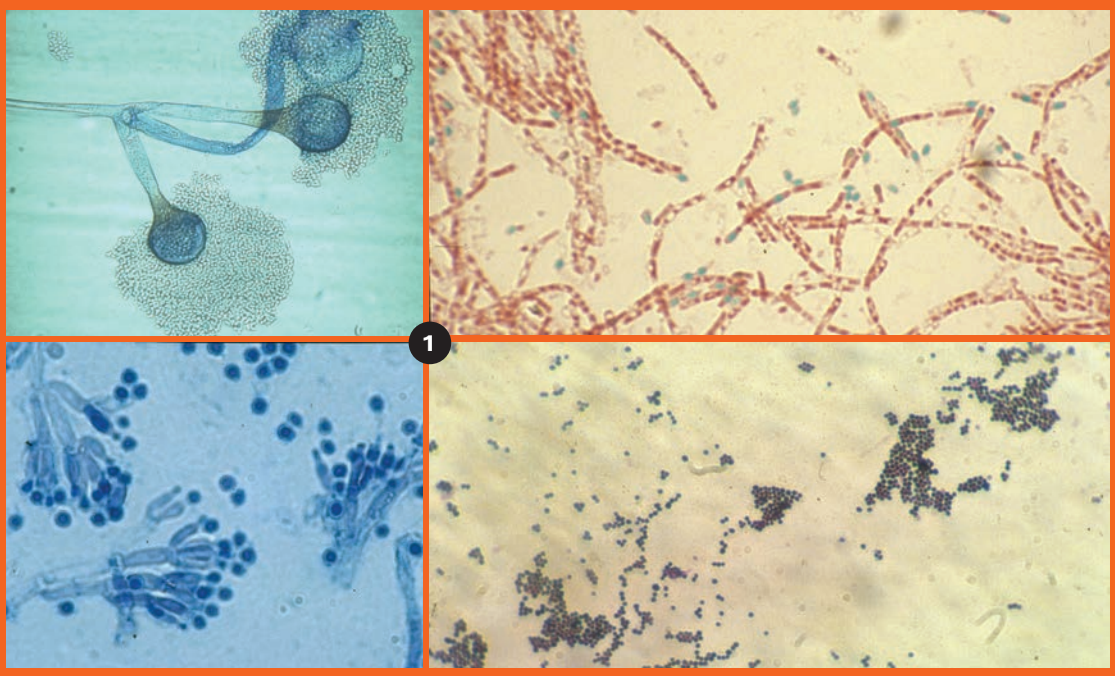
***ERC funding:*** € 2.16 million for 5 years

***Asthma and allergies are complex diseases caused by genetic and environmental factors. Available therapies only control symptoms and cannot cure or prevent these conditions. The HERA project aims to find new strategies for the prevention of asthma and allergies.***

Earlier work by Prof. Erika von Mutius and her team showed that children who grow up on farms, where they are exposed to a wide variety of microbes, are less likely to develop asthma and allergies. This prompted the researchers to compare the effects of growing up on different types of farms and non-farming communities on the immune systems of children.

These studies have progressed to the point where a systematic attempt can be made to identify those microbes whose presence protects against asthma and allergies, and to clarify how this depends on the genetic constitution of the individual human host. This is what the project HERA intends to achieve.

The long run results from this project could contribute to isolate active compounds from these pathogens and use them as starting points for new prevention strategies of asthma and allergy.



1 • "Bacteria (Staphylococci, Bacillus) and fungi (Penicillium, Aspergillus) isolated from cow sheds"

## 1.3 Looking ahead: preparing the future of the European Research Council

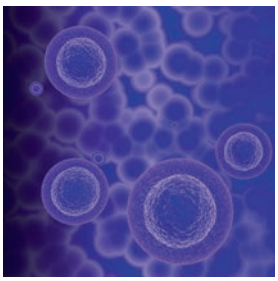
Robert-Jan Smits

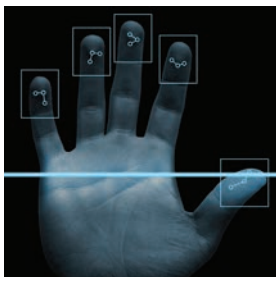
The ERC Scientific Council has taken a series of steps with a view to consolidating past experience and responding to present and future European needs. The overall aim is to explore the best possible conditions for the long lasting and sustainable success of its unique mission as a leading world-class funding institution in frontier research.

Towards this end and in line with the Council of Ministers Conclusions of March 2010, the European Commission set up a Task Force in December 2010 upon request of the ERC Scientific Council, to explore the various options and legal possibilities related to the ERC's future governance. The Task Force, chaired by Robert-Jan Smits, Director General for Research and Innovation at the Commission will explore, *inter alia*, the possibilities of firmly positioning the ERC within the European Research Area, taking full account of the new institutional framework defined by the introduction of the Lisbon Treaty. It includes participants from the relevant European Commission departments and representatives from the ERC Scientific Council, including its President Prof. Helga Nowotny. There will also be two external members, Prof. Vaira Vīķe-Freiberga, former President of the Latvian Republic and former Chair of the Review panel of the ERC, and Prof. Ernst-Ludwig Winnacker, former ERC Secretary General.

The Task Force will aim at concluding its work well before the decision on the next EU Research Framework Programme is taken, to allow ample time for the Council of Ministers and the European Parliament to hold a thorough and well-founded debate.

In searching to identify long-term solutions for the governance issues that have affected the ERC so far, the Scientific Council is convinced that the work of the Task Force will also benefit from the experience gained during the first years of the ERC's existence while laying the foundations for a robust future governance structure.



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

# Assessing impact

The results of ERC-funded research might not be visible before a few or several years. 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 activity is ongoing, as announced in the Monitoring and Evaluation Strategy adopted by the Scientific Council in June 2009. However, an initial analysis is already able to provide a preliminary assessment of some direct and derived socio-economic impact of ERC-funded research.

## 2.1 Supporting the best researchers

The ERC continuously monitor the participation of leading researchers in its funding schemes to inform discussions on how well they are received and where, if necessary, changes and improvements are needed to make them more attractive.

The best evidence that ERC-funded researchers receive the highest consideration among the top researchers in their areas is the fact that they receive international scientific prizes and awards.

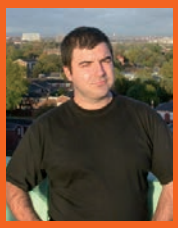
The most prestigious example in 2010 is the Nobel Prize awarded to Konstantin Novoselov for his work to produce and isolate graphene, published in Science in 2004, and subsequent experiments which helped further identify and characterize this material. Novoselov was among the first waves of researchers to be funded by the ERC.

Another, equally prestigious research prize is the Fields Medal of the International Mathematical Union, awarded to up to four mathematicians who are under 40 years to "recognize outstanding mathematical achievement for existing work and for the promise of future achievement". Stanislav Smirnov, who received an ERC Advanced Grant in 2008, was awarded the Fields Medal 2010 together with Elon Lindenstrauss* (Advanced grantee 2010).

Nobel Prizes and Fields Medals are, without doubt, the highest honors researchers can receive for their achievements. Those prizes are however awarded only for a handful of fields and only to few researchers. There are more research discoveries and technological breakthroughs happening every day in research than the Nobel Prize can recognize. This table lists a selection of prestigious research prizes and shows ERC grant holders who were awarded some of them in 2010.

| Prize | Category | Number laureates | | ERC Grantees |
|---|---|---|---|---|
| | | Total | ERC Grantees | |
| **Wolf Prize**** | Agriculture | 1 | 1 | David Baulcombe |
| | Mathematics | 2 | - | - |
| | Medicine | 1 | - | - |
| | Physics | 3 | 2 | Anton Zeilinger<br>Alain Aspect* |
| **Millennium Technology Prize** | Technological innovations | 1 | 1 | Michael Grätzel |
| **Abel Prize** | Mathematics | 1 | - | - |
| **EMBO Gold Medal** | Molecular Biology | 1 | 1 | Jason Chin |

* Prize awarded while grant application in selection process
** No prize awarded in Chemistry in 2010



## KONSTANTIN NOVOSELOV, NOBEL PRIZE IN PHYSICS 2010

***ERC Grantee:*** Prof. Konstantin Novoselov

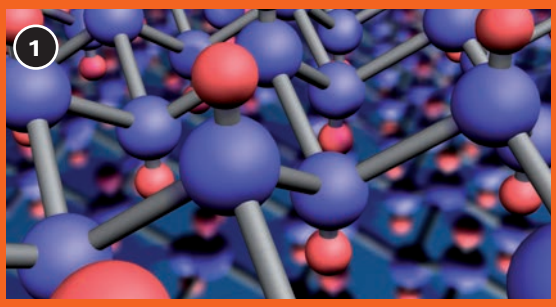
***Host Institution:*** University of Manchester, United Kingdom

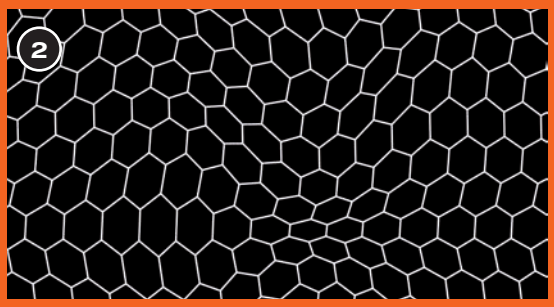
***Project:*** Physics and Applications of Graphene (GRAPHENE)

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

***ERC funding:*** €1.78 million euro for 5 years

Prof. Novoselov was awarded the prize alongside Professor Andre Geim for their groundbreaking work on graphene. Aged 36, Novoselov is one of the youngest Nobel laureates. He received an ERC Starting Grant supporting his research into the physics, properties and possible applications of new material graphene, a two-dimension sheet of carbon atoms, which promises multiple applications.




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".

## STANISLAV SMIRNOV, FIELDS MEDAL 2010

***ERC Grantee:*** Prof. Stanislav Smirnov

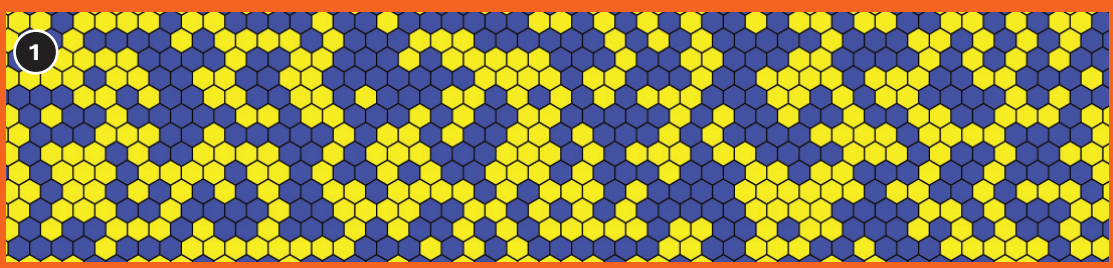
***Host Institution:*** Université de Genève, Switzerland

***Project:*** Conformal fractals in analysis, dynamics, physics (CONFRA)

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

***ERC funding:*** 1.28 million euro for 5 years

Prof. Smirnov was awarded one of the 2010 Fields Medals for being the first to provide a rigorous proof that the scaling limit of various two dimensional models in statistical physics is conformally invariant. Prof. Smirnov proved this for two important cases: connections between cavities in porous materials (percolation) and spin-interactions in ferromagnets (the Ising model). The ERC grant supports his research since 2009.




1 • "Percolation, a classical model for a random medium. Hexagons are coloured randomly, with blue ones representing holes in yellow rock. What is the probability that a liquid can seep through?"

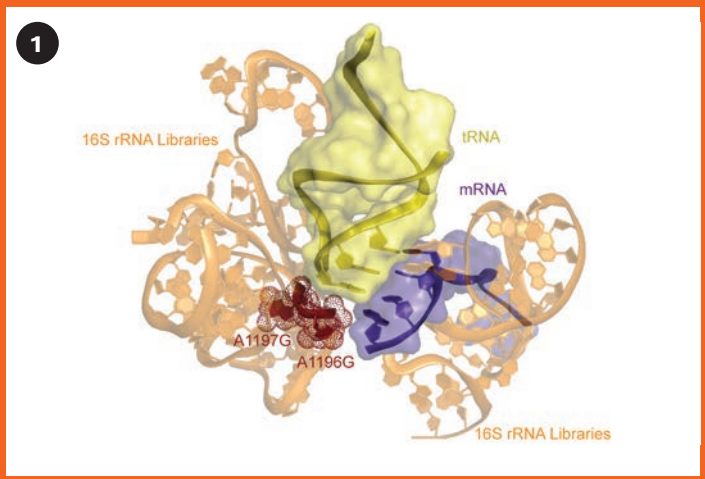
## JASON CHIN, EMBO GOLD MEDAL 2010

***ERC Grantee:*** Dr. Jason W. Chin
***Host Institution:*** Medical Research Council, United Kingdom
***Project:*** Encoded Cellular Synthesis of Unnatural Biopolymers (ECSUB)
***ERC Call:*** Starting Grant 2007
***ERC funding:*** € 1.78 million for 5 years

Dr. Jason Chin received the EMBO Gold Medal in 2010 "*for his pioneering work on reprogramming the genetic code*".
He and his team have produced new proteins that are not normally produced by natural organisms by expanding the genetic code. In the future, these new proteins could be used in cancer treatment or to create protein-like plastics within living organisms.

Within our cells we have ribosomes, small 'machines' which interpret our genetic material to produce the proteins we need. Ribosomes usually read codes composed by groups of three of the four nucleic acid bases in our genetic material to produce 20 standard amino acids. Dr. Chin and his team have created new ribosomes able to read quadruplets instead of triplets. They expanded the number of possible codes and therefore allowed a greater possible combination of amino acids, therefore a greater number of proteins.

When one of these new ribosomes was introduced into bacteria, the bacteria produced proteins with unnatural amino acids in specific positions. Researchers can tell where these amino acids are by labelling them with markers viewable with specialised equipment. Once marked the protein interactions within the cell can be monitored, offering deeper insights into the properties and functions of all existing, as well as new, proteins.




1 • "Ribosome".

## 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, the ERC is already monitoring the output of the first some hundreds of projects funded by the ERC. Among the early accomplishments ascribable to the ERC, an exploratory exercise systematically searching for publications acknowledging ERC funding using Thomson Reuters Web of Science (a bibliographic system indexing about 8,000 journals with the highest impact factors) shows that, as the projects mature and they increase in number, ERC funded research is making its way in the core body of knowledge. While in 2009 about 400 journal articles acknowledging the ERC were recorded, their number tripled in 2010. This is a combination of rising number of projects and maturing projects producing more results. For 2009, the articles are from 182 projects and for 2010 from 453 projects i.e. on average two and three articles per projects for 2009 and 2010 respectively.

### Important discoveries made in ERC projects

The following are examples of discoveries from ERC funded projects which have been hailed as "landmark" or "exceptional advances" by the research community. They are selected among scientific publications acknowledging ERC-funding which are featured by editorial boards of scientific journals, highlighted in post-peer review system such as Faculty of 1000[1] or covered by (popular science) press and media.

[1] Faculty of 1000 is a platform in which selected leading researchers (the Faculty) review publications in Life Sciences and assess their significance in respect to the advances they make. The faculty members choose which paper to review and mark them on a scale ranging from "exceptional" to "must read".

## NEUROSCIENCES: CONTROLLING ELECTRONIC DEVICES BY SNIFFING

***ERC Grantee:*** Prof. Noam Sobel
***Host Institution:*** Weizmann Institute, Israel
***Project:*** Predicting odor perception from odorant structure and neural activity in the olfactory system (ODORSPACE)
***ERC Call:*** Starting Grant 2007
***ERC funding:*** € 1.6 million euro for 4 years

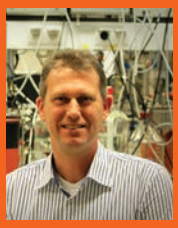
ERC-funded scientists have developed a unique device that allows people with severe disabilities to manoeuvre a wheelchair by sniffing, inhaling and exhaling through the nose. This technology can also be used by paralysed people to communicate with other persons.

The sniffing control device functions by a small rubber tube placed in front of the nostrils that measures changes in pressure in the nose. The system is relatively inexpensive and simple to learn to operate in comparison with other brain-machine interfaces.

The ODORSPACE project studies the sense of smell and has developed a tool to measure the physical stimulus of smell and its translation, via the neural system, in the perception of odours. Prof. Sobel's team developed an eNose that can measure smells and predict how odorant mixtures will be perceived. Several medical devices have been developed to treat sleep apnea and snoring or to help paralysed people who cannot move or communicate anymore.

1 • 'A conceptual schematic' demonstrating a metric we have developed for measuring smells, as in the ERC-funded studies by Haddad et al., 2008a; 2008b.

2 • "The functional magnetic resonance imaging (fMRI) set up". Here, odors are generated within the fMRI machine, allowing the team to investigate odor-induced brain activity, as in the ERC-funded study by Plotkin et al., in P.N.A.S. 2010.

## BACTERIA SHOW NEW WAY TO PRODUCE OXYGEN

***ERC Grantee:*** Prof. Michael Jetten
***Host Institution:*** Radboud University Nijmegen, The Netherlands
***Project:*** Anaerobic ammonium oxidizing bacteria: unique prokayotes with exceptional properties (ANAMMOX)
***ERC Call:*** Advanced Grant 2008
***ERC funding:*** € 2.5 million euro for 5 years

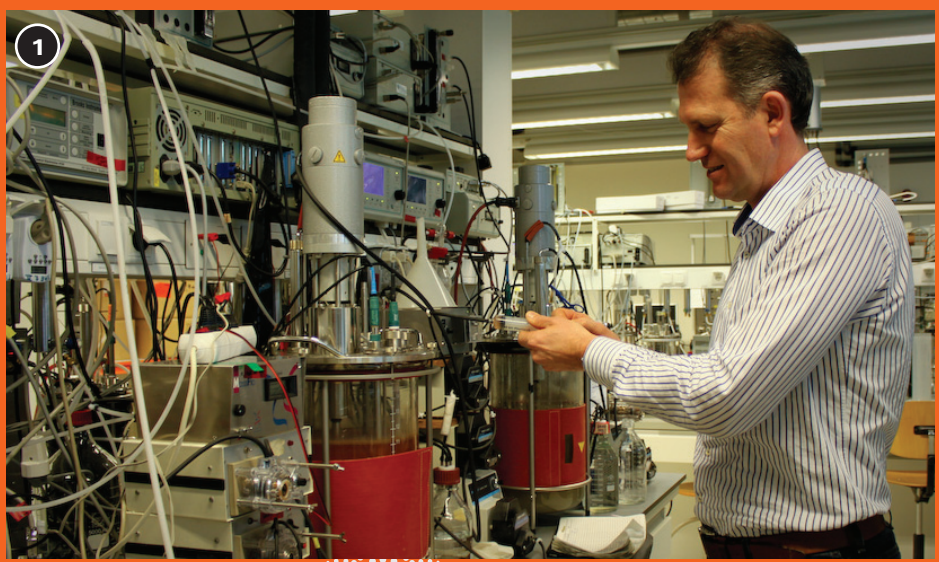
Researchers have discovered bacteria that can produce oxygen by breaking down nitrite compounds. They are also able to consume methane that is found in abundance in oxygen-poor areas such as in the sea floor.

Researchers knew of three biological pathways to produce oxygen until now. In photosynthesis oxygen is produced from carbon dioxide and water. In the second and third pathway, oxygen is produced from compounds which contain themselves oxygen such as chlorates.

This discovery published in Nature (25 March 2010) could indicate that this oxygen production mechanism may have existed before green plants appeared on earth. It opens up new possibilities for understanding how and where oxygen can be created and leads to new questions about the origin of oxygen on earth.

Researchers isolated the microbes in freshwater sediments in Dutch drainage ditches and studied their complete genome. Using those lab-grown bacteria, they found out that the bacteria broke down nitrites, using oxygen to consume the methane and releasing nitrogen as waste. The team is now trying to understand which enzyme is produced that enables oxygen production.

1 • ERC laureate Mike Jetten taking a liquid sample from an anammox bioreactor (ercanammo232927).




## CHEMISTRY: TIME TO RETHINK THE ROLE OF EMULSIFIERS?

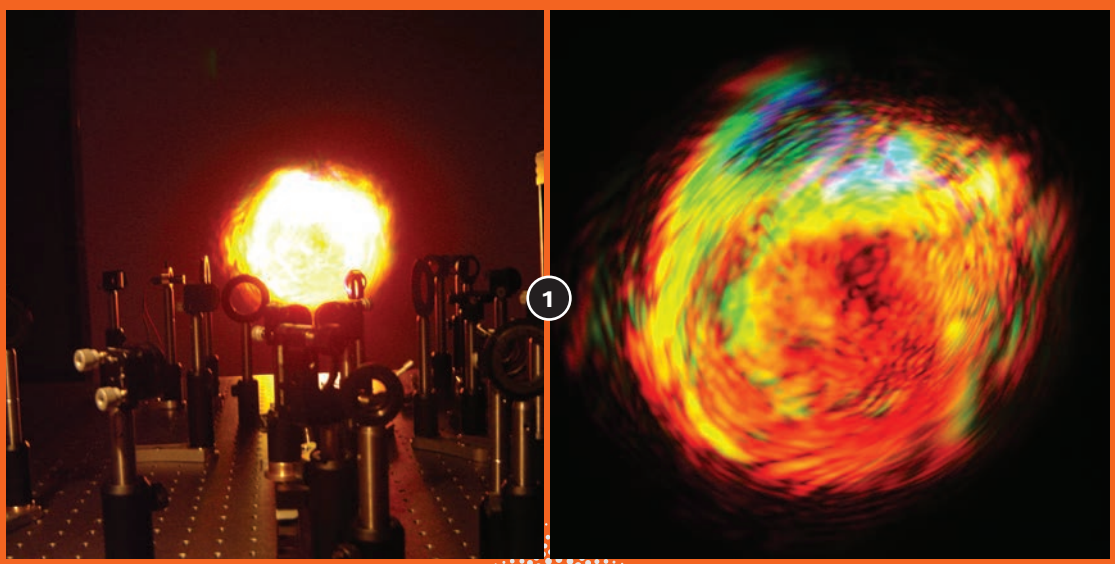
***ERC Grantee:*** Dr. Sylvie Roke
***Host Institution:*** Max Planck Gesellschaft Zur Foerderung Der Wissenschaften e.V., Max-Planck G., Germany
***Project:*** Molecular Interfacial structure and dynamics of Nanoscopic droplets in Emulsions (MINE)
***ER Call:*** Starting Grant 2009
***ERC funding:*** € 1.15 million euro for 5 years

Emulsifiers are used to "stabilize" emulsions, mixtures of liquids that do not mix harmoniously such as oil and water. A recent study suggests that, at least on nanoscale, emulsifiers may not work as previously thought.

The researchers studied various mixtures of water, oil and odium (NDS), a popular emulsifier found in shampoos and creams. They concluded that it was unclear what stabilized the nano-emulsions. Emulsifiers may not be needed at all or if they are, they may play a different role than previously thought.

The team now wants to study the effect of emulsifiers in bigger droplets such as in creams or ointments. Emulsions can be found in forms of pharmaceutical creams and ointments or of personal hygiene articles such as hairstyling or cosmetics.

1 • The group of Sylvie Roke develops and uses nonlinear light scattering techniques to study molecules at hidden interfaces of nanoscopic droplets in solution. Information on composition, ordering, orientation and handedness of molecules at these liquid/liquid interfaces. This novel development opens up new means to directly observe processes that dictate the existence, structure and stability of emulsions. For this type of research high power femtosecond (10-15 s) lasers are needed. When focused, such a short burst of photons breaks down the atoms and molecules in air, which results in a colorful image.



## POLITICAL COMPLEXITY EVOLVES IN SMALL STEPS BUT DECREASES IN COMPLEXITY CAN BE LARGE

***ERC Grantee:*** Prof. Ruth Helen Mace
***Host Institution:*** University College London, United Kingdom
***Project:*** The evolution of cultural norms in real world settings (CULTRWORLD)
***ERC Call:*** Advanced Grant 2009
***ERC funding:*** € 1.8 million euro for 5 years

Political complexity in human society evolves in small, incremental steps, according to a study published in Nature. The authors used methods usually applied to the study of biological evolution to test competing models of how complex societies rise and fall.

Several models for human political evolution, from tribes to chiefdoms to state have been debated. The authors focused Austronesian-speaking societies of the Pacific and island South-East Asia with a novel approach. They used quantitative methods of phylogenetic-tree analysis usually used by biologists and linguistic researchers.

As biologists use genetic data to construct phylogenetic trees, the team mapped data characterising the different Austronesian societies on the basis of their vocabulary and information available on their political organisation. They could then make hypotheses on what societies were like in the past and how they have changed over time. On the basis of this data, six different models of political evolution were tested in 84 societies.

Their findings suggest that political complexity rises and falls in a series of small steps. More over, while increases are sequential, decreases could also happen in bigger leaps, for instance if a small group leaves a large society to form a small new one or if political institutions disintegrate. According to the results, large non-sequential jumps in political complexity did not happen in the history of these societies.

Source: CORDIS News

# Advancing Frontier Research

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

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.

The ERC *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 investigators or the members of their team. The only restriction being that the research is performed in the EU or one of the FP7 Associated Countries.

## 3.1 The 2010 snapshot

### ERC Starting Grants

The 2010 ERC Starting Grant call was published in July 2009 with 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, 1,230 in Life Sciences and 638 in Social Sciences and Humanities. A total of 436 proposal were funded with a total of more than € 537 million awarded and an overall average awarded grant of around €1.2 million.

The 2011 Starting Grant call was published in July 2010. A total of 4,080 proposals were submitted in response: 1,690 for Physical Sciences and Engineering, 1,440 for Life Sciences and 950 for Social Sciences and Humanities, representing respectively 42%, 35% and 23%, a splitting similar the 2010 Starting Grants call (see Figure 3).

### ERC Advanced Grants

The 2010 ERC Advanced Grant call was published in October 2009 with an indicative budget of €590 million. A total of 2,009 proposals were received distributed by domain as follows: 902 proposals in Physical Sciences and Engineering (45%), 621 (31%) in Life Sciences and 486 in Social Sciences and Humanities (24%). The evaluation process resulted in a total of 266 proposals retained for funding with a total of more than € 588 million awarded and an overall average awarded grant of around €2.2 million (see Figure 4).

The 2011 ERC Advanced Grant call was published in November 2010 with deadlines between February and April 2011 and an indicative budget of € 661 million.

## 3.2 From 2007 to 2010: four years of ERC calls

By the end of 2010 and since the start of the *Ideas* Programme in 2007, the ERC had launched in total eight calls for proposals:

- Six calls were completed (Starting Grant 2007, 2009 and 2010; Advanced Grant 2008, 2009 and 2010), i.e. the evaluation process was concluded and the results were communicated to applicants and other stakeholders.
- The deadline for submission of proposals of the Starting Grant 2011 call had passed and the evaluation process was on-going.
- A call for Advanced Grant 2011 was launched at the end of 2010 with deadlines in Spring 2011.

Arguably, the sharp decline of the number of applications between the first and second Starting Grant call (see Figure 3) is explained partly by the changed application procedures between the first and subsequent calls.

Figure 3 - **Starting Grant: Submissions 2007 - 2011**

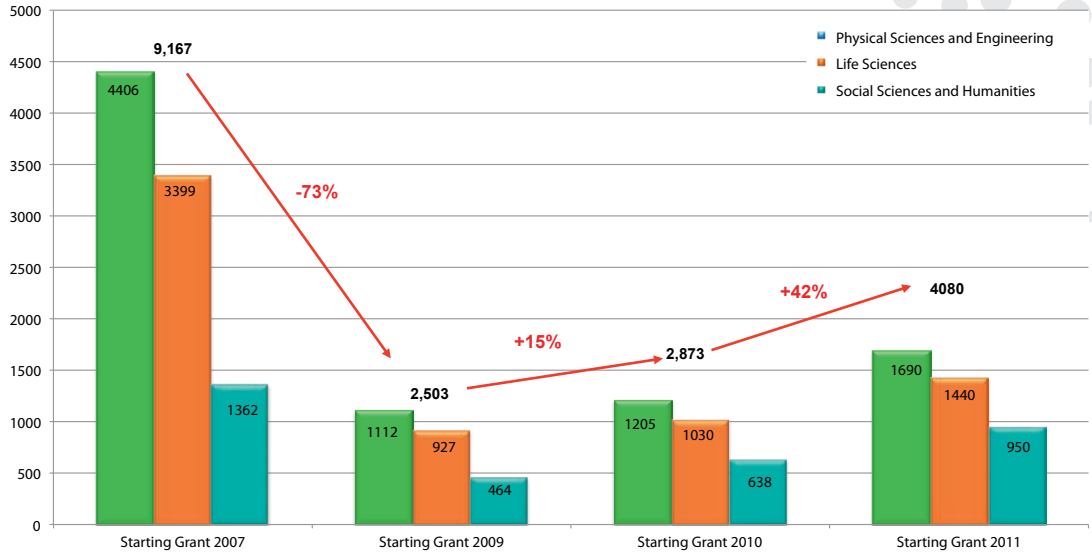
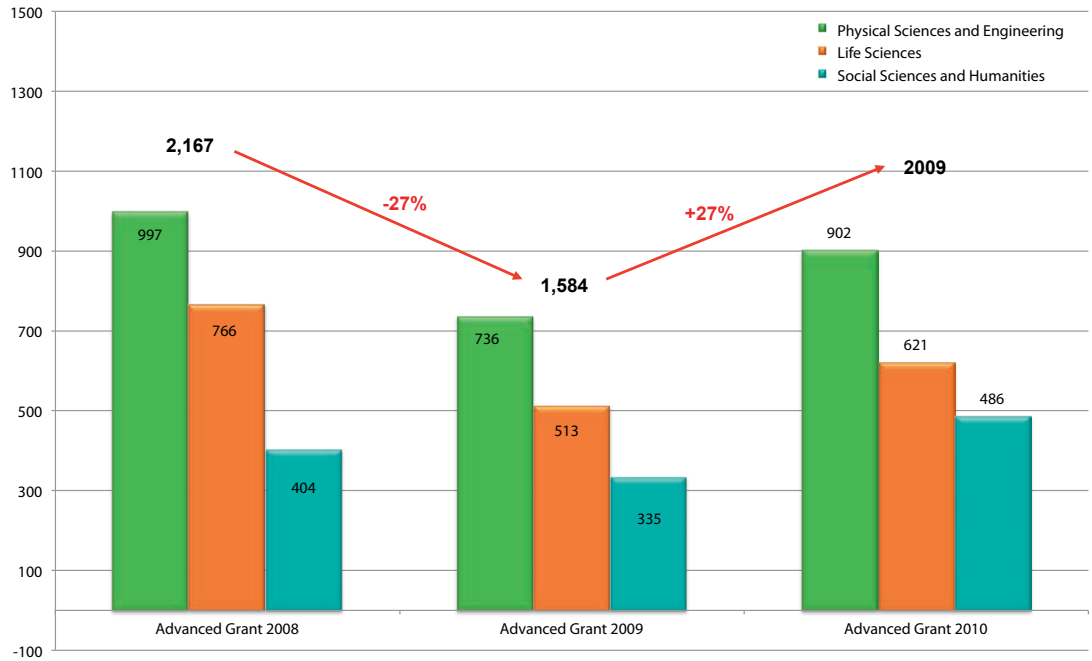


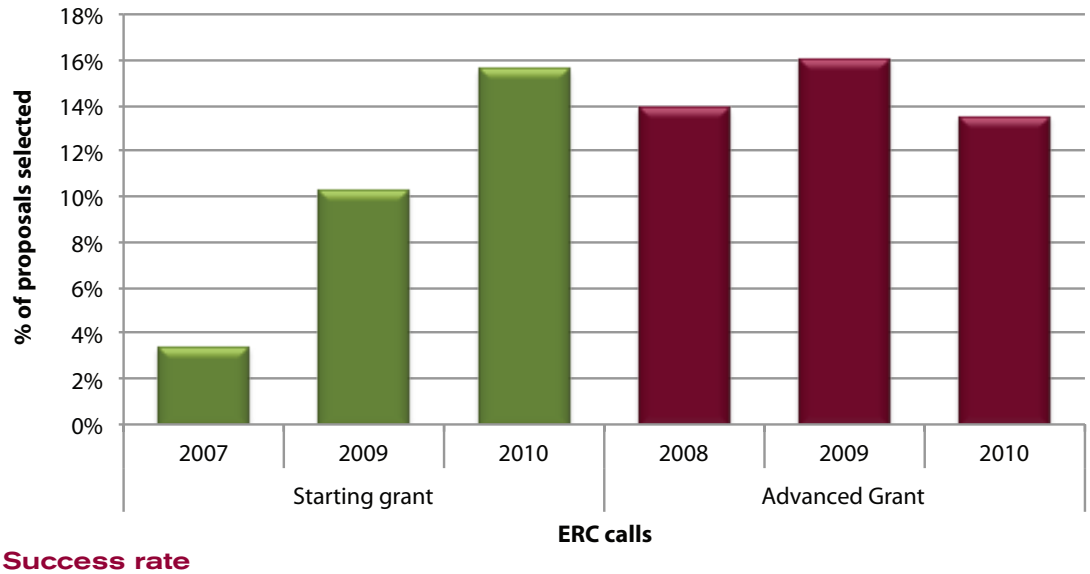

Figure 4 - **Advanced Grant: Submissions 2008 - 2010**



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.

The number of applications received in 2010 confirms an increasing trend. In response to the 2010 calls (both Starting and Advanced Grants), a total of 4,882 proposals were submitted, representing a 20% increase on the 2009 submissions, with a larger increase (27%) for the Advanced Grants. The response to the 2011 Starting Grant competition, with 4,080 proposal received, represent an even larger increase in demand (42%) compared to the last Starting Grant.

Figure 5 - **Success rate (six ERC calls)**




## Success rate

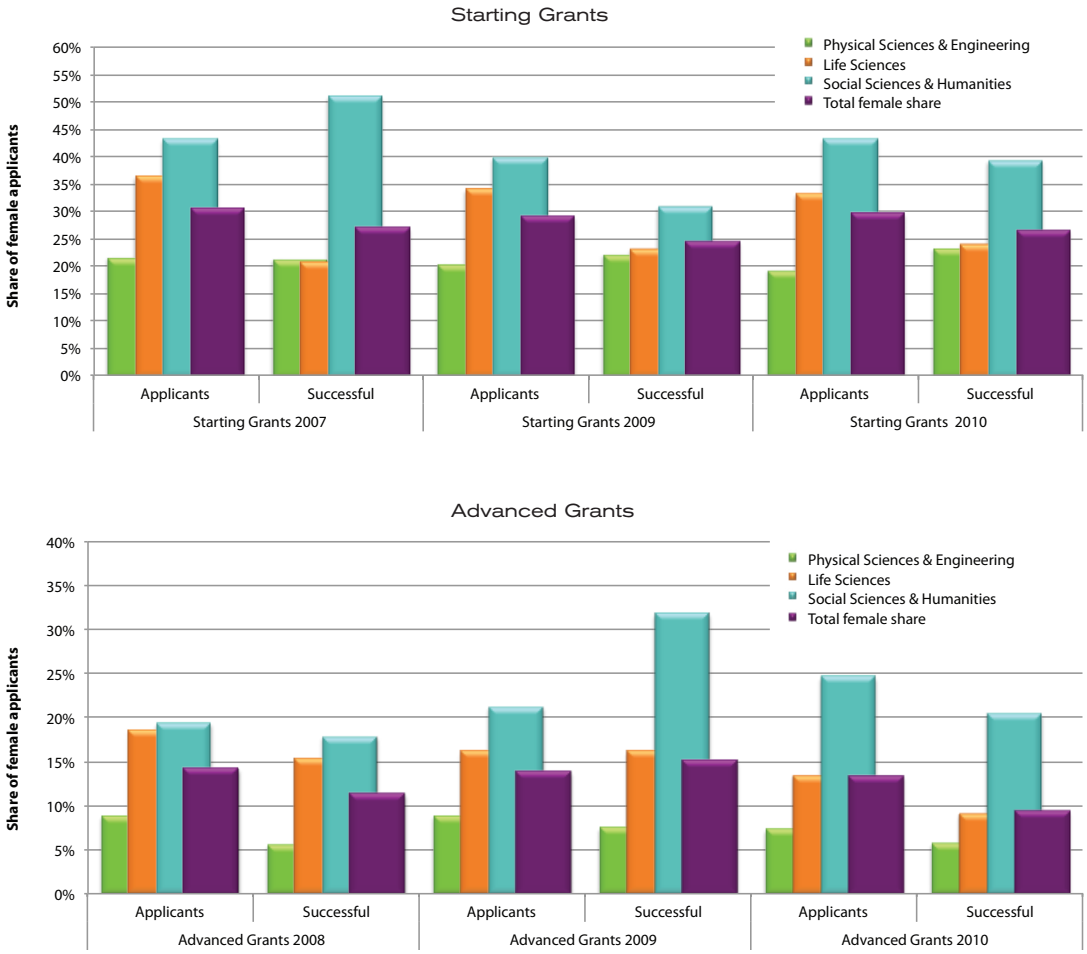
The ERC supports investigator-driven frontier research through a competitive review process greatly recognised and highly respected by the entire scientific community, based on the sole criterion of scientific excellence. For each ERC call, approximately 2,800 members of the science, engineering and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

In 2010, the percentage of proposals selected through this process over the total number of proposals evaluated in the Starting Grants was higher than in the previous calls, with a success rate increasing from 3.4% in 2007 to 10.2% in 2009 to 15.6% in 2010. The success rate of the Advanced Grants rose from an initial 13.9% in 2008 to 16% in 2009 but fell to 13.5% in 2010 (see Figure 5).

## Gender distribution of ERC grants

With six completed calls, around a fifth of the more than 1,700 ERC grantees are women. The share is substantially higher in the Starting Grant competitions with 26% women grantees, as compared to 12% in the Advanced Grant competitions. These relative low shares are partly due to the lower proportion of women applying to each of the two grant schemes, with an average of 30% in the Starting Grants and 14% in the Advanced Grants. Although broadly speaking these ratios reflect the proportion of women at the different stages of research careers in Europe, the ERC is working on encouraging more female top researchers to apply for ERC grants (see Figure 6).

Figure 6 - **Share of female applicants on total numbers, by domain**




## Host Institutions

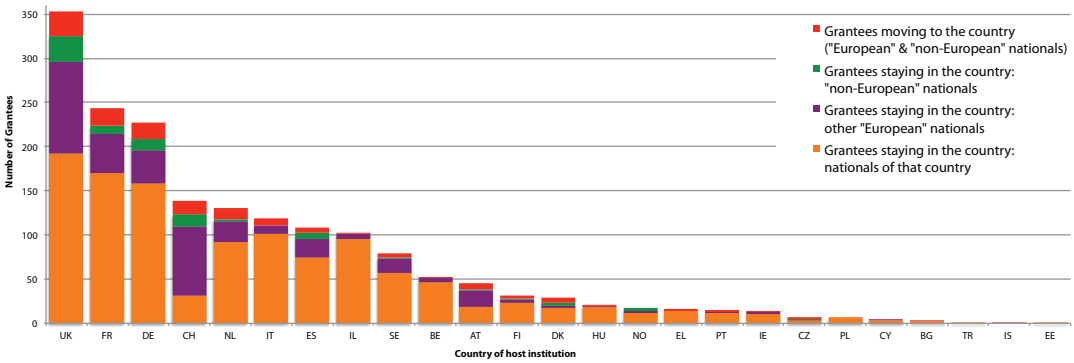
The majority of the 975 Starting Grant holders of the first three calls are hosted by institutions located in the EU, while 13% have a host institution in an FP7 Associated Country. For the first three Advanced Grants calls, the share of host institutions from Associated Countries is significantly higher (17%). Figure 10 and Figure 10/2 (see page 36 to 39) show the geographical distribution of organisations hosting 2010 Advanced and Starting Grant holders. A list of the most succesfull host institutions can be found on page 62.

## Mobility of top researchers from outside Europe and inside Europe

Until now ERC applicants rarely chose to move to a country different from where they were already conducting their research activities at the moment of submitting the proposal.

The numbers of applications to ERC calls coming from scientist residing outside the EU and Associated Countries continue to be small. A limited number of them were successful and their success rate is comparable with the rest of applicants. However, the Starting Grant scheme proved more successful than the Advanced Grant scheme in attracting scientists to Europe.

Figure 7 - **Country of host institutions and origin of grantees**




The impact of the ERC on intra-European mobility is also limited. In the period 2007-2010, around 10.4% of the Starting grantees and 5.3 % of the Advanced grantees moved to a different country after obtaining their grant. Of these, 53 grant holders (37%) moved from outside Europe, with most of them having their previous residence in the USA (see Figure 7).

It looks that host institutions which can offer additional incentives, e.g. tenure track positions for the time after the grant is terminated, family support mechanisms, are more successful in attracting young researchers. In contrast, typical Advanced Grant holders have already a fixed position, are settled in their environment and scientific network, and thus less mobile.

However, the contribution to the development of the European Research Area is evident when looking at the high number of ERC grantees who work outside their home country. Thirty-one percent of the Starting Grant holders and 21% of the Advanced Grant holders are based in a European host institution outside the country of their nationality.

A significant share of Italian, German, Greek or Polish grantees, for instance, work in other European countries whereas Finnish or British researchers rather choose a host institution established in their home country. These patterns also differ considerably between hosting countries, e.g. the share of non-national grant holders in Switzerland and in the UK is above average when compared to other countries.

## Starting Grant holders: "starters" and "consolidators"

In order to assure comparable success rates between the younger and more experienced Starting Grant applicants, the ERC began in 2010 to assess them as "starters" (award of PhD from 2 up to 6 years prior to the Starting Grant call publication) or "consolidators" (award of PhD over 6 and up to 10 years prior to the

Starting Grant call publication) taking into account the specific stage of their research career at the time of the application. First observations have shown that streaming has positive effects and evaluation panels did not have any difficulty ensuring comparable success rates for the two categories.

Figure 8 - **Age of Advanced and Starting grantees (2010)**

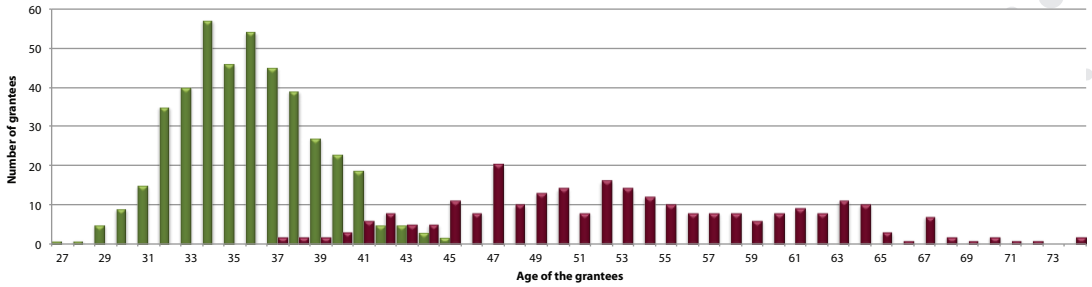



Figure 8 shows that there is no upper age limit, but also that the overlap in age distribution for the two grant schemes is very low. This proves that the schemes effectively target well-distinguished populations of researchers.

## Career paths and the relevance of the US

Mobility plays an important role for individual research careers and for the development of a scientific landscape as a whole. But research careers vary by disciplines and national research systems. First analysis of the career paths of ERC grant holders provide interesting observations. For example, the standard career path of the current 74 ERC grantees working in the field of neurosciences includes a PhD obtained in their home country followed by a postdoc position abroad. In two-thirds of the cases the postdoc was completed in a US research institution. Different patterns can be observed in economics where roughly half of the ERC-grantees received their PhD at a US university.

The ERC will boost its efforts to attract third country researchers in the future by increasing the visibility of the ERC schemes, informing European host institutions of the opportunities to recruit nationals from countries outside the ERA with ERC grants or better understanding the different needs of different researchers in different fields.

Figure 9 - **US Career steps of ERC-Grantees in Neurosciences**

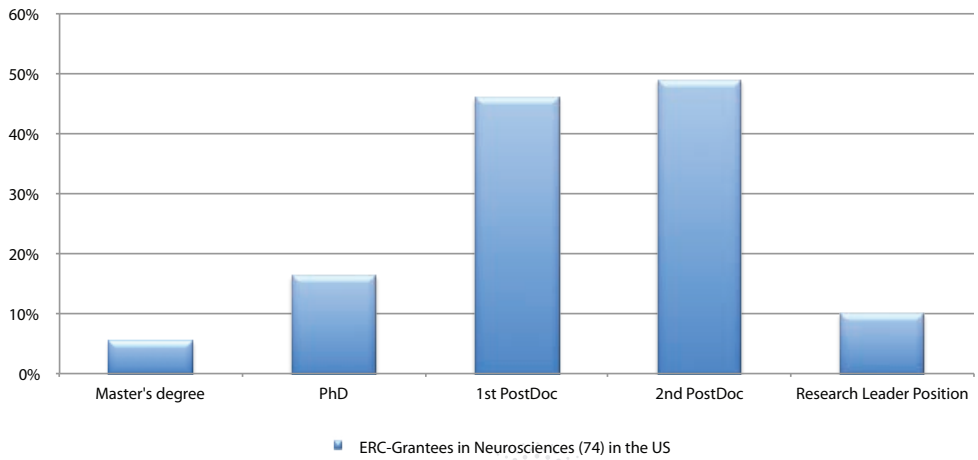
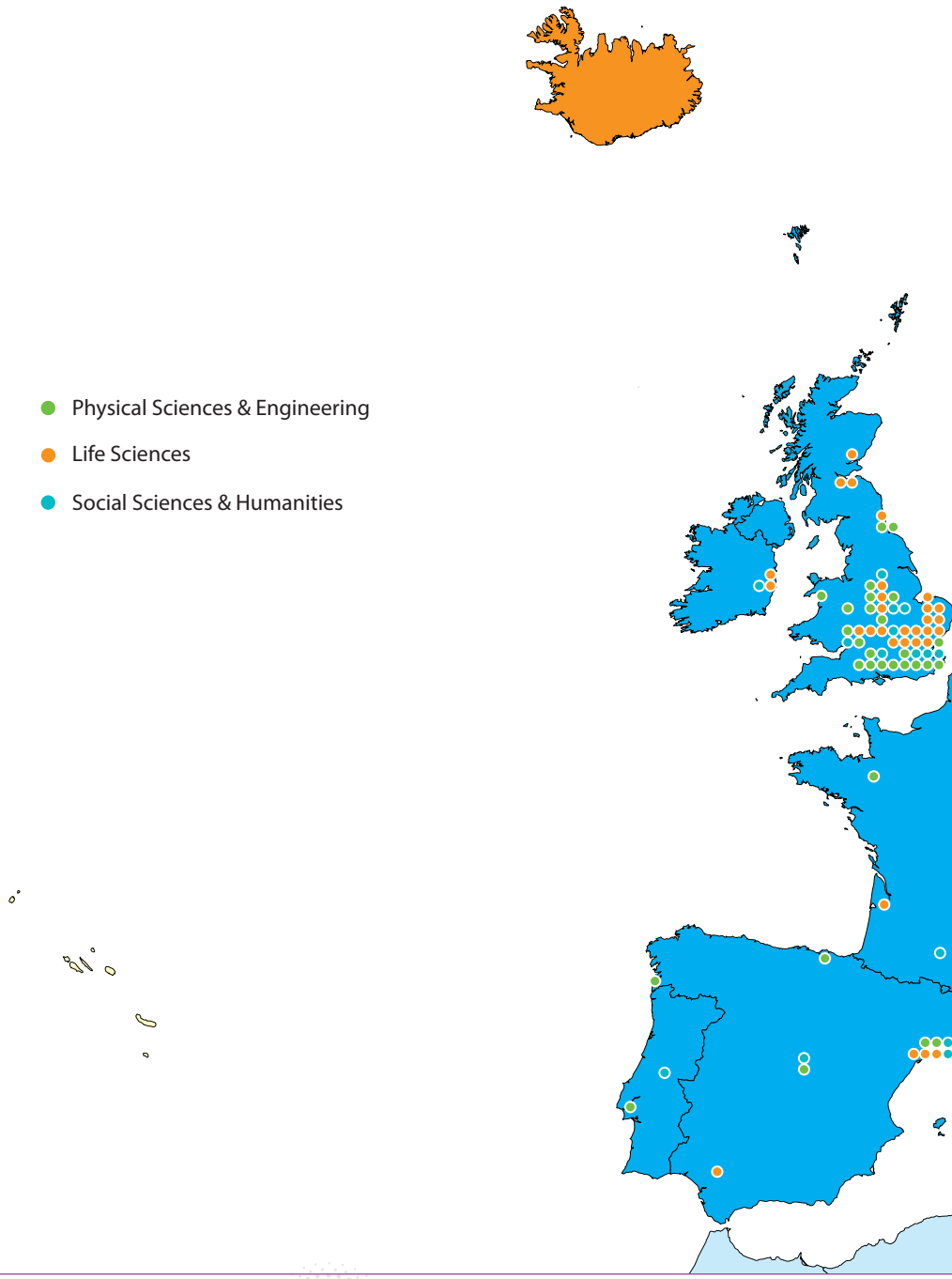


Figure 10 - **ERC Advanced Grant: 2010 Call**
**Geographical distribution of grant holders**



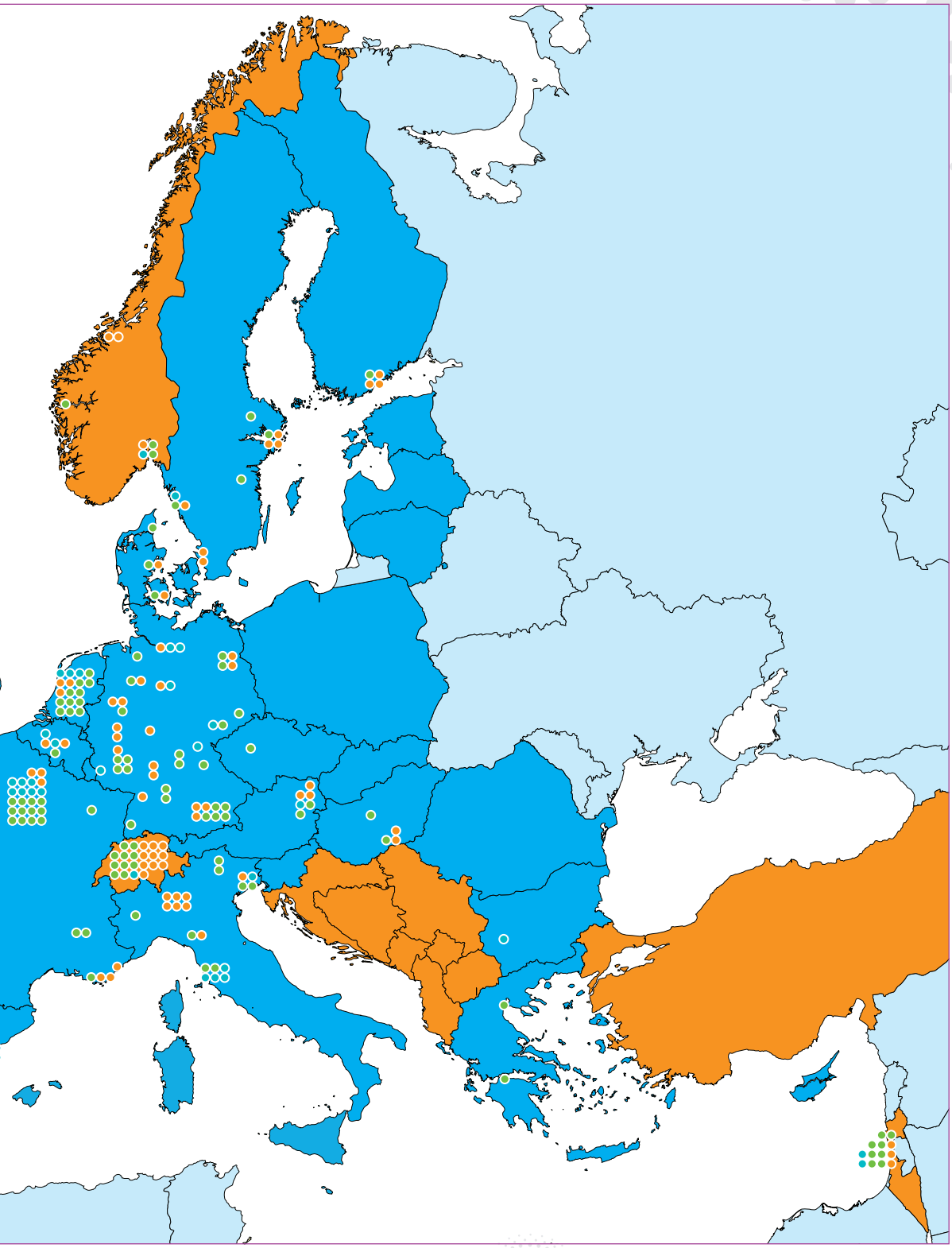
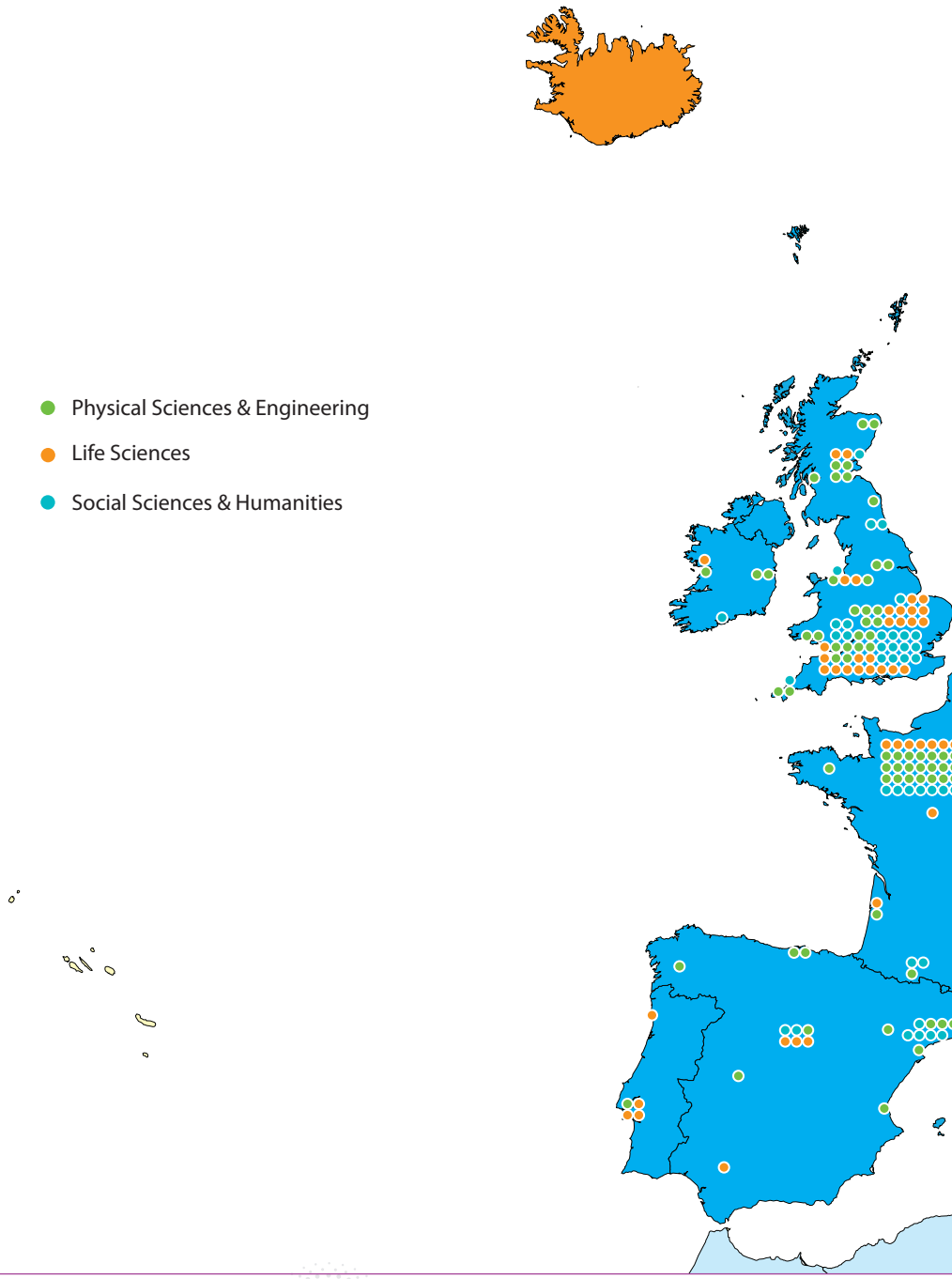
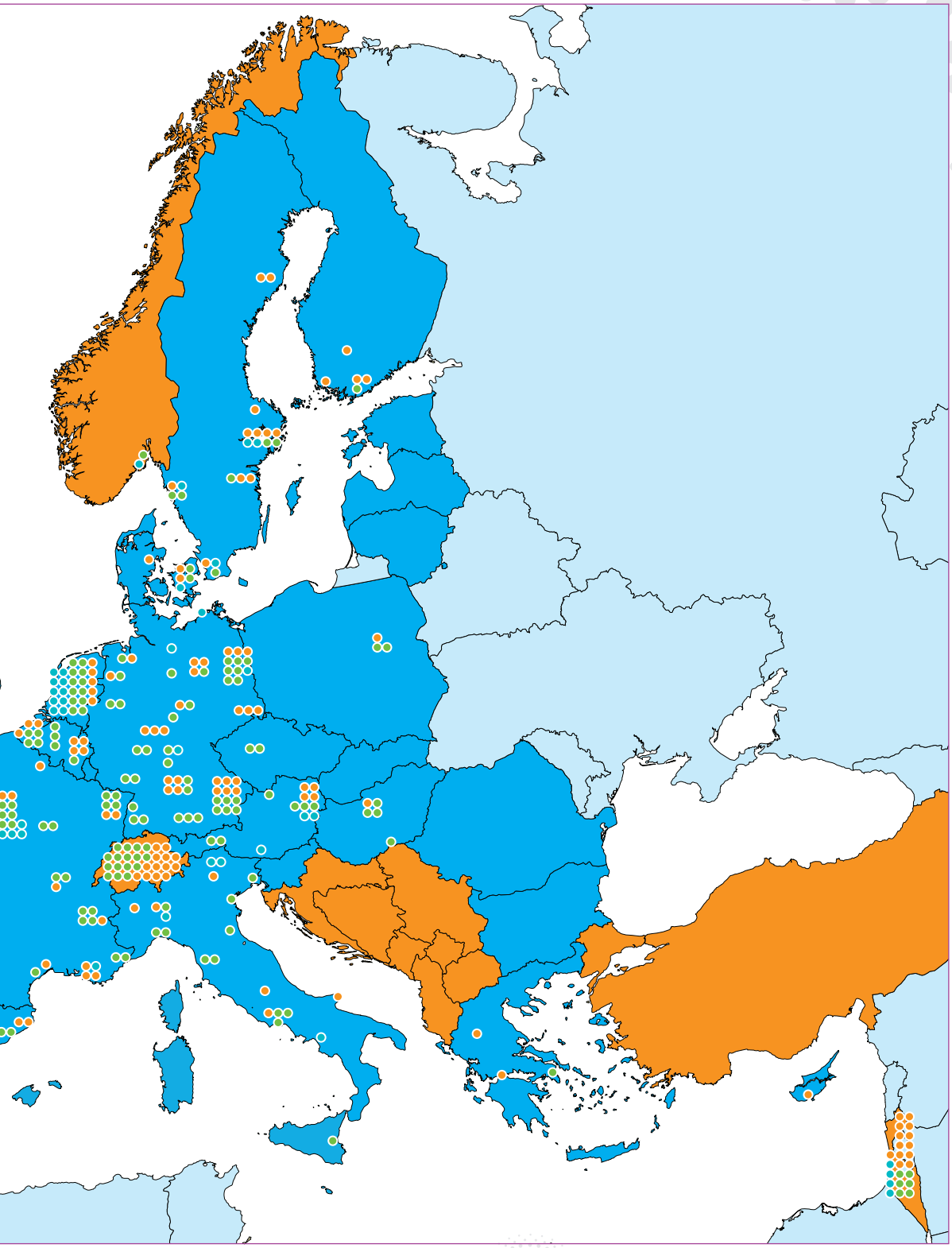


Figure 10/2 - **ERC Starting Grant: 2010 Call**
**Geographical distribution of grant holders**





# ERC Scientific Council and Executive Agency

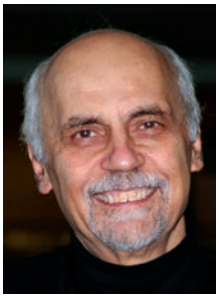
## 4.1 The ERC Scientific Council

The Scientific Council has the responsibility to establish the ERC's overall scientific strategy, the work programme and from a scientific perspective positions on the 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 allow it to be 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. The list of the Scientific Council members in 2010 can be found on page 54.

### Changes in membership



Prof. Fotis C. Kafatos

Prof. Fotis C. Kafatos, the founding President of the ERC and Chairman of its Scientific Council, stepped down from his position as from 1 March 2010, after accompanying the ERC from the cradle and devoting four years of commitment and achievements to its development into a fully-fledged funding body, known and respected not just by European scientists but throughout the world.

Following the announcement of Prof. Fotis C. Kafatos' resignation, the ERC Scientific Council unanimously elected Prof. Helga Nowotny, an eminent Austrian social scientist, as the new ERC President and Chair of the Scientific Council. At the moment of the appointment Prof. Nowotny was ERC's vice-President and vice-Chair of its Scientific Council. She took office on 1 March, 2010.

Prof. Kafatos remained member of the Scientific Council and was unanimously elected ERC Honorary President.

On 11 March 2010, the ERC Scientific Council regrettably lost one of its members. Prof. Leena Peltonen-Palotie, Academician of Science of Finland and one of Europe's most eminent researchers in human genetics, passed away after a serious illness.

Prof. Leena Peltonen-Palotie

As the term of office of the current Scientific Council comes to an end in early 2011, an independent ERC Identification Committee, composed of six high level scientists, was appointed by the European Commission in September with the task of identifying future ERC Scientific Council members.

The Committee was given the twofold mandate to identify new members for the staged renewal of approximately one third of the Scientific Council and to maintain a pool of candidates for future replacements of Scientific Council members thereafter. The scientific community is consulted in this identification process.

## Meetings

Due to the specific governance model, the Scientific Council's plenary meetings and regular meetings of its members with ERC stakeholders are prepared with the organisational and administrative support of the Executive Agency. The Agency also provides advice and analysis to facilitate the Scientific Council to fulfil its tasks as described in Annex 1 of the *Ideas* Specific Programme, as well as support to the operational activities of its working groups (WGs) and permanent committees.

The Scientific Council held regular meetings in 2010 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 ERC's Scientific Council's presence felt in different places covered by the *Ideas* Specific Programme and is considered an important event both by the national authorities as well as the local scientific and research community. Five Scientific Council plenary sessions were organised during the period between 1 January and 31 December 2010: in March in Bucharest (Romania), in April and December in Brussels (Belgium), in June in Santiago de Compostela (Spain) and in October in Luxembourg.

Following the recommendations of the Panel on the Review of the ERC's structures and mechanisms in 2009, the Scientific Council established two Standing Committees: the first providing guidance on conflicts of interest, scientific misconduct and ethical issues and the second dealing with the selection of evaluation panelists. The Executive Agency supported the operational activities of the two committees which met once and twice respectively in 2010.

In addition to plenary sessions, members of the Scientific Council meet in Working Groups addressing specific issues. In 2010, various meetings of the ERC Working Groups on "Relations with Industry", "Open Access", "Third Countries participation" and "Gender Balance" were organised by the Executive Agency. The WGs carry out analysis and contribute to the ERC scientific strategy through proposals to be adopted by the Scientific Council in plenary in the areas covered by their mandates: examine the ERC's relationship with the industrial/business sector and the impact of ERC-funded research on innovation; develop an ERC position on open access; explore suitable mechanisms to boost the participation of non-European researchers, particularly Brazil, Russia, India and China (the BRIC countries), in the ERC schemes; ensure that the ERC is at the forefront of best practice regarding the gender balance of grantees.

A series of working documents containing analysis and key messages on the specific issues dealt with by the Working Groups and by the Standing Committees were prepared by the Executive Agency, in conjunction with members of the groups.

## The ERC Board

To further assure its liaison with the European Commission and the Executive Agency, the Chair- and vice-Chairpersons of the Scientific Council and the Secretary General together with the Director of the Agency meet regularly as the ERC Board. These meetings are also attended by the senior management of the Agency. The Board met in Brussels 9 times in 2010, in particular to prepare or to give follow up to meetings of the Scientific Council.

## Contribution of the Scientific Council to the Consultation on the "Europe 2020 Strategy"

In presenting his programme for the new European Commission, President Barroso set out his vision for where the European Union should be in 2020 and proposed a common agenda to enable the EU make a full recovery from the financial and economic crisis, while speeding up the move towards a new sustainable social market economy, smarter and greener. Before presenting a formal proposal for the "*Europe 2020 Strategy*"[2] early in 2010, the Commission asked for opinions and views on some suggested broad policy considerations for the future strategy.



[2] More information on the EU's Strategy for Growth "Europe 2020" at: http://ec.europa.eu/europe2020/index_en.htm

The Scientific Council participated in the Consultation on the "*Europe 2020 Strategy*" and responded to the invitation to comment with a number of observations[3] organised around an analysis of two central objectives of the strategy proposed:

1. *"a new sustainable social market economy, a smarter, greener economy, where our prosperity will come from innovation and from using resources better and where the key input will be knowledge";*
2. *"a genuine European Knowledge Area underpinned by a world-class knowledge infrastructure, in which all actors (students, teachers, researchers, education and research institutions and enterprises) benefit from the free circulation of people, knowledge and technology (the 5th freedom)".*

The Scientific Council agrees that the first is a most worthwhile target to strive for and that the statement captures in a nutshell the essential linkages among the forces that have to be brought to bear for success. The innovation performance of the European economy is far from optimal and the need for improvement is dramatic on all fronts: in the numbers of technologically based start-ups, in the propensity of established firms to innovate, and in the emergence of new sectors arising from the development of new technologies. The aim is to look back at the coming decade sometime in the future and assert that the proportion of technological breakthroughs coming out of Europe – helping to establish competitiveness and leadership in new sectors - has been substantially larger than it has been in the last decades.

In the views of the Scientific Council, knowledge, and in particular scientific knowledge, is at the basis of innovation. Although not sufficient, the access to first-rate research, and to the institutions that make it possible, is a necessary condition for the vitality of innovation. An economy that denies itself a cutting edge research system creates for itself an enormous handicap in the race for innovation. Knowledge is also at the basis of the possibility of a green economy. Regulation, including multilateral agreements, will play an indispensable role but this will not be enough. A massive research push, both in basic science and in technological development, will be essential.

The link between scientific knowledge on the one hand and innovation and the renewal of the European economy on the other raises a hopeful challenge for Europe. The aspiration has to be for Europe to reinvigorate its ambitions and make its science "second to none".

With regard to second aim – the achievement of a genuine European Knowledge Area underpinned by a world-class knowledge infrastructure – the Scientific Council applauds this aim and reminds that in complete congruity with this, the European Commission gave the ERC the mission "to put excellence at the heart of European research". Indeed, the ERC objectives align themselves very well with the aims of the "*Europe 2020 Agenda*".

The Scientific Council believes that the wish to make Europe a world-class, second-to-none knowledge society demands that Europe becomes a hotbed of top talent. This requires enhancing the ability of Europe to retain and repatriate European scientists and scholars, as well as attract talents from abroad. To meet this objective the Scientific Council strongly recommends policies to foster the empowerment of researchers, especially of the younger ones. With this purpose the granting schemes of the ERC encourage the early independence of individual researchers. Key to the empowerment is also the elimination of barriers to mobility and the ERC practice of general portability of grants would be a significant advance.

[3] http://erc.europa.eu/pdf/D600282_Contribution_of_the_Scientific_Council_of_the_ERC_%20Consultation_future_EU_2020_Strategy.pdf

## ERC Scientific Council gender equality plan

In December 2010, the ERC Scientific Council adopted a gender equality plan[4] defining three central goals: to ensure that excellent female researchers are fully informed and aware of the opportunities that an ERC grant offers; to ensure fairness and equal treatment in the ERC grant competitions; and to improve the gender balance within the ERC's peer review system.

The plan is based on the ERC's view that women and men are equally able to perform excellent frontier research. The aim is to take into account and confront structural gender differences, so that the ERC can fulfill its mission to support excellent frontier researchers across Europe, irrespective of nationality, gender or age.

Some of the measures foreseen by the gender equality plan are already in progress. Like in earlier years, the share of men and women applicants and grantees were monitored by domain for each call in 2010. The female shares are shown in Figure 6, section 3.2 of this Annual Report. Further, the ERC evaluation criteria were adjusted in the ERC Work Programme 2010, to emphasize that career breaks and/or unconventional research career paths shall be taken into account when evaluating the track-records of Principal Investigators.

## Strategic developments in 2010 – Proof of concept

In order to strengthen the ERC's role in the innovation chain, from blue sky research to commercialisation, during 2010 the ERC Scientific Council developed a new granting opportunity which from 2011 will be offered to ERC grant holders to establish the innovation potential of ideas arising from their ERC-funded frontier research projects.

The "proof of concept" aims to cover a funding gap in the earliest stage of an innovation, and can be used to cover activities in the preliminary phases of turning research outputs into a commercial proposition, i.e. the initial steps of pre-competitive development of commercial potential.

The ERC grant-holders will have the opportunity to establish proof of concept of an ERC-funded idea, i.e. make its innovation potential evident to the market, securing thereof prospective commercialisation opportunities.

The ERC funds excellent research at the frontier of knowledge. This type of research often generates unexpected or new opportunities for commercial application and the ERC is particularly keen in helping to ensure that the useful excellent ideas that it has already funded do not miss these opportunities. The proof of concept funding looks to build upon ideas which draw substantially from research that has been funded by the ERC and is expected to lead to social and technological innovations which, when successfully applied, could generate enormous economic and societal benefits for Europe. Conducting a proof of concept will allow ERC grant holders to undertake further work to establish viability, technical issues and overall direction of their project; clarify Intellectual Property Rights (IPR) position and strategy; provide feedback for budgeting and other forms of commercial discussion; establish connections to later stage funding; cover initial expenses for establishing a company.

The first ERC Proof of concept call will be launched in March 2011 with an initial deadline for submission in June and a second one in November.

All Principal Investigators benefitting from an ERC Advanced or Starting Grant that is either ongoing or where the project has ended less than 12 months before the publication date of this call are eligible to participate and apply for an ERC proof of concept funding.

[4] The gender equality plan can be downloaded from the ERC web: http://erc.europa.eu/pdf/ERC_ScC_Gender_Equality_Plan_2007-2013.pdf

## 4.2 The ERC Secretary General

Prof. Mas-Colell

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 established by the Scientific Council.

The proposed merger of the two positions of ERC Executive Agency Director and ERC Secretary-General recommended by the external review in 2009 and intended as an interim solution in the larger context of addressing the governance issue, was not taken up and the two functions will continue to co-exist in the present framework. Professor Mas-Colell, selected ERC Secretary-General for two and a half years on 1 July 2009, stepped down from this position on 31 August 2010 to return to his career as professor of Economics at Universitat Pompeu Fabra in Barcelona.

The procedure for selecting a new Secretary General was ongoing at the end of 2010. In line with the *Ideas* Specific Programme, the recruitment process is conducted autonomously by the Scientific Council and based rigorously on relevant experience and scientific qualifications.

## 4.3 The ERC Executive Agency

The Executive Agency implements the Seventh Framework Programme's *Ideas* Specific Programme according to the strategies and methodologies established 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.

### Structure

The organisational structure of the Agency follows its operational and horizontal objectives. It consists of two operational departments (five Units) and one Resources and Support Department (three Units). The Accounting Officer, the Internal Audit Office, the Audit Management and Implementation Unit, the Communication Unit as well as the Support to the Scientific Council Unit report directly to the Director (see page 60).

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).

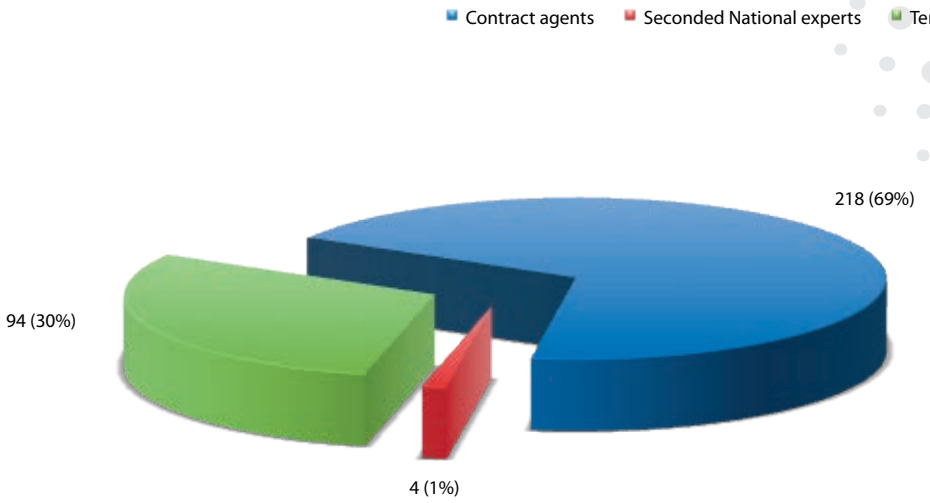
### Staff and Recruitment

The 2010 operating budget provided for an establishment plan of 100 temporary agents (TA) and a budget for 215 contract staff (CA) and 15 Seconded National Experts (SNE's), adding up to a total of 330 agents.

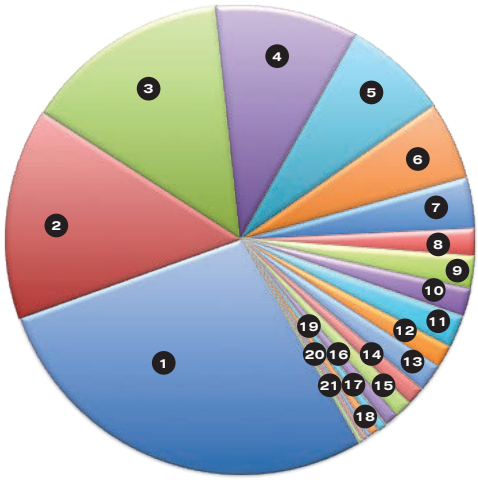
At the end of December 2010, the Agency employed a total of 316 agents: 94 temporary agents, 218 contract agents and 4 Seconded National Experts.

Statistics of December 2010 show that the Agency employs approximately 35% men and 65% women. As regards gender balance of highly specialised staff (Temporary Agents and Contract Agents Function Group IV), 59% of the posts are occupied by women. At the end of 2010 the ERC Executive Agency employed nationals from 21 Member states.

## Figure 11 - **Staff composition by post category**

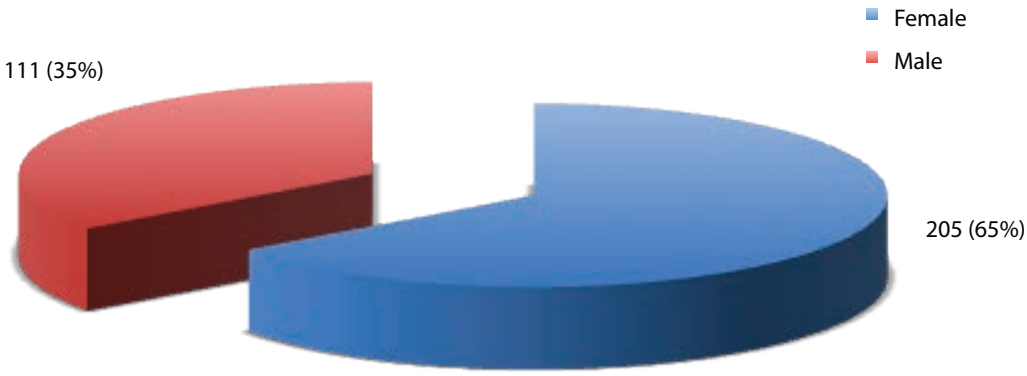



## Figure 12 - **Staff composition by nationality**



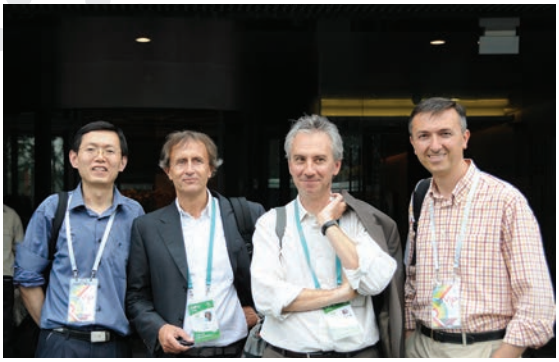

1 • Belgium 88 (27,8%)
2 • France 46 (14.6%)
3 • Italy 45 (14.2%)
4 • Spain 31 (9.8%)
5 • Germany 23 (7.3%)
6 • Greece 17 (5.4%)
7 • United-Kingdom 11 (3,6%)
8 • Portugal 6 (1.9%)
9 • Romania 7 (2.2%)
10 • Bulgaria 6 (1.9%)
11 • Poland 7 (2.2%)
12 • Hungary 6 (1.9%)
13 • Sweden 5 (1.6%)
14 • Austria 4 (1.3%)
15 • Finland 4 (1.3%)
16 • Lithuania 3 (0.9%)
17 • The Netherlands 2 (0.6%)
18 • Slovakia 2 (0.6%)
19 • Ireland 1 (0.3%)
20 • Cyprus 1 (0.3%)
21 • Latvia 1 (0.3%)

## Figure 13 - **Staff composition by gender**



## 4.4 Communication

During the course of 2010, the ERC continued its efforts not only to raise awareness of its funding opportunities in the research community, but also to increase the visibility of the ERC and its research projects among the general public and the media.



Lei Yong (ERC Starting Grantee 2009), Jack Metthey (Director "*Ad interim*"), Massimo Gaudina (Head of Communication Unit), Alberto Broggi (ERC Advanced Grantee 2008), at World Expo 2010 Shanghai, China.


Konstantin Novoselov talking to Máire Geoghegan-Quinn, European Commissioner for Research and Innovation, during the Nobel Foundation reception at the Nordic Museum in Stockholm, 9 December 2010.

In particular, the ERC Scientific Council decided to put further emphasis on awareness raising outside Europe in order to attract more top researchers from non-European countries to pursue their research in Europe. To this end, targeted visits and outreach campaigns in the US, China, Japan, India and Brazil were organised. The ERC was present in major international research conferences, career fairs and workshops in particular in the US, for example the "AAAS" annual meeting in San Diego, the "MIT-European Career Fair" in Boston and the "Annual Meeting of the Society for Neuroscience" in San Diego. The ERC participated in the Shanghai "World Expo" in Shangai and the "Indian Science Congress" in Kerala. ERC delegations also visited universities in the US (Berkeley, Stanford and UC Davis) and in São Paulo, Brazil, as well as institutes and organisations in Beijing, Shanghai, and in Tokyo.

In line with this outreach priority, targeted brochures were produced and translated into Chinese, Japanese, Russian and Spanish, and "promotional ERC banners" were designed e.g. for the EU Delegation offices based in the US, China, Brazil and India. As a result of these outreach activities, an immediate increase in the number of hits on the ERC website from the countries visited has been noted, as well as a slight increase of grant applications.

The ERC also participated in numerous conferences in Europe, such as "ESOF" in Torino, the "Research Career Fair" in Paris and the "EMBO" in Barcelona, to name but a few.


Prof. Helga Nowtny (ERC President) and Jack Metthey (Director "*Ad Interim*") with Japanese hosts, Tokyo.


ERC Stand at the EMBO 2010 Annual Meeting in Barcelona, Spain.

What is more, press activities were organised in Europe and overseas, and relations with the press further developed. Over the year, the ERC caught the interest of the media as an organisation, but its funded research and its grantees were also increasingly in the limelight, such as ERC Starting Grantee Konstantin Novoselov, 2010 Nobel Prize laureate in Physics. Also, the successful completion of ERC Advanced grantee Alberto Broggi's 10,000 km intercontinental trip with solar powered autonomous cars from Italy to the "World Expo" in Shanghai received much media attention worldwide.

In order to reach out through all communication channels, the ERC also produced several videos, including one tracing the historical developments of the ERC presented at the celebration of the 1000th grantee event and a first portrait of one of the successful grantees (Dr Cédric Blanpain). Also, the content of the ERC website has continuously been improved during the course of the year and will be revamped to include more relevant sections.

The ERC continued to foster relations with existing networks of key stakeholders and collaborated closely with relevant departments of the European Commission, as well as its Representations offices in the Member-States and EU Delegation offices around the world. The National Contact Points (NCPs), based all over Europe and serving as information multipliers to potential applicants, were continuously kept informed of the ERC developments and of its calls.

# Outlook for 2011

The coming year will see major developments which will hopefully establish the ERC on a sustainable basis in the long-term.

The term of office of the first Scientific Council runs until February 2011. Two-thirds of the members will stay on for a second term and seven new members, identified by an independent identification committee, will be appointed.

The independent review of the ERC in 2009 recommended continuing with the Executive Agency model, but opened the door to a revision of the structures and mechanisms in two years time in case its recommendations had not then been implemented. The work of the Taskforce set up to reflect on possible scenarios to ensure a stable structure going beyond the current research funding programme will be ongoing in 2011, including, if necessary, proposals for adjustments to the general model for Executive Agencies.

The processes for appointing a new Director and a new Secretary General are ongoing and are expected to be finalised in 2011.

The negotiations on the EU budget and the support for research and innovation for the period post 2013 are also due to begin in early 2011. The Commission will first provide initial orientations for the future support for research and innovation on the basis of which a public consultation will be organised in the first quarter of 2011. The ERC Scientific Council will, of course, contribute its position to the consultation. The European Council is expected to adopt conclusions on research and innovation for the first time in February 2011. The legislative proposals will be adopted at the end of the year. Overall the Commission will sustain in the negotiations the view that research and innovation, central to the "*Europe 2020 Strategy*" agreed by the Member States, should be a top budgetary priority. The current Chair of the Scientific Council, and ERC President, Prof Helga Nowotny has clearly stated her view that the budget of the ERC should at least double in the next Framework Programme.

# Annexes

# Members of the Scientific Council in 2010

**Prof. Helga NOWOTNY**
Vienna Science and Technology Fund (WWTF) - Austria
Professor em.

**Dr. Daniel ESTEVE**
Commission for Atomic Energy (CEA) Saclay - France
Research Director

**Dr. Claudio BORDIGNON**
Vita-Salute San Raffaele University, Milan - Italy
Full Professor of Hematology

**Prof. Dr. Sierd CLOETINGH**
VU University Amsterdam - The Netherlands
Royal Netherlands Academy Professor of Earth Sciences

**Prof. Mathias DEWATRIPONT**
ECARES , Université Libre de Bruxelles - Belgium
Professor of Economics

**Prof. Carlos DUARTE**
Spanish Research Council (CSIC) - Spain
Research Professor

**Prof. Pavel EXNER**
Doppler Institute, Prague - Czech Republic
Scientific Director

**Prof. Hans-Joachim FREUND**
Fritz-Haber-Institut der Max-Planck-Gesellschaft, Berlin - Germany
Director

**Prof. Dame Wendy HALL**
University of Southampton - United Kingdom
Professor of Computer Sciences

**Prof. Carl-Henrik HELDIN**
Ludwig Institute for Cancer Research, Uppsala - Sweden
Director and Professor in Molecular Cell Biology

**Prof. Dr. Fotis C. KAFATOS**
Faculty of Natural Sciences Imperial College, London
United Kingdom
Chair of Immunogenomics

**Prof. Dr. Michal KLEIBER**
Polish Academy of Sciences - Poland
President

**Prof. Norbert KROÓ**
Hungarian Academy of Sciences - Hungary
Vice-President

**Prof. Maria Teresa LAGO**
School of Sciences, University of Porto - Portugal
Full Professor

**Dr. Óscar MARIN PARRA**
Institute de Neurociencas de Alicante - Spain
Professor for the Spanish National Research Council (CSIC)

**Prof. Henrietta MOORE**
University of Cambridge - United Kingdom
William Wyse Chair of Social Anthropology

**Prof. Christiane NÜSSLEIN-VOLHARD**
Max-Planck-Institut für Entwicklungsbiologie Abteilung III (Genetik)
Germany
Director

**Prof. Leena PELTONEN-PALOTIE († 11 March 2010)**
University of Helsinki - Finland
Professor of Medical Genetics and Molecular Medicine

**Prof. Alain PEYRAUBE**
EHESS – Centre de recherches linguistiques sur Asie Orientale - France
Directeur de recherche

**Dr. Jens R. ROSTRUP-NIELSEN**
Haldor Topsoe A/S - Denmark
Director R&D Division

**Prof. Salvatore SETTIS**
Scuola Normale Superiore di Pisa - Italy
Director and Professor of the History of Classical Art and Archaeology

**Prof. Dr. Med. Rolf M. ZINKERNAGEL**
Zurich University - Switzerland
Head, Institute of Experimental Immunology

# Panel Chairs of the ERC Peer Review Panels
# ERC Starting Grant Panels 2010

## Life Sciences

LS1 Molecular and structural biology and biochemistry
**Panel Chair: Marcel Méchali**

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 Petersen**

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**

## Phisical 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**

**The list of all Panel Members is available at:**
**http://erc.europa.eu/pdf/stg-panel-members-310809.pdf**

# Panel Chairs of the ERC Peer Review Panels
# ERC Advanced Grants Panels 2010

## Life Sciences

LS1 Molecular and structural biology and biochemistry
**Panel Chair: Maciej Zylicz**

LS2 Genetics, genomics, bioinformatics and systems biology
**Panel Chair: Stylianos Antonarakis**

LS3 Cellular and developmental biology
**Panel Chair: Maria Leptin**

LS4 Physiology, pathophysiology and endocrinology
**Panel Chair: Nancy Elisabeth Hynes**

LS5 Neurosciences and neural disorders
**Panel Chair: Ole Petter Ottersen**

LS6 Immunity and infection
**Panel Chair: Albertus Osterhaus**

LS7 Diagnostic tools, therapies and public health
**Panel Chair: Rino Rappuoli**

LS8 Evolutionary, population and environmental biology
**Panel Chair: Isabelle Olivieri**

LS9 Applied life sciences and biotechnology
**Panel Chair: Inge Broer**

## Social Sciences and Humanities

SH1 Individuals, institutions and markets
**Panel Chair: François Bourguignon**

SH2 Institutions, values, beliefs and behaviour
**Panel Chair: Andre Gingrich**

SH3 Environment and society
**Panel Chair: Peter Nijkamp**

SH4 The human mind and its complexity
**Panel Chair: Bernard Comrie**

SH5 Cultures and cultural production
**Panel Chair: Glen Warren Bowersock**

SH6 The study of the human past
**Panel Chair: Wim Blockmans**

## Physical Science and engineering

PE1 Mathematical foundations
**Panel Chair: Enrique Zuazua**

PE2 Fundamental constituents of matter
**Panel Chair: Gerhard Rempe**

PE3 Condensed matter physics
**Panel Chair: Jerzy Langer**

PE4 Physical and analytical chemical sciences
**Panel Chair: Manfred Kappes**

PE5 Materials and synthesis
**Panel Chair: Gianfranco Pacchioni**

PE6 Computer science and informatics
**Panel Chair: Micheline Beaulieu**

PE7 Systems and communication engineering
**Panel Chair: A.M.J. Koonen**

PE8 Products and process engineering
**Panel Chair: Carlos Bernardo**

PE9 Universe sciences
**Panel Chair: Thomas Henning**

PE10 Earth system science
**Panel Chair: Peter Liss**

**The list of all Panel Members is available at:**
**http://erc.europa.eu/pdf/Panel_Members_A_AdG_2010.pdf**

# Agency structure

CAO
Chief Accountant

S. WALA
+32 (0)2 296 66 65

IAO
Internal Au
Capability

M. HENNES

B
Scientific Management
Department

J. LABASTIDA

B1
Process
Management
and Review

B. TUBBING

B2
Starting Grant

A. MARTIN-HOBDEY

B3
Advanced Grant

G. NAGY

C1
Grant
Preparation

T. PROST

DIR
Director's Office
P. AMOR
*rector Ad Interim)*

A1
Support to the Scientific Council

T. PAPAZOGLOU

A2
Communication

M. GAUDINA

C
rant Management Department
MAY *(Acting HoD)*

D
Resources & Support Department
Y. PATERNOSTER

D0
Administrative Budget

C2
Grant Implementation

M. MAY

C3
Audit Management and Implementation

J. BRODERSEN

D1
IT Tools Development and Management

M. VANBIERVLIET

D2
Human Resources, Infrastructure, and Document Management

C. LENARDUZZI

D3
Programming, Monitoring, Legal Matters and Risk Management

M. OLIVAN AVILES

## Institutions with more than 10 ERC grantees (first six ERC calls)

| Higher Education Institutions | | | | |
|---|---|---|---|---|
| **No.** | **Institution** | **Starting Grants** | **Advanced Grants** | **Total Grants** |
| 1 | University of Cambridge, United Kingdom | 25 | 22 | 47 |
| 2 | University of Oxford, United Kingdom | 22 | 21 | 43 |
| 3 | Swiss Federal Institute of Technology Lausanne (EPFL), Switzerland | 21 | 21 | 42 |
| 4 | Hebrew University of Jerusalem, Israel | 20 | 13 | 33 |
| 5 | Swiss Federal Institute of Technology (ETH), Switzerland | 9 | 23 | 32 |
| 5 | Weizmann Institute, Israel | 15 | 17 | 32 |
| 6 | Imperial College, United Kingdom | 13 | 14 | 27 |
| 7 | University College London, United Kingdom | 13 | 13 | 26 |
| 8 | University of Zurich, Switzerland | 8 | 10 | 18 |
| 9 | Catholic University of Leuven, Belgium | 15 | 2 | 17 |
| 9 | University of Munich, Germany | 6 | 11 | 17 |
| 9 | University of Edinburgh, United Kingdom | 9 | 8 | 17 |
| 10 | Karolinska Institute, Sweden | 8 | 8 | 16 |
| 10 | University of Helsinki, Finland | 7 | 9 | 16 |
| 11 | Technion - Israel Institute of Technology, Israel | 14 | 1 | 15 |
| 12 | University of Leiden, The Netherlands | 7 | 7 | 14 |
| 12 | University of Bristol, United Kingdom | 5 | 9 | 14 |

| | | | | |
|---|---|---|---|---|
| 13 | University of Vienna, Austria | 5 | 8 | 13 |
| 13 | Free University Amsterdam, The Netherlands | 7 | 6 | 13 |
| 13 | Radboud University Nijmegen, The Netherlands | 9 | 4 | 13 |
| 13 | University of Utrecht, The Netherlands | 8 | 5 | 13 |
| 14 | University of Amsterdam, The Netherlands | 5 | 7 | 12 |
| 14 | University of Geneva, Switzerland | 4 | 8 | 12 |
| 15 | University of Aarhus, Denmark | 6 | 5 | 11 |
| 15 | University of Ghent, Belgium | 10 | 1 | 11 |
| 15 | University of Heidelberg, Germany | 8 | 3 | 11 |

**Research performing Organisations**

| No. | Institution | Starting Grants | Advanced Grants | Total Grants |
|---|---|---|---|---|
| 1 | National Centre for Scientific Research (CNRS), France | 61 | 34 | 95 |
| 2 | Max Planck Society (MPG), Germany | 21 | 22 | 43 |
| 3 | National Institute for Health and Medical Research (Inserm), France | 14 | 10 | 24 |
| 4 | Commission for Atomic Energy (CEA), France | 15 | 5 | 20 |
| 5 | National Institute for Research in Computer Science and Automatic Control (INRIA), France | 8 | 6 | 14 |
| 6 | Spanish National Research Council (CSIC), Spain | 10 | 3 | 13 |
| 7 | Medical Research Council (MRC), United Kingdom | 6 | 6 | 12 |
| 8 | Pasteur Institute, France | 7 | 4 | 11 |

European Commission

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"The Scientific Council is committed to continuously work hard to fulfil the ERC's unique mission. It will continue to make fundamental contributions to the transformation of Europe into a world-leading knowledge area, where frontier research can be the hotbed for innovation and the well being of its citizens."

Helga Nowotny

SEVENTH FRAMEWORK PROGRAMME

European Research Council
Executive Agency

erc

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