European Commission

Annual Report on the ERC activities and achievements in 2013

Prepared under the authority of the ERC Scientific Council

RESEARCH & INNOVATION POLICY

European Research Council

Established by the European Commission

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Contents

Commissioner's introduction

This Annual Report describes the achievements of the European Research Council in its last year under the leadership of Professor Helga Nowotny.

Let me start by adding my personal thanks for all that she has done since 2006 as a member of the Scientific Council, which she has chaired since 2010. She has led this truly pioneering European project with ambition, passion and commitment. Always faithful to a broad definition of science, in the tradition of the 19th century German term 'Wissenschaft', she has worked tirelessly to ensure that the systematic quest for knowledge and learning is rewarded. She has been a great president for the ERC and European research as a whole has benefited from her leadership.

The year 2013 has also seen the end of the seventh framework programme for research and development (FP7) and the finalisation and adoption of *Horizon 2020*. This new programme, which will be an important catalyst for growth and jobs, is one of the few areas in the new EU budget to see an increase. This is a very good result that will help Europe tackle many long-term and complex challenges.

With *Horizon 2020*, Europe will have a single, integrated programme linking research to all forms of innovation and covering the entire value chain in one single programme. *Horizon 2020* has been designed as part of a larger picture. It aims to support the objectives of Europe 2020 and its flagship initiative, Innovation Union, which aspires to create the best conditions for Europe's researchers and entrepreneurs.

Horizon 2020 will boost Europe's industrial competitiveness by stimulating leadership in enabling and industrial technologies, improving access to risk finance, and encouraging more innovation in small and medium enterprises (SMEs). It will take a challenge-led approach and boost the role of research and innovation in solving key societal challenges. The focus is on challenges to tackle, rather than disciplines to be financed, because problems like competitiveness, climate change, energy security or public health are so complex and multi-faceted that we need to think and act outside of our usual silos.

But Europe cannot reach all these objectives without strengthening its science base. This is why a third fundamental objective of *Horizon 2020* is to stimulate future and emerging technologies, to encourage cross-border training and career development, to support research infrastructures and, of course, to improve European performance in frontier research through the ERC. Its creation has represented one of the biggest changes to the EU research landscape since the launch of FP7 in 2007. It will now be one of the strongest points of continuity in *Horizon 2020*, where its role is significantly strengthened.

In just six years, the ERC has earned a world-class reputation, and deservedly so. With over 4 000 grantees to date and an ever-increasing number of applicants, the ERC is already generating a host of new discoveries, knowledge and ideas. Europe will benefit greatly from the insights, empirical discoveries and socio-economic innovations that will emerge from all the research fields supported by the ERC.

If we want to build a vibrant, innovation-based economy fuelled by ideas and creativity, we need to strengthen Europe's science base, even when we don't expect any immediate technological spin-off. If we want to have impact, we need excellence. And we need to support excellent researchers to produce the highest quality research.

This is what the ERC has been doing for the last six years, rapidly becoming the point of reference for excellent frontier research in Europe.

I would also like to thank Professor Donald Dingwell, whose term as ERC Secretary General also came to an end in December 2013. He has been a great ambassador for the ERC and for science during his tenure. Leading the 'ERC goes Global' campaign, he visited over 50 cities in 16 countries. He will now be returning to his position as Research Professor for Experimental Volcanology at LMU. There, he will continue to contribute to European science with his work at the very forefront of research on some of the most powerful forces and events on our planet.

Máire Geoghegan-Quinn

European Commissioner for Research, Innovation and Science

Personal message from the ERC President

This Annual Report is the last one under my presidency of the ERC. I take this opportunity to thank everyone who was and is involved with the ERC, and in particular my former and present colleagues in the ERC Scientific Council, for the inspiring and hard-working time we spent together. I want to thank the colleagues from the ERC Executive Agency (ERCEA) without whose dedication and professionalism our achievements would not have been possible. Looking back at the last seven years, I realise that it was a truly great journey, its success not always certain, with plenty of exciting challenges on the way. I can say that the results fully justify the investment of time, energy, and creativity from all of us.

This report provides again a glimpse into the main achievements of the ERC over the last year. In 2013, evaluation and granting procedures continued to run smoothly. For the first time, the ERC ran four major calls in one year, with the Starting, Consolidator, Advanced, and Synergy Grant calls spending EUR 1.7 billion; and awarding around 900 grants to excellent researchers at around 300 Host Institutions across Europe. The Proof of Concept call ran twice and also met with rising interest.

The year 2013 has seen the consolidation and finalisation of the next EU multi-annual financial framework, and the hammering out of *Horizon 2020*, the European Commission's research and innovation framework programme for 2014–20. Thanks to the successful public support from the European research community, *Horizon 2020* is the only line in the overall EU budget that can claim real growth. For the ERC, *Horizon 2020* will be the new legislative foundation and the source of its future funding. Around EUR 13 billion will be available for funding frontier research. I am grateful to everyone who contributed — and spoke up — in support of frontier research as the best guarantee for Europe's future. The increase in the ERC budget acknowledges that the ERC has been, and continues to be, a success story of European integration and speaks volumes for its position in the global research landscape.

Still, demand for ERC funding continues to rise to an ever-higher level, keeping the overall success rate of proposals at merely 12 %. The numbers confirm the ERC Scientific Council's conviction that the intellectual and scientific basis for creative and excellent research in Europe is far from exhausted. But it puts pressure on the Scientific Council to tighten the eligibility criteria for applying for ERC funding. We are confident that a good balance has been struck between openness in relation to the European research community and the need to relieve the evaluation panels from the excessive workload resulting from a massive rise in the number of proposals.

Regarding the changes of the legislative framework, I am particularly grateful to our colleagues from the ERCEA for their thorough and dedicated work during the *Horizon 2020* negotiations. The new legislation also foresees changes in the governance structure of the ERC. My successor as ERC President, Jean Pierre Bourguignon, is the first president to reside full-time in Brussels, enabling him to cope in greater detail with the rapidly expanding tasks that stem from the merger of this position with that of the former Secretary General. The Scientific Council will also welcome new members, and only two from the founding generation will remain until the end of next year.

The ERC is a learning institution, and it will remain so in the future. By introducing the changes noted above, I am inclined to add: the changes will make us even stronger. The ERC will stay committed to funding frontier research based on the sole criterion of scientific excellence. The spirit of the ERC will continue to be as dynamic as ever. And the ERC will remain true to its motto 'keep it simple!'. The overall way of conducting our research evaluation procedure will remain at the highest level — thus safeguarding the ERC's reputation as the gold standard for Europe. What started six years ago will gain even more momentum: transformation of Europe into a world-leading knowledge area through ERC funding.

Prof. Helga Nowotny
ERC President and Chair of its Scientific Council

Highlights - 2013 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 to reinforce 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 need to increase the attractiveness of Europe, both for the best researchers worldwide and for industrial research investment. In addition, the programme aims to strengthen the EU's capacity to generate new knowledge that will feed back into the economy and society.

The ERC is comprised of 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) support researchers at the early stage of their careers, with the aim of providing working conditions that enable them to become independent research leaders, while Advanced Grants (AdG) are 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.

In 2013, in response to the rapidly rising number of applications, the Starting Grant scheme was divided into two separate calls, 'starters' and 'consolidators'. Consolidator Grants (CoG) support researchers who are at the early stage of their careers but very often already working with their own group, while the 'starters' are usually still in the process of setting up their own research group.

A relatively small part of the ERC budget is dedicated to the Proof of Concept (PoC), which offers to existing ERC grant holders the possibility of establishing the innovation potential of ideas stemming from their ERC grants. This funding scheme is aimed at covering the funding gap known as 'the valley of death' which occurs in the very early stages of the commercialisation process of potentially innovative ideas.

The ERC Synergy Grant, a new funding opportunity launched in 2012 on a 2-year pilot basis by the ERC Scientific Council, continued in 2013. It specifically aims to enable small groups of outstanding Principal Investigators and their teams to bring together complementary skills, knowledge and resources in new ways that will help them jointly address research problems that go beyond what could be achieved without such synergies.

By promoting excellence, the ERC has a fundamental role in reinforcing and making more coherent the whole system of research and innovation. This 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. The ambition is to lay the foundations for solutions to unpredictable challenges that European society may face.

1.2 Main achievements in 2013

The 'Ideas' specific programme's budget implemented by the ERC is EUR 7.5 billion over a period of seven years. It represents around 15 % of the entire FP7 budget.

In the implementation of the programme commitment credits of EUR 1.8 billion (global commitment) and payments of EUR 1.1 billion were fully executed in 2013. Around 2.3 % of the operational budget was spent on administration.

The ERC schemes have been well received by the research community. Since its start in 2007, the ERC has completed 13 calls for proposals for the Starting, Consolidator and Advanced Grant schemes. The competitions yielded a total of over 40 000 proposals. More than 4 300 projects have been selected for funding through a rigorous peer review process and hosted in almost 600 prestigious research institutions in the EU and FP7 associated countries.

In response to the 2013 calls for Starting, Consolidator and Advanced Grants, the ERC received a total of 9 410 proposals, representing a 34 % increase compared to 2012 (48 % increase for Starting/Consolidator and 4 % increase for Advanced Grant). Around 900 new awards were granted to individual investigators hosted in universities and other public and private institutions throughout the EU and associated countries, for a total budget of approximately EUR 1.7 billion. Some 9 222 proposals were finally evaluated, divided as usual into 25 different evaluation panels per call, involving almost 1 000 panel reviewers and more than 5 000 external reviewers.

In response to the second Synergy Grant call, launched in October 2012, just under 450 applications were submitted in 2013. After a two-step evaluation procedure specifically designed for this purpose, 13 projects were selected for funding and will share a total of EUR 150 million. The projects, at the crossroads of many disciplines, will receive funding of up to EUR 15 million each for the next six years. Each project brings together two to four outstanding researchers, which means that 45 scientists based in 11 countries are supported through these prestigious grants.

A glance at the list of ERC grant holders who received international scientific prizes and awards in 2013 [1] provides a good example of how ERC funding schemes have attracted top researchers this year. Several ERC grantees have received prestigious international scientific prizes and awards. Also noteworthy is the fact that the ERC already counts among its grantees eight Nobel Prize winners and three Fields medallists.

ERC-funded projects are highly productive and ERC-funded research is widely present in high-impact journals. By the end of 2013, the ERC Executive Agency (ERCEA) collected from Thomson Reuters' Web of Science more than 20 000 journal articles acknowledging ERC funding.

The efficient operation of all the calls during 2013 underlines the successful organisational development of the ERCEA, which was created to implement the 'Ideas' specific programme as an integrated constituent of the ERC. The agency had 379 members of staff at the end of 2013.

[1] http://erc.europa.eu/projects-and-results/prizes-and-awards/prizes-and-awards-2013

1.3 Highlights – 2013 in review

The ERC celebrates its 3 000th funded researcher

Six years after being set up, the ERC reached a significant milestone at the beginning of 2013 with 3 000 top scientists funded to pursue excellent frontier research across Europe. To mark the symbolic awarding of this ERC grant, a ceremony took place at the Royal Netherlands Academy of Arts and Sciences in Amsterdam on 15 January. The 3 000th grantee, Prof. Christian Keysers, won a Starting Grant in the area of Social Sciences that will take further his innovative research on empathy and the brain. Key personalities from the political and research arenas, including the European Commission's Director-General for Research and Innovation, Robert-Jan Smits, attended the celebration.

Prof. Keysers is Head of Department of the Social Brain Lab at the Netherlands Institute for Neuroscience (NIN), a purely research-based institute of the Royal Netherlands Academy of Arts and Sciences (KNAW). His research project explores the brain to better understand the human capacity to slip into the skin of other people to vicariously experience their actions and share their emotions. Christian Keysers is also a Professor at the University Medical Centre Groningen (University of Groningen).

In search of how your brain feels

© Christian Keysers

Do you remember Dr. No, the first James Bond film? When the tarantula crawled on the hero's chest, what did you see? The flickering of pixels on the screen? No, you most likely saw a scared secret agent with an itching chest, trying to kill a spider. Somehow your brain transformed the pixels into hidden states that are not visible to the eye, namely intentions and emotions.

Your body tensed in anticipation of his actions and your heart beat faster, as if you were in his place. Intense experiences of sharing other people's actions and emotions is what makes cinema so captivating. But films only capitalise on the human capacity at the core of this project; the capacity to slip into the skin of other people to vicariously experience their actions and share their emotions. Professor Christian Keysers leads the research project "VICARIOUSBRAIN", funded by a EUR 1.8 million European Research Council Starting Grant, which aims to reach a better understanding of the processes of empathy within our neurons. This project highlights the ability of the social sciences to have a significant impact on the other two scientific domains that the ERC supports.

Christian Keysers' research project consists of two complementary analyses. Together with his team, he will examine how the network of regions in the brain involved in action observation - the so-called vicarious motor network - integrates information. They will focus on the direction of information flow between the different vicarious motor nodes to challenge traditional models of action observation.

While the first analysis tackles how we share others' actions, the second explores emotions. Prof. Keysers and his team will examine how neurons in brain regions associated with empathy respond during the experiencing, and witnessing, of emotions. His laboratory has already shown that whilst viewing the disgust of others, we activate a region of our brain (the insula) that is normally activated when we experience disgust ourselves. These vicarious emotional activations are similar to vicarious motor activations, except that they occur in regions associated with emotions, rather than action execution.

Given the tremendous interest in emotional empathy across many fields, understanding its neural causes will open exciting new horizons in several areas. This research project will notably impact upon the Life Sciences, contributing to progress in genetics but also to better therapies for psychiatric disorders of empathy (autism, schizophrenia and psychopathy). For robotics, it will concretise a biological example of how brains can process and predict the actions of others and read their feelings. In the long-run, these interactions through robotics will feed back into neuroscience, by testing whether their models enable the prediction and perception of the actions of other organisms.

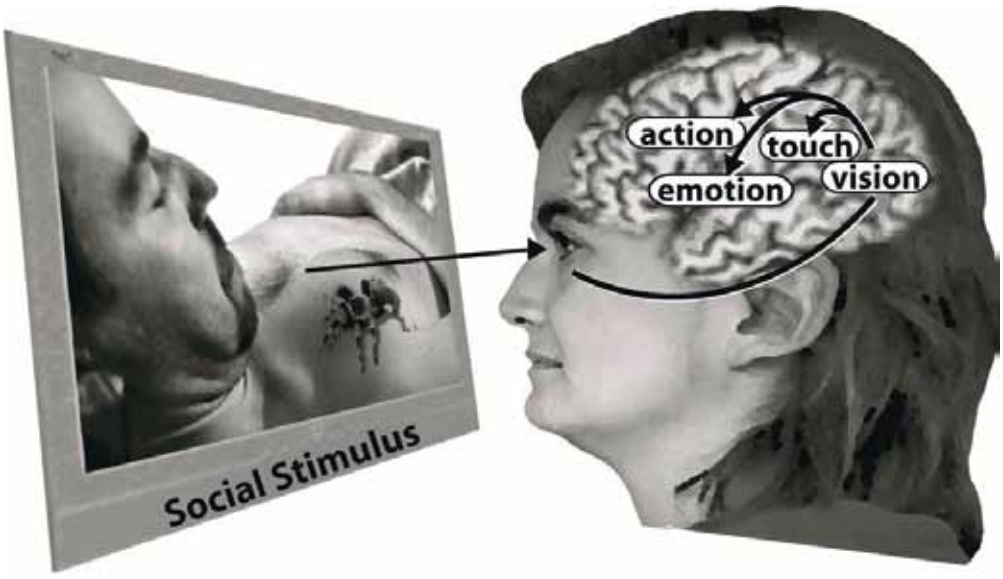
ERC grantee: Prof. Christian Keysers

Host Institution: Royal Netherlands Academy of Arts and Sciences (KNAW), the Netherlands

ERC project: Cracking the code and flow of empathy (VICARIOUSBRAIN)

ERC call: Starting Grant 2012

ERC funding: EUR 1.8 million for five years



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European Research Council meets world leaders in Davos 2013

In January 2013, the ERC attended the World Economic Forum (WEF) in Davos, Switzerland. The ERC was represented by its President Helga Nowotny as well as some of Europe's brightest scientists. The forum, which has taken place annually for the past 40 years, is one of the most well-known platforms for leaders from governments, business, civil society and academia to discuss pressing global issues. With its participation, the ERC has introduced a scientific perspective into the discussions by highlighting the most up-to-date trends in science, with the aim of stimulating a debate on the importance of frontier research for today's society.

Around 2 500 participants from around 100 countries, including Heads of State or Government, ministers, leaders of many of the world's top companies and organisations, trade unions and think tanks, artists and academics, gathered in Davos in order to 'improve the state of the world'.

In addition to Prof. Helga Nowotny, the ERC delegation was made up of Sir Tim Hunt (member of the ERC Scientific Council and Nobel laureate in Physiology or Medicine 2001), Prof. Serge Haroche (ERC grantee and Nobel laureate in Physics 2012), Prof. Jules Hoffmann (Nobel laureate in Physiology or Medicine 2011) and Prof. Viola Vogel (ERC Panel Chair and Head of the Laboratory of Applied Mechanobiology at the Swiss Federal Institute of Technology, Zurich).

ERT and ERC jointly urge EU leaders not to cut funds in research

On 30 January 2013, the ERC and the European Round Table of Industrialists (ERT) [2] published a joint letter addressed to European leaders in the context of an imminent European Council Summit, urging them to boost Europe's growth and employment prospects by fully funding *Horizon 2020*.

Both organisations shared the strong concerns already expressed by Nobel laureates, in a letter published in October 2012, about cuts to the EU research budget. They explained that any reduction in the funding to support excellent research would result in Europe having limited means to attract outstanding talent in a highly competitive global market. They underlinedthe fact that Europe could not risk losing a generation of talented scientists, just when it needed them most. The ERT and the ERC jointly expressed their wish that Europe would become a magnet for talent wherever it could be found. A continued supply of well-trained scientists and entrepreneurs is essential for European industry. Europe's future can only be built on its brains.

ERC Proof of Concept grantees meet industry

On 5 February 2013, 11 ERC grantees holding Proof of Concept Grants met various investors from industry to speak about their projects and establish potential business contacts. [3]

The ERC President, Helga Nowotny, Anne Glover (Chief Scientific Adviser to the European Commission President) and Clara de la Torre (Director at DG Research and Innovation at the European Commission) were amongst the speakers at this event, organised by the Science|Business Innovation Board on the ERC premises in Brussels.

[2] The ERT is a forum of 50 European industrial leaders aiming at promoting the competitiveness and growth of Europe's economy.

[3] http://erc.europa.eu/new-technologies-european-research-council

The ERC grantees showcased scientific breakthroughs and made a commercial pitch for the market potential of their technologies to R & D executives and venture investors.

The pitches, which included biomaterials for bone generation, diagnostics for cancer, a process to generate random numbers, and technology to remove nitrogen from waste water, highlighted the huge innovation potential of European science if academics and industry can overcome traditional barriers and work more closely together.

Identification of 'frontier research' and 'emerging research areas' in research proposals

As part of its monitoring and evaluation strategy the ERC has funded over the last three years two ambitious projects that have investigated suitable bibliometrics techniques for identifying 'emerging research topics' and 'frontier research'. The projects try to look at the ways in which bibliometrics could be used to measure the extent to which ERC is reaching its mission '... to stimulate scientific excellence by supporting and encouraging the very best, truly creative scientists, scholars and engineers to be adventurous and take risks in their research.' The two Coordinate and Support Actions (CSAs) projects [4] presented their results in February 2013, at a workshop organised by ERCEA in collaboration with the two project teams.

During a two-day discussion, ERC Scientific Council members, scientometrics experts, ERCEA scientific officers, representatives of the European Commission and of other research funding bodies scrutinised the results presented by the CSA projects team members; namely, bibliometric techniques and indicators measuring the extent to which the ERC is supporting research proposals in 'frontier research' and 'emerging research areas'. Different potential bibliometric techniques in support of the ERC monitoring and evaluation strategy were presented and demonstrated during the workshop. The results are of relevance for the ERC evaluation and selection process, key performance indicators, and follow up on scientific impact.

ERC grantees to host early-career top US talent

The recent initiative between the US National Science Foundation (NSF) and the ERC has been taken a step further since the summer of 2012. The implementing arrangement, which provides opportunities for early-career NSF researchers to join ERC-funded teams in Europe, seems to resonate with ERC grantees.

In 2012, the ERC launched an expression of interest to its grantees. 789 answered positively to the idea of hosting NSF scientists. The majority of the interested ERC grantees held Starting Grants (503). They were based in 23 different countries in Europe, and had 43 different nationalities. Amongst them, there were 26 US nationals with ERC grants.

The ERC provided the final list of all participating grantees to the NSF and in parallel the NSF launched a call for expression of interest addressed to all eligible postdoctoral fellows and CAREER awardees. In the course of spring 2013, a matching between ERC grantees and NSF researchers took place with 12 NSF researchers finally selected to join ERC teams.

[4] Development and verification of a bibliometric model for the identification of frontier research (DBF) and Emerging research areas and their coverage by ERC-supported projects (Eracep).

A second call for expression of interest was launched in November 2013 by the ERC and received 676 positive answers, with once again a majority from Starting grantees (392).

Next generation of scientists meets with peers in Vienna

On 28 February and 1 March 2013, the ERC jointly organised an event in Vienna with the Institute of Science and Technology Austria (IST) and the Austrian Federal Ministry of Science and Research.

This was an initiative aimed at gathering a hundred scientists, including about 20 ERC grantees, with the view to facilitating debates and interactions among researchers from different domains and countries, in particular from central and eastern Europe.

The number of ERC grants awarded to researchers based in different countries varies greatly, mainly reflecting the large differences between the size of the populations and economies in the different countries. But this number and the different success rates also reflect the various levels of investment in research and the quality of the scientific publications in the different countries. By hosting this event, the ERC expected that it would foster the interest of scientists from central and eastern Europe in applying for ERC funding, and ultimately improve their performance in ERC competitions.

The ERC meets the European Space Agency

The European Space Agency (ESA) is Europe's largest organisation dedicated to the exploration of space. Informal contact between the ERC and ESA had already been established in response to ESA's interest in the research topics funded by the ERC and their relevance to ESA's grand science themes. In the framework of the existing informal discussions the ERC President Helga Nowotny had a bilateral meeting with ESA Director-General Jean-Jacques Dordain at ESA's headquarters in Paris (May 2013) and attended the meeting of ESA's High-level Science Policy Advisory Committee (Hispac) in June 2013. Prof. Nowotny's presentation of the ERC's principles, operation and portfolio of projects attracted a great deal of interest from the Hispac members and strengthened the way to future collaboration between the two organisations.

Strong ERC presence in Lindau

During the first week of July 2013, the 63rd Lindau Nobel Laureate Meeting gathered 34 Nobel Prize winners and the next generation of leading researchers. The ERC participated for the fifth consecutive year. In addition to ERC President Helga Nowotny and four Nobel Prize-winning ERC grantees (Theodor Hänsch, Serge Haroche, Jean-Marie Lehn and Ada Yonath), a strong contingent of young scientists was also present, consisting of ERC Starting grantee Daniela Wilson and 13 young researchers who were part of various research teams funded through ERC grants. This year's edition of the renowned gathering at Lake Constance in Germany put the spotlight on Chemistry, with a strong focus on Green Chemistry, chemical energy conversion and storage, as well as biochemical processes and structures.

[5] http://erc.europa.eu/sites/default/files/press_release/files/Press_release_NSF-ERC_agreement_final.pdf

ERC brainstorms ideas to tie academia and industry at the Alpbach Technology Forum

In August 2013, the ERC participated in the Alpbach Technology Forum, an important part of the European Alpbach Forum, an annual event in the Austrian Alps which gathered together politicians, industrialists and renowned scientists from all areas. The ERC President, Helga Nowotny, and three ERC grantees led two plenary sessions during the forum.

Prof. Nowotny chaired a plenary session on graphene, the 'dream material' meant to revolutionise future technologies. The main speaker at this session was ERC Starting grantee 2007 and Nobel Laureate in Physics 2010, Konstantin Novoselov. Prof. Nowotny also chaired the panel discussion 'From research to economic success'. Two other ERC speakers contributed to the debate, ERC Starting grantee 2009 Nicole Grobert with a lecture on 'Tailored nanomaterials — crossing the valley of death' and ERC Starting grantee 2007 Davide Iannuzzi who looked back at his experience as an academic entrepreneur, 'From the blackboard to the market'.

Topics such as high-tech industry clusters around universities, multidisciplinary working teams, mentoring, risk and venture capitals were widely debated. Real life experiences and case studies were used to illustrate the need to encourage the ingenuity of young scientists, the impact of outstanding basic science on the global competitiveness of our societies and the best ways to market ideas.

European Research Council takes part in the debate at the 'Summer Davos' meeting in China

The Annual Meeting of the New Champions, organised by the World Economic Forum (WEF), took place in Dalian, China, from 11 to 13 September 2013. This annual meeting, dubbed 'Summer Davos', focuses on the younger generation and creates an opportunity for exchanges between leaders from industry, academia and key decision-makers, as well as the media and civil society.

The ERC brought to Dalian more speakers and took part in more sessions than ever before. Led by Helga Nowotny, the delegation included Nobel laureate Sir Tim Hunt and sinologist Alain Peyraube, both members of the Scientific Council, who were speakers in several sessions. In addition, six ERC-funded researchers showed the latest discoveries in their fields and brought the scientific perspective into discussions of this year's theme 'Meeting the innovation imperative': Advanced grantee Peter Zoller (Wolf Prize winner 2013), as well as Starting grantees Nicole Grobert, Valeria Nicolosi, Jeremy O'Brien, Hele Savin and Wilfried Weber. They all underpinned the most recent trends in science and the need to support excellent frontier research today for tomorrow's innovations.

New agreement for Korean young talent to join ERC research teams

A new initiative was launched on 8 November 2013 to boost opportunities for early-career Korean scientists to come to Europe and join the research teams of ERC grantees. Minister of Science, ICT and Future Planning of the Republic of Korea, Choi Mun Kee, and — on behalf of the ERC — the European Commissioner for Research, Innovation and Science, Máire Geoghegan-Quinn, signed the implementing arrangement. The signing ceremony took place on the occasion of the EU–Korea summit held in Brussels and in the presence of the President of the Republic of Korea Park Geun-hye, EU Presidents Herman Van Rompuy (Council) and José Manuel Barroso (Commission), as well as ERC President Helga Nowotny.

The objective of the implementing arrangement is to stimulate cooperation by bringing the best researchers together to exchange ideas and experiences, and to enhance their international profile and knowledge. The initiative will make it easier for early-career Korean top scientists to be part of ERC-funded research teams for 6 to 12 months.

As mentioned above, the first agreement of this kind was signed in July 2012 with the NSF in the US to provide opportunities for early-career NSF researchers to join ERC-funded teams in Europe.

Global Research Council

Prof. Helga Nowotny represented the ERC at the Global Summit 2013 of the Global Research Council (GRC), which took place in Berlin from 27 to 29 May 2013. The German Research Foundation (DFG) and the National Council of Technological and Scientific Development (CNPq) of Brazil jointly hosted the meeting, which was attended by heads of 70 organisations from around the globe.

The discussions at the Global Summit 2013 focused on two main topics: open access to scientific publications and research integrity. On open access, the GRC endorsed an action plan, which includes activities through which GRC member organisations can foster the open exchange of research results with a high degree of flexibility. It specifies three basic principles: encouragement, awareness raising, and support. On research integrity, a statement of 'Principles for research integrity' was endorsed. While stressing that researchers and institutions themselves remain ultimately responsible for undertaking research with integrity, it also points out that research funding agencies have an obligation to ensure that research meets the highest possible standards.

Both the action plan and the principles for research integrity were developed at a set of regional meetings, including a meeting in Brussels to which the ERC contributed.

Meeting of the Global Research Council (GRC) in Berlin, Germany, May 2013

Open access to scientific publications will remain on the agenda of the GRC in 2014. A mechanism is being designed to monitor progress made in the implementation of the action plan. The second topic to be discussed at the next Global Summit is early career researchers. A statement of principles for funding the future (talent cultivation, mobility, interdisciplinarity, etc.) will be endorsed.

Open access: the ERC joins arXiv

In September 2013, the ERC took a further step towards open access by joining an international partnership supporting arXiv, one of the major scientific repositories in the areas of physics and mathematics, which is operated by Cornell University Library (New York, US). The ERC is the first European research-funding organisation to join the arXiv sustainability initiative. By doing so, it has reaffirmed its commitment to open access and to ensuring that the fruits of the research it funds can be freely accessed, read and used, both by scientists working in relevant areas and by the public at large.

As a major resource for researchers in the physical and engineering sciences, arXiv is actively used by ERC-funded researchers to provide open access to their research results. More than 3 000 research papers resulting from ERC projects have already been deposited. By joining arXiv, the ERC now has the chance to contribute to the further development and enhancement of the service to match the evolving needs of its users.

ERC organises workshop on gender issues

The working group of the Scientific Council dealing with gender balance issues has been monitoring and analysing the gender distribution of applicants to the ERC and the success rates of men and women since 2007. Taking into consideration the different ERC granting schemes and countries, the group came to the following conclusions:

- the proportion of applications from women is 30 % for the Starting Grants and 15 % for Advanced Grants;
- the proportion of women applying to the different granting schemes is lower on average than the potential pool of qualified women at these levels in Europe;
- this mismatch is not homogeneous throughout the different European countries: in some the numbers are similar while in others fewer women apply than are potentially qualified to do so;
- the success rates of women is on average two percentage points below that of men and this difference has been relatively stable since 2007;
- no correlation between the number of women in the evaluation panels or the gender of the panel chair and the success rate of women applying to these panels was found, suggesting that improving the gender balance in panels will not be critical in solving the issue.

Based on these observations the working group organised a workshop entitled 'On the way to the top: providing equal opportunities for men and women in science and technology'. The workshop, which took place on 2 December 2013 in Brussels, gathered together representatives from national research organisations and gender experts to discuss the diversity of practices and approaches to gender mainstreaming in various European countries. It was divided into two sessions both focused on identifying successful practices and policies, one for 'Improving gender balance' and the other for 'Targeting gender bias'. A full report, with the main recommendations, will be presented early in 2014.

This workshop was the last of a series of initiatives that the Scientific Council's Working Group on Gender Balance took in 2013, including the invitation to Isabelle Vernos to speak at the Gender Summit in Washington DC, as well as her editorial in *Science* magazine.

Research highlights

This part of the Annual Report showcases research across the three domains: Physical Sciences and Engineering; Life Sciences; and Social Sciences and Humanities. The section offers a brief analysis of a specific area of research in each domain. The aim is to provide a 'snapshot' of the kinds of grants the ERC supports. The research fields chosen are: universe sciences, with an emphasis on research into extra-solar planets and cosmology; genomics, focusing in particular on plant sciences; and economics, finance and management. Two projects from each domain are highlighted to offer insights into the work of researchers at the top of their respective fields.

Overview of ERC projects in universe science

In March 2013, the most detailed map of the early universe acquired by the European Space Agency's Planck satellite was released. The news made the front pages around the world. This map was created by detecting the cosmic microwave background radiation: the oldest light in our universe imprinted on the sky when the universe was just 380 000 years old. From its launch date in May 2009 and until October 2013 when its last instrument was switched off, the Plank space-based telescope acquired an immense amount of data that scientists will analyse for years to come. ERC grantees are among the scientists working on this data. To date the ERC has funded around 30 projects focused on the big cosmological issues: the origin and evolution of the universe, its accelerated expansion, the mysterious ingredients (dark matter, dark energy), the large-scale properties of the universe, the origin of cosmic structures, the relation between gravity and space-time. These projects also make use of other space-based and ground-based facilities like the European Space Observatory (ESO), ESA's Euclid and NASA's James Webb, as well as of large-scale surveys such as the Baryon Oscillation Spectroscopic Survey (BOSS) and the Dark Energy Survey.

Another area of universe science that attracts substantial ERC funding is galactic astronomy (galaxies and clusters of galaxies). Thirty six projects in this area try to answer questions regarding the formation and evolution of galaxies, the mysteries of galactic 'archaeology' (galaxies in the early universe), the formation and dynamics of galaxy clusters, the history of the Milky Way, the behaviour of active galactic nuclei. The submission and funding of projects in this area peaked in 2012, triggered by the latest surveys of our galaxy: the Gaia-ESO survey (which began collecting data in January 2012 using the ESO's very large telescope), ESA's Gaia mission (which will create an extraordinarily precise three-dimensional map of more than a thousand million stars throughout our galaxy and beyond), the recently commissioned LOw Frequency ARray (LOFAR), and the focal-plane array system Apertif at the Westerbork Synthesis Radio Telescope.

Another 10 ERC-funded projects investigate the astrophysics of gamma-ray emission and acceleration by studying gamma-ray sources such as binary systems, accreting neutron stars and black holes, pulsars and pulsar wind nebulae, or extreme explosive events such as massive-star collapse.

Overall, the ERC funds 138 projects whose main topic is universe science (3.4 % of all ERC grants), with a total budget of EUR 240 million. [6] The study of 'stars and stellar systems, planets and planetary systems' has the largest share of these projects (40 %). Although a clear separation is not possible for all projects, roughly half of them deal with star-related issues (star formation, structure and dynamics, 3D star modelling, evolution of stars and determination of age, supernovae explosions), while the other half examine issues on a planetary scale.

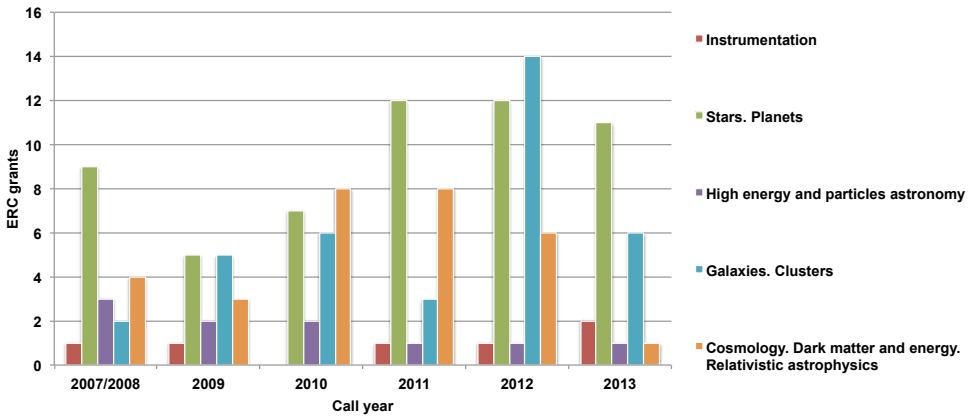
Another area of concentration for a significant number of ERC-funded projects is the search for extra-solar planets. This rapidly expanding area of universe science has contributed enormously to scientists' capacity to model the formation and evolution of planets. The search for extra-solar planets is moving towards the detection of low-mass Earth-like planets and the characterisation of their structure and atmospheric components, in an attempt to establish whether life may exist around other stars. About 10 ERC grants are active in this area, some of them working specifically on the development of new instruments designed to aid the detection of Earth-like planets. Closely related to these efforts is the study of the interstellar medium, proto-planetary disks and star debris, which set the initial conditions for building planets.

[6] Consolidator Grant 2013 call not taken into account.

Other ERC-funded projects are studying our own solar system (e.g. helioseismology and magnetism, the surface of Mars, the icy moons of Jupiter and Saturn), drawing on the datasets acquired by recent space missions. Earth system science falls in another dedicated ERC panel but it is strongly related to universe science. Space observation of Earth is a very important source of data for various research fields ranging from terrestrial, marine and atmospheric studies to climatology and the evolution of life. At the same time scientific findings concerning planet Earth help us to understand planetary science on a larger scale.

The number of articles and reviews in universe science acknowledging ERC support increased from around 40 papers in 2009 (three of which were published in *Science* or *Nature*) to over 500 in 2012 (of which 11 were published in *Science* or *Nature*). Out of the approximately 20 000 papers published up to 2013 and acknowledging ERC support, over 1 400 papers (over 7 %) present results from ERC grants funded in the 'Universe science' panel (34 papers appeared in either *Science* or *Nature*).

Figure 1: **ERC projects funded in panel 'Universe science' by main topic and call year**



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Tracking Gravitational Waves: the next piece of the puzzle

This ERC-funded research argues that we are at a crux in our understanding of the relationship between theoretical explanations for how our universe functions and the data provided by astronomical observations of how that universe moves and behaves. The evolution of the universe is still best explained by the gravitational theory of general relativity (GR); quantum mechanics has grappled with elucidating physics at a micro-scale and particle physics is fitting the last jigsaw pieces into the standard model. In isolation, these theories are the best we have, but in combination they are somewhat more problematic. Recent developments in astronomy suggest that Einstein's may not be the final word on the subject.

The LEAP project is testing the 'space-time' paradigm by examining its behaviour in the presence of mass. According to GR, space-time is curved in the presence of mass, and when a mass moves it causes ripples. These ripples are known as Gravitational Waves. They are known to affect orbiting stars, but they have never been directly detected. Until now. Working in collaboration with experts across Europe, Prof. Kramer and his team are drawing on the low-frequency range not covered by ground-based detectors using radio astronomical observations of radio pulsars. Their innovative techniques will harness the collective power of Europe's largest telescopes to synthesise the biggest fully steerable telescope on Earth. By recording the signals received by this array of telescopes observing the same pulsar, the LEAP project can combine these signals into a coherent sum, producing more accurately measured pulse arrival times than has previously been possible. The goal is to 'capture' evidence of Gravitational Waves in action by measuring subtle changes in the pulse arrival times as the space-time around Earth is distorted. This research will, it is hoped, provide a giant leap in sensitivity and precision to finally explore this new window on the observable universe.

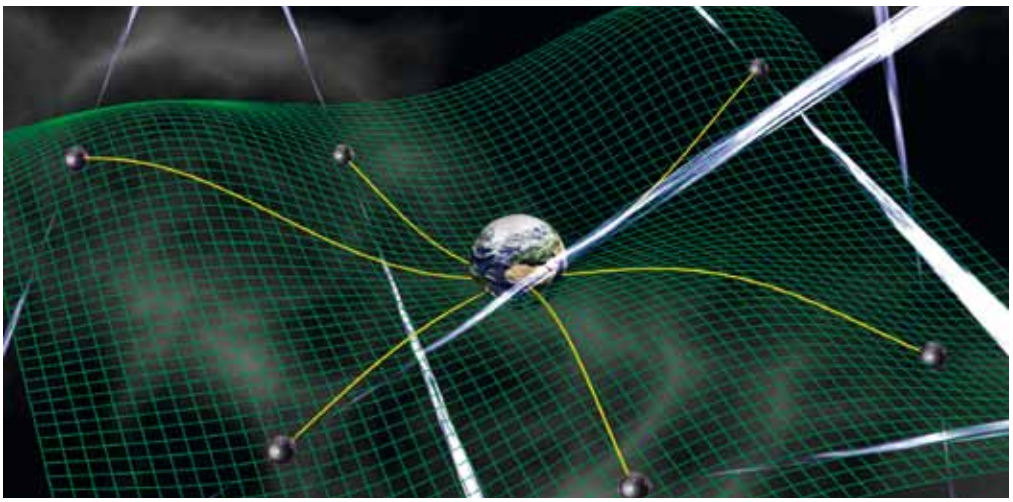
ERC grantee: Michael Kramer

Host Institution: University of Manchester (United Kingdom)

ERC project: Large European Array for Pulsars (LEAP)

ERC call: Advanced Grant 2008

ERC funding: EUR 2.5 million for five years



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In a Pulsar Timing Array experiment conducted within the LEAP project, the astronomers try to measure small changes in the arrival time of pulsar signals that are caused by a propagating low-frequency gravitational wave

© Andrzej Udalski

Surveying new worlds: the future of observational astronomy

One of the principal goals of this ERC-funded project is the exploration of new frontiers in observational astronomy: specifically, the search for extra-solar planets using a cutting-edge gravitational micro-lensing technique which enables the study of objects with a mass between that of a planet and that of a star, irrespective of the light emitted. The OGLEIV project is part of a wider optical gravitational lensing experiment: a long-term photometric sky survey (running since 1992) which has taught us a great deal about the observable universe. Prof. Udalski's research aims to achieve significant progress in the micro-lensing field by launching a second generation planetary micro-lensing survey of the Galactic Centre, where the probability of the occurrence of micro-lensing events is optimal. This survey hopes to make a census of planets down to Earth masses orbiting their hosts at 1/5 astronomical units. This is just possible by observing gravitational micro-lensing phenomena. This technique is the only one sufficiently sensitive to detect exo-planets in large mass range located at these distances from their host suns. These regions of planetary systems are extremely important for exploration because it is commonly believed that planets are formed there.

Prof. Udalski and his team have already discovered exo-planets in classical planetary systems: 10 new Jupiter-sized planets floating in interstellar space far from the light of any nearby parent star. These objects barely emit energy and do not disturb other bodies. They remained undetected until the micro-lensing technique was used. The scale of the data collected by the OGLEIV survey is vast: approximately one billion photometric observations are collected during each clear night. The number of regularly observed stars in the Galactic Centre is well over half a billion, and around 100 million stars in the Magellanic Clouds system are regularly monitored by the OGLEIV survey.

ERC grantee: Andrzej Udalski

Host Institution: Uniwersytet Warszawski (Poland)

ERC project: Optical Gravitational Lensing Experiment: New Frontiers in Observational Astronomy (OGLEIV)

ERC call: Advanced Grant 2009

ERC funding: EUR 2.5 million for five years

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OGLE observing facilities and the telescope

Overview of ERC projects in genomics

Genomics is the study of the genetic make-up of organisms. It represents a revolution in genetics which has driven major progress in all aspects of life science research, from medical sciences to ecology. The first nucleic acid sequence was published 50 years ago; however it took a further three decades to develop the high throughput technology that currently allows rapid sequencing of an organism's entire genome and the introduction of this data into the super-computational platforms that analyse it. The number of sequenced genomes has increased exponentially in the last 10 years as a result of the reduced cost and increased efficiency of DNA sequencing techniques. The cost of sequencing an individual human genome in 2003 was EUR 75 million: it costs less than EUR 5 000 today.

DNA sequencing is only one aspect of genomics, as the information obtained is subsequently used to compare the genes of different organisms (comparative genomics), to study gene function (functional genomics) and to predict the structure of encoded proteins, thus offering clues to their function (structural genomics). Since its launch in 2007, ERC-funded scientists have been strongly involved in genomics research, with 136 funded projects [7] using the 'genomics, comparative genomics, functional genomics' keyword to describe their projects. This represents 3 % of all ERC-funded projects, and these projects have been awarded a total budget of EUR 250 million. Genomics projects are distributed over all nine of the ERC Life Sciences' evaluation panels, from basic research into animal and plant development and evolution to applied biotechnology.

The genomics revolution has allowed major advances to be made in research into a variety of different species, including plants, which play a key role in the sustainability of life on earth. Plants fix solar energy, which drives nearly all living processes, and at the same time they are the basis of our food chain. They are continuously threatened by harmful pathogens and pests, as well as abiotic stresses (i.e. drought, high salt concentrations and scarcity of resources). Actual crop losses due to abiotic stress are estimated at 25–40 % worldwide. As a result of the rapidly growing human population, we are facing the enormous challenge of increasing agricultural productivity while simultaneously decreasing our ecological footprint in a changing climate. Plants, since they are easy to maintain, breed and genetically cross, are ideal models to study cell biology, development and evolution. To date there are more than 80 ERC-funded projects on plants, funded by seven of the nine different Life Sciences' evaluation panels. The first full sequencing of a plant genome, *Arabidopsis thaliana*, was achieved in 2000, and plant genomics has since been used in both the study of plant evolution and the development of plant strains with increased resistance to diseases and abiotic stress. The following two ERC-funded projects include breakthrough basic research into the evolution of plant iridescence and an applied agricultural project which aims to breed plants better adapted to both harsh environments and human needs.

[7] Not including the Consolidator Grant 2013 call.

© Heather Whitney

Iridescence as adaptive advantage

This ERC-funded project is studying the shifting, sensory advertising campaign conducted by plants in their battle for adaptive advantage and survival. Many plants possess a multi layered, complexly patterned structural colour, called iridescence, which moves and changes depending on the angle it is observed from. It is a highly effective and efficient visual signal, but little is known about the additional benefits these optical properties bring to the plants who display them. Iridescence is found throughout nature, but it is much more widespread amongst plants than was previously thought possible. Dr Whitney and her team are studying the adaptive advantages iridescence confers upon the plants who possess it: how does it affect camouflage? Does it provide photo-protection for shade dwelling plants? Why is it produced at all? Once these adaptive advantages have been teased out, this research aims to weigh the costs incurred by the plant and the developmental adaptations necessary to produce iridescence. The identification of the genes controlling iridescence production should also be feasible by comparing the gene expression profiles of plants grown in different conditions to produce different amounts of iridescence.

This is an inter-disciplinary project which ranges across animal vision and behavioural theory; optics; plant physiology and genomics. The Blueleaf project draws on optics to determine the properties of iridescence and animal behavioural theory to judge what effect iridescence has on attraction/repulsion between the animal and the plant, a crucial factor in the plant's survival and propagation. Preliminary results suggest that different mechanisms of iridescence production may have the potential to perform different ecological roles. The results of this project should have wide-ranging implications for fields as diverse as optics, biotechnology and even nanotechnology.

ERC grantee: Heather Whitney

Host Institution: University of Bristol (United Kingdom)

ERC project: The adaptive advantages, evolution and development of iridescence in leaves (BlueLeaf)

ERC call: Starting Grant 2010

ERC funding: EUR 1.1 million for five years

© Heather Whitney

Iridescent elaphoglossum

© Holger Puchta

The role of meiotic recombination in designing the next generation of plants

Successful agricultural development relies on the selective breeding of plants to ensure the maximum yield and the greatest disease resistance. This necessitates the selection of favourable over unfavourable traits. This ERC-funded research is drawing on an analysis of meiotic recombination, a process essential for gene linkage in plant development. Researchers in this field, plant genomics, already have the capability to transfer single traits, creating products better known as genetically modified organisms (GMOs). The Comrec project aims to develop the molecular tools for a new kind of 'designed' plant breeding. This should result not only in the ability to transfer or eliminate specific traits, but also enable access to the complete gene pool of natural species, and even contribute to its widening through crossing with closely related species. To achieve this, Dr Puchta and his team are trialling the introduction of meiotic recombination at specific genome sites. More broadly, the regulation of the level of genome-wide exchange is being attempted through the calibration of the factors involved in recombination in both gene conversions and crossovers, and through an attempt to restore segregation without causing discernible genetic exchange. By drawing on the natural mechanism of recombination, this research should elucidate a technique for 'improved' plants which avoids the biotechnical pitfalls associated with GMOs. The results should enable selective breeding for healthier plants and larger yields.

ERC grantee: Holger Puchta

Host Institution: Karlsruher Institut für Technologie (KIT), Germany

ERC project: Designed plant breeding by control of meiotic recombination (Comrec)

ERC call: Advanced Grant 2010

ERC funding: EUR 2.5 million for five years

© Holger Puchta

Forming reproductive organs of a Tomato. In these organs meiotic recombination occurs

Overview of ERC projects in economics, finance and management

The 2008 financial crisis and the resulting worldwide recession have radically shaken the views of many economists and have revealed a need for a better understanding of financial market developments and of the causes and consequences of crises, and how best to prevent them.

Around 15 % of ERC projects funded in the discipline of 'economics, finance and management' are in the area of finance, and at least half of them address the financial crisis from various angles. There are projects analysing financial globalisation and capital flows as a necessary step to understand the roots of the crisis and its international transmission; or examining which frictions hinder the efficient functioning of financial markets, as well as looking into the implication of these frictions for financial risk management and the optimal regulation of financial markets. Others aim to assess the risk-taking of financial intermediaries or the sources of systemic risk or to develop optimal regulation strategies for the financial sector. Understanding the incentives of financial intermediaries, the distortions induced by these, and how to mitigate them, are other areas of research covered. The increasing importance of financial conglomerates as a consequence of the financial crisis, their control over corporates and their effects on performance, investments, financing and governance policies are some other aspects researched in the ERC-funded grants, as well as how financial instability spreads across countries and influences the real economy and how to develop appropriate policy responses to this contagion. Finally, some projects aim to analyse the channels of information flow endogenous to firms and their effects on financial markets, and the development of financial crises and models of risk management for the financial sector, with particular attention to the prevention and management of financial crises.

ERC-funded research in the area of finance also explores financial market behaviour, broadly defined. Research covers areas such as asset pricing, risk management, behavioural finance, regulation of the retail finance industry, learning and volatility in the financial markets, trading, and informational frictions.

Another 10 % of the projects funded in the economics area aim to develop new or to extend and improve existing cutting-edge methodological tools for economic and econometric modelling, applicable to a broad range of micro- and macroeconomic issues. Some of these projects adopt a theoretical approach to their subject matter by focusing on general methodological issues, but the majority are also concerned with the application of these methodological tools to specific empirical aspects of economic reality. Although there is no single overarching trend in research in this area, a large portion of these projects lay emphasis on the refinement and implementation of non-parametric estimation techniques, particularly in cases where structural change, non-linearities or unobserved heterogeneity are assumed to be present in the data. In general, however, structural modelling prevails in this group, while, in empirical terms, many projects use micro-data. Finally, some projects are concerned with the estimation of non-linear dynamic stochastic general equilibrium models, as well as of matching and interaction models.

Around 27 % of projects financed by the ERC in this area of research can be placed within the vast field of macroeconomics, with both theoretical and empirical research, as well as the construction and use of macroeconomic models, covering a wide range of topics within the broad areas of economic growth and development, business cycles, and macroeconomic policy.

A significant number of projects deal with development and economic growth, as well conflicts and immigration. They cover research on the evolution of developing countries, with an emphasis on poverty and inequality, the economics of conflicts in poor and developing countries as well as economic development, structural change and income distribution in transition economies, often using China as a model or a case study.

A small number of projects focus on monetary economics and policy, looking for example at the effects of monetary policy on the asset price bubbles or understanding the origin of assets price boom and bust cycles, or attempting to provide a unified theory of money and liquidity. A significant number of these projects deal with the analysis of dynamic stochastic general equilibrium models, often by introducing variables and conditions normally not included in standard models.

Rethinking the causes and consequences of the financial crisis is also one of the subjects of research explored in this group of ERC-funded projects. This research is mainly empirically motivated and focuses on an international macroeconomic framework, often with relevant policy implications.

ERC-funded research in the wide area of microeconomics, another 27 % of the projects in this discipline, subsumes several strands of cutting-edge research in economic theory and empirics, in particular in behavioural and experimental economics, including neuroeconomics, behavioural game theory and strategic decision-making; in institutional economics; on social capital and social networks; and in various ramifications of applied microeconomics.

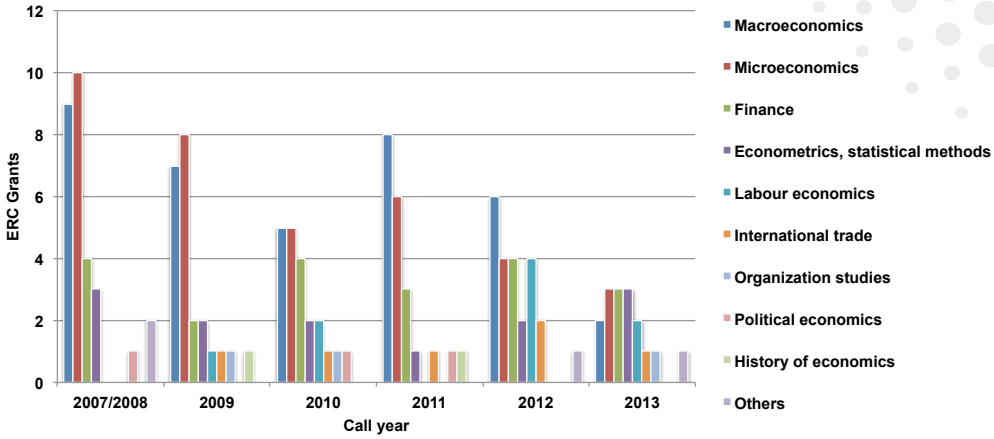
Funded projects in the area of behavioural and experimental economics aim to shed light on the cognitive, psychological and social factors which determine economic agents' behaviour and decision-making. Common research themes in this subgroup of projects are the issues of bounded rationality and learning, and the effects of various other types of cognitive limitations and psychological predilections of economic agents on market outcomes. Another research strand in this subgroup of projects is behavioural game theory and strategic decision-making, which involves, inter alia, research on the dynamics of socio-economic interaction between intelligent agents and on belief formation. A common research theme in several projects of this subgroup is the endogenous determination of economic agents' preferences via psychological, ideological and cultural factors, including the impact of the social environment on preferences, their cultural transmission, as well as their neural and genetic determinants and their evolutionary foundations.

In the research strand of institutional economics several ERC-funded projects aim to study the economic role of institutions from various perspectives, for example, to model the effect of institutions on economic agents' cognition, strategic thinking, preferences, and cooperative behaviour with applications, inter alia, in consumer demand, labour supply, bargaining rules and auctions. Social networks and social capital are other common research themes for several ERC-funded projects in the area of microeconomics. Projects in this subgroup typically aim to study economic allocation in social networks, and to analyse how network architectures shape the properties of market equilibrium.

Finally, several ERC-funded projects aim to promote our understanding on applied aspects of microeconomic theory with a strong empirical content, for example, by analysing consumer food purchasing and firm food pricing behaviours, or by proposing the design of market regulation and procurement contests in order to create better incentives for research and development.

(7) Consolidator Grant 2013 call not taken into account.

Figure 2: **ERC projects funded in panel 'economics, finance and management' by main topic and call year**



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The role of institutional investors and their incentives in financial markets

This ERC-funded project is a synthesis of economic and financial theory, contributing to a discipline known as macro-finance, in which Dr Pavlova is a leader. One of her lines of work focuses on introducing institutional investors into traditional models of financial markets. The leading theories developed in academia stipulate that prices in financial markets are determined by households (or by the so-called 'representative household'). Dr Pavlova argues that institutional investors, such as mutual funds, pension funds, hedge funds, etc., play an important role in financial markets, and ignoring such investors' incentives and constraints might lead to a biased view of how financial assets are priced in capital markets. One application of this theory is to commodity markets, which have experienced an unprecedented inflow of institutional investors in recent years, and these inflows of funds may have pushed up the prices of basic commodities.

Dr Pavlova's other line of work focuses on cross-border equity flows and on how such flows affect external deficits around the globe. Since a large bulk of equity flows come from institutional investors, Dr Pavlova believes that expanding her models of capital markets with institutional investors to a global multi-country economic framework might shed some new light on the determinants of international financial contagion. Financial contagion, or the spread of instability and financial crises worldwide, could be sparked by certain trades by institutions. By understanding the effect of institutions on both the markets and the economy more widely, the IFAP project aims to contribute to the development of more nuanced policy responses to financial shocks.

ERC grantee: Anna Pavlova

Host Institution: London Business School (United Kingdom)

ERC project: Institutional frictions in international finance and asset pricing (IFAP)

ERC call: Starting Grant 2010

ERC funding: EUR 926 000 for five years

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Growing like China

Prof. Zilibotti's ERC-funded research is exploring the consequences of structural change for rapidly developing economies, particularly for China. This change is examined from three interrelated perspectives: the macroeconomic waves produced by China's rapid growth, the impact on technological change and competition policy and the cultural transmission of these effects, particularly for social cooperation mechanisms. The focus of this project is on the structural changes that run hand-in-hand with a developing economy, and what determines its success or failure: touching everything from policies and institutions to social preferences and hierarchies. Prof. Zilibotti's research asks not just how an economy rises from relative poverty to prosperity, but why some succeed and others fall behind.

China is central to the project because its economic transition is the most spectacular modern example we have. In 2000, China's GDP per capita was approximately equivalent to that of the US in 1870. Only 10 years later, it had reached the US's level in 1935. China's situation is of particular interest to Prof. Zilibotti and his team because it is in many ways anomalous: high growth has brought with it increased exports of capital, a declining labour share and swift movement between sectors and firms of varying rates of productivity. One of the questions central to this project is whether this inter-sector malleability increases efficiency. The IPCDP project looks not only at these macroeconomic facets, but also at the social impact of these changes: at income distribution, the rise of the middle class and the ramifications of the one child policy for insurance in old age. Interwoven with this is a study of the relationship between innovation, IPR issues and the take-up of technology. Studying the growth and spread of cultural preferences should reveal the factors that act as a catalyst for economic prosperity.

Reaching beyond China, this project asks what binds a country together, both economically and culturally, and what tears it apart. This is cross-disciplinary work which examines inter-ethnic conflicts and child labour in particular. The hope is that if we can better comprehend what leads to these breakdowns in civilised behaviour, we can work more effectively towards their eradication.

ERC grantee: Fabrizio Zilibotti

Host Institution: Universität Zürich (Switzerland)

ERC project: Institutions, Policy and Culture in the Development Process (IPCDP)

ERC call: Advanced Grant 2008

ERC funding: EUR 1.6 million for five years

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Skyline Shanghai/Lujiazui business district in Pudong, Shanghai, the heart of China's economic transformation

Advancing frontier research

From 2007 to 2013: seven years of ERC calls

Table 1: ERC calls for proposals

ERC Call	Applications received	Of which		
		Evaluated *	Funded	Success rates (%) **
Starting Grant 2007	9 167	8 787	299	3.4
Starting Grant 2009	2 503	2 392	245	10.2
Starting Grant 2010	2 873	2 767	436	15.8
Starting Grant 2011	4 080	4 005	486	12.1
Starting Grant 2012	4 741	4 652	566	12.2
Starting Grant 2013	3 329	3 255	300	9.2
Consolidator Grant 2013	3 673	3 604	312	8.7
StG and CoG total	30 366	29 462	2 644	10.2
Advanced Grant 2008	2 167	2 034	282	13.9
Advanced Grant 2009	1 584	1 526	245	16.1
Advanced Grant 2010	2 009	1 967	271	13.8
Advanced Grant 2011	2 284	2 245	301	13.4
Advanced Grant 2012	2 304	2 269	319	14.1
Advanced Grant 2013	2 408	2 363	289	12.2
AdG total	12 756	12 404	1 707	13.9
StG, CoG and AdG total	43 122	41 866	4 351	12.1
Proof of Concept 2011	151	139	51	36.7
Proof of Concept 2012	143	120	60	50.0
Proof of Concept 2013	292	279	67	24.0
PoC total	586	538	178	36.9
Synergy Grant 2012	710	697	11	1.6
Synergy Grant 2013	449	427	13	3.0
Synergy total	1 159	1 124	24	2.3

* Ineligible and withdrawn proposals not taken into account - ** Basis: evaluated proposals. Average of the individual call success rates

data as of 19/12/2013

By the end of 2013, the ERC had launched in total six Starting Grant, one Consolidator Grant [8] and six Advanced Grant calls for proposals.

The third call for Proof of Concept Grants was launched in January 2013, with the first deadline in April and the second in October 2013.

Finally, the evaluation process of the second pilot call for Synergy Grants was concluded before the end of the year.

All calls were completed, i.e. the evaluation process was concluded and the results were communicated to the applicants and other stakeholders.

[8] Since 2010, the Starting Grant has been 'streamed', allowing applicants to be compared with researchers of a similar level. Broadly speaking, 'starters' are usually still in the process of setting up their own research group, while 'consolidators' are very often already working with their own group, but need to consolidate it. As a development from this practice, under the 2013 work programme, the two streams of what was the ERC Starting Grant were separated into two calls in response to the rapidly rising number of applications.

The number of applications received in 2013 confirms a strongly increasing trend: in response to the 2013 calls (Starting, Consolidator and Advanced Grants), a total of 9 410 proposals were submitted, representing a 33 % increase compared to 2012 submissions, with a larger increase (48 %) for the Starting and Consolidator Grants and an increase of 4 % for the Advanced Grants.

Table 2: **Distribution by country of residence of the Principal Investigators at the time of application**

	Evaluated				Funded			
Call	EU	Assoc. Countries	Other countries	Total	EU	Assoc. Countries	Other Countries	Total
Starting Grant 2007	7 907	665	215	8 787	252	35	12	299
Starting Grant 2009	2 133	196	63	2 392	207	29	9	245
Starting Grant 2010	2 438	265	64	2 767	365	55	16	436
Starting Grant 2011	3 586	307	112	4 005	421	49	16	486
Starting Grant 2012	4 148	390	114	4 652	492	66	8	566
Starting Grant 2013	2 823	329	103	3 255	231	55	14	300
Consolidator Grant 2013	3 283	272	49	3 604	266	43	3	312
StG and CoG total	26 318	2 424	720	29 462	2 234	332	78	2 644
Adv. Grant 2008	1 697	296	41	2 034	229	47	6	282
Adv. Grant 2009	1 281	209	36	1 526	197	43	5	245
Adv. Grant 2010	1 684	230	53	1 967	226	40	5	271
Adv. Grant 2011	1 988	200	57	2 245	265	33	3	301
Adv. Grant 2012	1 965	233	71	2 269	266	42	11	319
Adv. Grant 2013	2 025	255	83	2 363	238	45	6	289
AdG total	10 640	1 423	341	12 404	1 421	250	36	1 707
Grand Total	36 958	3 847	1 061	41 866	3 655	582	114	4 351

FP7 Associated Countries

Albania, Bosnia-Herzegovina, Iceland, Israel, Faroe Islands, Liechtenstein, the former Yugoslav Republic of Macedonia, Republic of Moldova, Norway, Republic of Montenegro, Serbia, Switzerland, Turkey.

Note: due to Croatia's accession to the EU and to a process of data validation concerning the residence countries the numbers could be slightly different for some calls compared to the numbers published in the ERC Annual Report 2012.

ERC Starting Grants 2013

The 2013 ERC Starting Grant call was published in July 2012 with an indicative budget of EUR 398 million. In total, 3 329 proposals were received, distributed by domain as follows: 1 486 proposals in Physical Sciences and Engineering (45 %), 1 073 in Life Sciences (32 %) and 770 (23 %) in Social Sciences and Humanities. A total of 300 proposals were selected for funding (data as of December 2013). More than EUR 430 million was awarded with an overall average grant size of around EUR 1.5 million.

ERC Consolidator Grants 2013

The 2013 ERC Consolidator Grant call was published in November 2012 with an indicative budget of EUR 523 million. In total, 3 673 proposals were received, distributed by domain as follows: 1 668 proposals in Physical Sciences and Engineering (45 %), 1 203 in Life Sciences (33 %) and 802 (22 %) in Social Sciences and Humanities. A total of 312 proposals were selected for funding (data as of December 2013). More than EUR 590 million was awarded with an overall average grant size of around EUR 1.9 million.

ERC Advanced Grants 2013

The 2013 ERC Advanced Grant call was published in July 2012 with an indicative budget of EUR 662 million. A total of 2 408 proposals were received, distributed by domain as follows: 1 053 proposals in Physical Sciences and Engineering (44 %), 788 in Life Sciences (33 %) and 567 in Social Sciences and Humanities (23 %). The evaluation process resulted in a total of 289 proposals being retained for funding (data as of December 2013) for a total of about EUR 670 million awarded and an overall average grant size of around EUR 2.4 million.

ERC Proof of Concept 2013

The 2013 ERC Proof of Concept call was published in January 2013, with a first deadline on 24 April and a second one on 3 October and a budget of EUR 10 million, approximately half per deadline. A total of 145 proposals were received at the first deadline and 147 at the second one.

The evaluation process resulted in a total of 33 proposals being retained for funding at the first deadline and 34 at the second.

ERC Synergy Grants 2013

In its 2012 and 2013 work programmes, the ERC Scientific Council launched on a pilot basis a new funding opportunity, the ERC Synergy Grant. The number of applications submitted to the second Synergy Grant call (2013) was 449, down from more than 700 in 2012. Thirteen Synergy projects were selected for funding in 2013. As each Synergy Grant project involves between two and four Principal Investigators, 45 outstanding researchers are being supported through these 13 grants. Nine proposals out of the 13 retained were resubmitted from the 2012 Synergy call. The total budget allocated to the Synergy call in 2013 was EUR 150 million.

Table 3: **Synergy projects selected for funding in the 2013 pilot call**

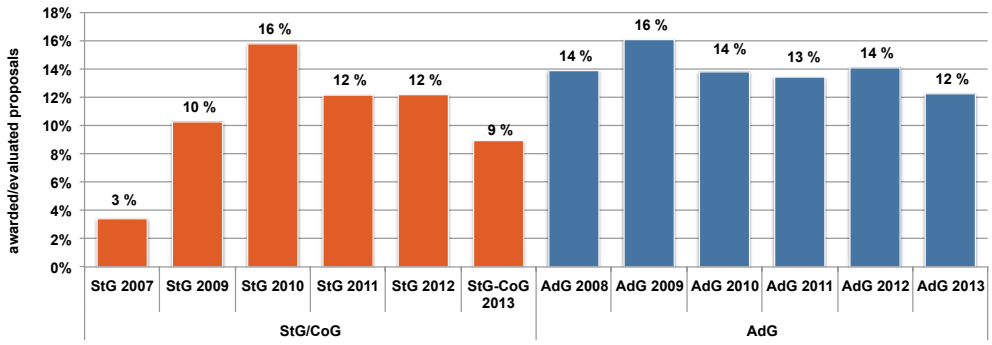
Building a Model Cell to Achieve Control of Cellular Organization	Marileen DOGTEROM	Anna AKHMANOVA		
	FOM Netherlands	Utrecht University		
Dynamics of human genome architecture in stable and transient gene expression changes	Miguel BEATO DEL ROSAL	Thomas GRAF	Guillaume FILION	Marc MARTI-RENOM
	Center for Genomic Regulation Spain	Center for Genomic Regulation Spain	Center for Genomic Regulation Spain	Center for Genomic Analysis Spain
Mechanisms of Evasive Resistance in Cancer	Michael HALL	Niko BEERENWINKEL	Gerhard CHRISTOFORI	Markus HEIM
	University of Basel	ETH Zurich	University of Basel	University Hospital of Basel
Arctic Sea Ice and Greenland Ice Sheet Sensitivity	Eystein JANSEN	Kerim NISANCIOGLU	Jens CHRISTENSEN	Bo Møllesøe VINTHER
	University of Bergen	University of Bergen	Danish Meteoro-logical Institute	University of Copen-hagen
Effects of phosphorus limitations on Life, Earth system and Society	Josep PENUELAS	Michael OBERSTEINER	Ivan JANSSENS	Philippe CIAIS
	Centre for Ecological Research and Forestry Applications Spain	International Institute for Applied Systems Analysis Austria	University of Antwerp	Versailles Saint-Quentin-en-Yvelines University
Holistic evaluation of light and multiwave applications to high resolution imaging in ophthalmic translational research revisiting the helmholtzian synergies	Jose-Alain SAHEL	Mathias FINK		
	The Foundation Voir et Entendre France	Pierre-Gilles de Gennes Research Foundation France		
Frontiers in Attosecond X-ray Science: Imaging and Spectroscopy	Franz Xaver KAERTNER	Ralph Wolfgang ASSMANN	Henry Nicholas CHAPMAN	Petra Marie-Luise FROMME
	University of Hamburg	DESI	University of Hamburg	DESI
Spin-charge conversion and spin caloritronics at hybrid organic-inorganic interfaces	Henning SIRRINGHAUS	Joerg WUNDERLICH	Jairo SINOVA	Iain MCCULLOCH
	University of Cambridge	Hitachi Europe Limited UK	Johannes Gutenberg University Mainz	Imperial College of Science, Technology and Medicine
Imaging the Event Horizon of Black Holes	Heino FALCKE	Michael KRAMER	Luciano REZZOLLA	
	Radboud University Nijmegen	Max Planck Society	Max Planck Society	
Gas and Dust from the Stars to the Laboratory: Exploring the NanoCosmos	Jose CERNICHARO QUINTANILLA	Jose Angel MARTIN GAGO	Christine JOBLIN	
	CSIC	CSIC	CNRS	
imPACT – Privacy, Accountability, Compliance, and Trust in Tomorrow's Internet	Michael BACKES	Peter DRUSCHEL	Rupak MAJUMDAR	Gerhard WEIKUM
	Saarland University	Max Planck Society	Max Planck Society	Max Planck Society
Constructing Social Minds: Coordination, Communication, and Cultural Transmission	Gunther KNOBLICH	Josep CALL	Gyorgy GERGELY	Dan SPERBER
	Central European University Hungary	Max Planck Society	Central European University Hungary	Central European University Hungary
Beyond Boundaries: Religion, Region, Language and the State	Michael WILLIS	Sam Julius VAN SCHAIK	Nathan HILL	
	British Museum	The British Library Board	School of Oriental and African Studies, University of London	

Success rate

The ERC supports investigator-driven frontier research through a competitive review process widely recognised and highly respected by the entire scientific community, based on the sole criterion of scientific excellence. For the 2013 Starting Grant call, almost 2 000 members of the Science, Engineering and Social Science and Humanities communities participated in the excellence review process as panellists and external reviewers. For the Consolidator Grants, the number of experts was around 2 300 and for the Advanced Grants over 2 000.

As the number of submitted proposals increased at a much higher rate than the call budget, the success rate decreased further for Starting and Consolidator Grants from 12 % in 2012 to 9 % in 2013. The success rate for the Advanced Grants also decreased from 14 % in 2012 to 12 % in 2013 (see Figure 3.1).

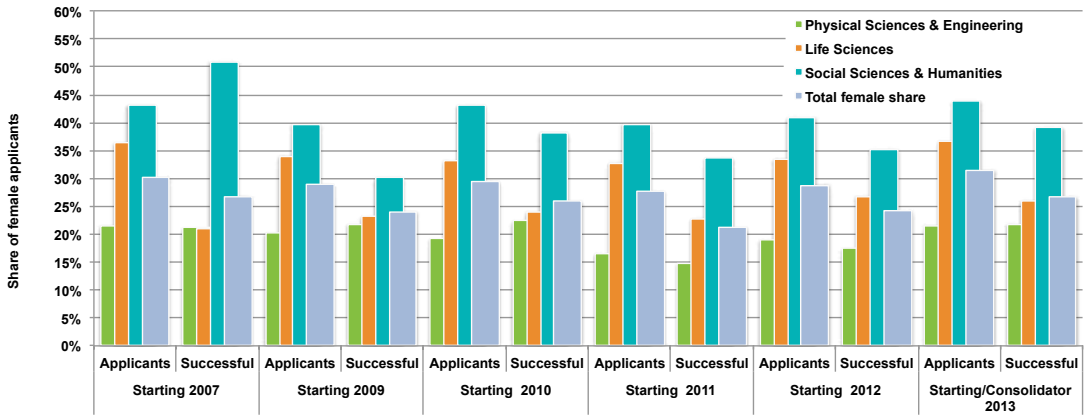
Figure 3.1: **Success rate (13 ERC calls)**



Gender distribution of ERC grants

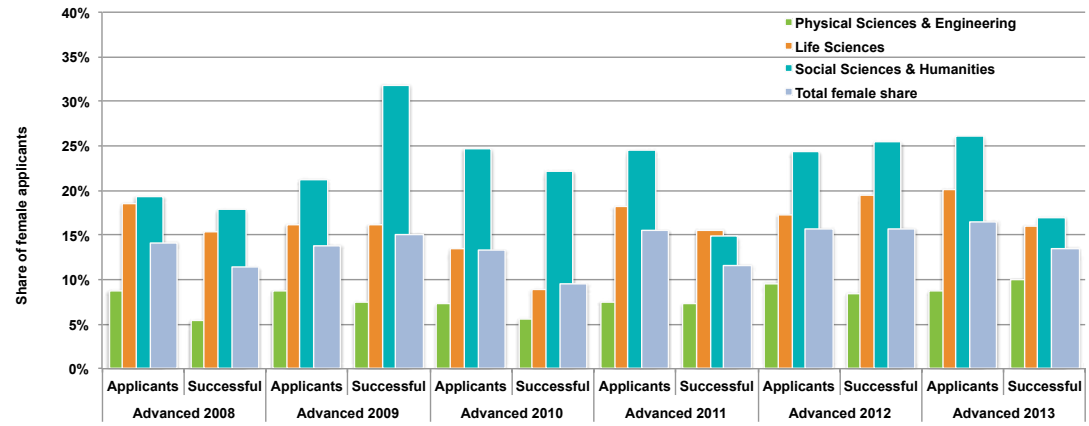
With 13 completed calls, around one fifth of the more than 4 300 selected projects has a female Principal Investigator. The share is substantially higher in the Starting/Consolidator Grant competitions with 25 % women grantees, compared to 13 % in the Advanced Grant competitions. These relatively low 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/Consolidator Grants and 15 % in the Advanced Grants (see Figures 3.2 and 3.3).

Figure 3.2: **All ERC Starting and Consolidator Grant calls – share of female applicants (*) per ERC call by domain**



* Not counting ineligible or withdrawn applications

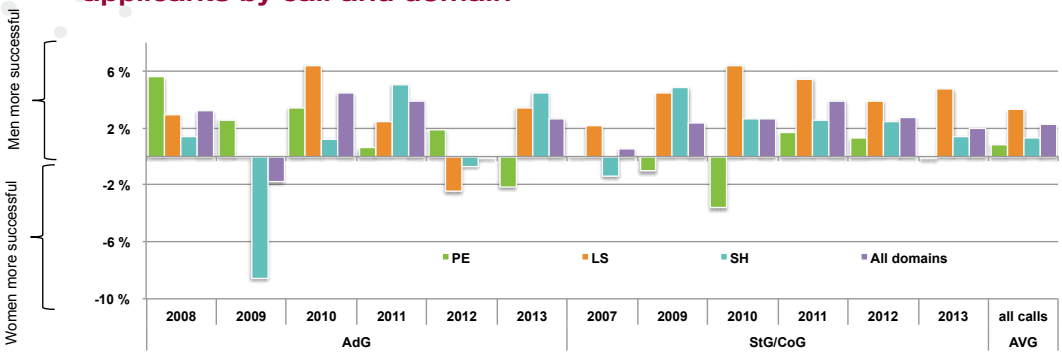
Figure 3.3: **All ERC Advanced Grant calls – share of female applicants (*) per ERC call by domain**



* Not counting ineligible or withdrawn applications

In general, male applicants are slightly more successful than women. Sometimes women are more successful than men, and this has happened in all three domains, although always in different calls (see Figure 3.4).

Figure 3.4: **Difference in success rates between female and male applicants by call and domain**



Host Institutions

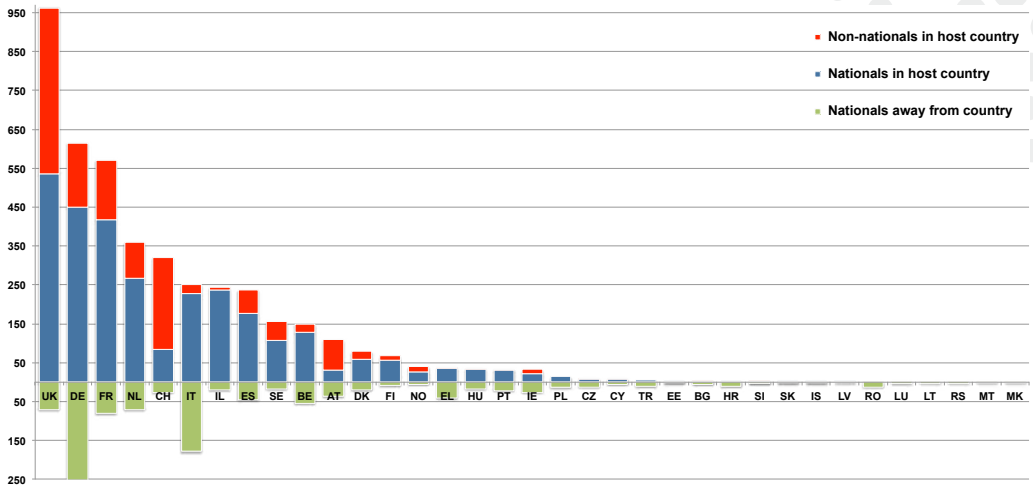
Almost 600 prestigious research institutions from 29 countries, both EU Member States and FP7 associated countries, host at least one ERC grantee after the completed ERC calls of 2007–2013. One third of the host research organisations have at least five ERC grantees.

The majority of the ERC grantees are hosted by institutions located in the EU (86 %), and 14 % have a Host Institution in an FP7 associated country. Figures 3.5, 3.6 and 3.7 on pages 52-57 show the geographical distribution of organisations hosting the 2013 starting, consolidator and advanced grantees. A list of the most successful Host Institutions can be found on page 87.

In general, most of the ERC grantees are nationals of the country of their Host Institution with the exception of Switzerland and Austria where the share of foreign grantees is 74 % and 71 % respectively (see Figure 3.8). In absolute numbers, the United Kingdom hosts the largest group of foreign grantees (426, of which 83 % were already resident in the United Kingdom at the time of application), followed by Switzerland (237, of which 79 % were already resident in Switzerland). The share of foreign grant holders is very small in Israel (3 %), Greece (3 %), Hungary (8 %), and Italy (9 %).

The same figure shows the tendency of some nationalities to work abroad rather than in their home country: around 55 % of the Greek, Austrian and Irish grantees are based in foreign countries (when looking at nationalities with at least 30 ERC grants). The absolute numbers are in particular high for Germany and Italy, with 253 and 178 nationals respectively hosted by institutions abroad. In both cases, almost 90 % of these grantees were resident abroad at the time of application (data as of December 2013).

Figure 3.8: **Country of Host Institution and origin of grantees**



Europe as a prime location for scientists from all over the world

ERC competitions are open to any researchers anywhere in the world who want to conduct research in a EU Member State or FP7 associated country. The ERC list of grantees displays 64 nationalities, as declared by the Principal Investigators at the time of granting. Among these nationalities, 29 are outside the European Research Area (ERA): there are eight Asian nationalities, seven Latino-American, six African, four from the ex-Soviet Union, in addition to Australia, New Zealand, the US and Canada. US nationals are by far the most common with 139 grantees, representing 45 % of all non-ERA grantees (namely non-EU Member States and non-associated countries). Overall 7 % of the ERC grantees are nationals of countries outside ERA.

Most of the non-ERA grantees were already resident in Europe at the time of application (90 %). Until now the ERC has funded 114 researchers who, at the time of application, were resident outside the ERA, representing 3 % of all the grantees (31 of them are non-ERA nationals). The vast majority of the incoming grantees (100 researchers of the total 114) were resident in the US at the time of application.

In addition, the analysis of the composition of ERC-funded teams shows that ERC grantees are attracting to Europe large numbers of excellent young researchers from abroad (see page 46 of this report).

With a view to increasing the ERC's visibility and to attracting more applicants from overseas, in 2012 the ERC launched an international awareness-raising campaign, 'ERC goes Global', led by its Secretary General. Visits were organised during the course of 2012 and 2013 to countries in North, Central and South America, Africa, Asia and Oceania.

The ERC grants offer non-ERA grantees the possibility to obtain additional financial resources to cover 'start-up' costs as well as flexibility in the requirement on the minimum 50 % of the total working time in an EU Member State or associated country.

National initiatives supporting ERC finalists

With the ERC calls for proposals being so competitive (average success rate only 12 %), some countries have developed national funding schemes in support of 'finalists' to ERC competitions, i.e. applicants who obtained a high score at the evaluation, but could not be funded by the ERC due to budget limitations. According to the information available to the ERC, some countries launched these schemes at the time of one of the first ERC calls and have kept them active over the years: Finland, Poland and Norway for all types of grants; Belgium-Flanders, Sweden and Spain for Starting Grants only. Other countries created these schemes at a later stage, but have also maintained them over the years: Luxembourg, Slovenia, Greece, Ireland, and the Czech Republic for example. A small number of countries ran support schemes only for a particular call or for the calls of a single year (e.g. Switzerland, Italy and France for StG2007, Cyprus for StG2009, Hungary for StG2007 & StG2009 and Romania for the 2011 calls).

The funding decision in these national schemes is based on the results of the ERC evaluation process, with only additional eligibility checks performed on the applicants. In a few cases (e.g. Luxembourg, Finland) some further evaluation can also take place at national level. As a rule, the host organisation of the applicant must be based in the country offering financial support and can (for most schemes) be different from the organisation that signed the Host Institution letter in the original ERC application. In general, there are no provisions on the nationality of the grantee, with only a few countries restricting the eligibility to their own nationals.

Most support schemes reduce the funding compared to the amount originally requested to the ERC, and also shorten the project duration. Some of the schemes aim to support the applicants in order to increase their chances of success in future ERC competitions. The Irish scheme, for example, explicitly encourages the funded researchers to resubmit to future ERC calls.

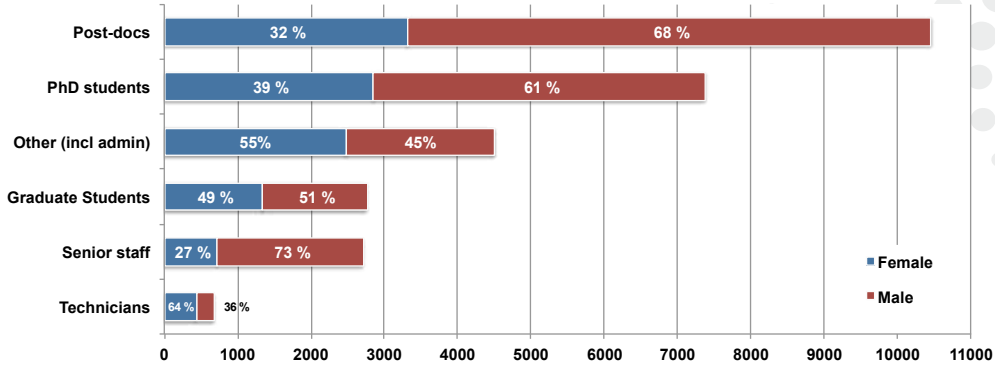
Training tomorrow's leading researchers

ERC grants are individual grants awarded to excellent researchers in order to help them develop their frontier research ideas. However, in their efforts for scientific breakthroughs, ERC grantees do not work alone. Generous ERC funding offers them a possibility to set up their own research project team by recruiting the most promising researchers from the global pool of scientific talent. Through these research teams, set up by grantees independently, the ERC indirectly contributes to the training of a new generation of excellent scientists who will, inspired by their mentors, take their role in the future.

Current evidence coming from a significant sample of almost 1 000 funded projects indicates that, on average, each ERC project — in addition to a Principal Investigator — employs around six team members, a large majority (63 %) of whom are early career researchers: about 37 % of team members are postdoctoral researchers and some 26 % are PhD students.

A forecast based on a simple headcount of ERC team members (reported so far) indicates that by the end of the 'Ideas' specific programme in December 2013, with around 4 300 starting and advanced grantees funded, the ERC will have also supported some 28 000 additional project team members, offering cutting-edge research training for nearly 10 000 postdocs and 7 000 doctoral students. They represent tomorrow's generation of excellent researchers, personally mentored by the best scientists of our time in new research techniques at the frontier of knowledge. While the final professional destination of some of these research-trained graduates is academia, some will continue their career in industry, bringing with them skills needed to perform research and to develop new ideas as well as skills in using advanced instrumentation and techniques.

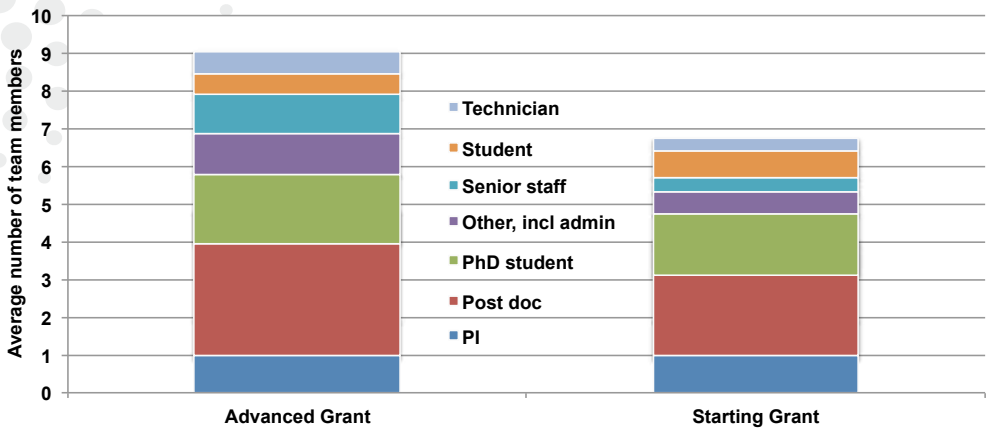
Figure: 3.9: **Forecast – number of ERC team members at the end of FP7 'Ideas'**



On the basis of the analysis of this large sample, the actual number of team members on a single ERC project varies a great deal and could range from a sole Principal Investigator to as many as 25 staff members on a project. The number of team members on a project also varies according to the grant schemes and the three scientific domains.

Advanced Grant projects tend to set up larger teams, on average engaging about eight team members supporting a Principal Investigator, while Starting Grant project teams are generally smaller, with five to six team members per Principal Investigator on average. Starting Grant teams include on average two postdocs, between one and two PhD students and another supporting staff member, most likely administrative staff or a graduate student. Advanced Grants generally expand on this composition by adding to it another postdoctoral student, one senior research staff member and a full-time administrative staff member. On average, teams in Life Sciences tend to be larger than teams in Physical Sciences and Engineering, with teams in Social Sciences and Humanities being the smallest.

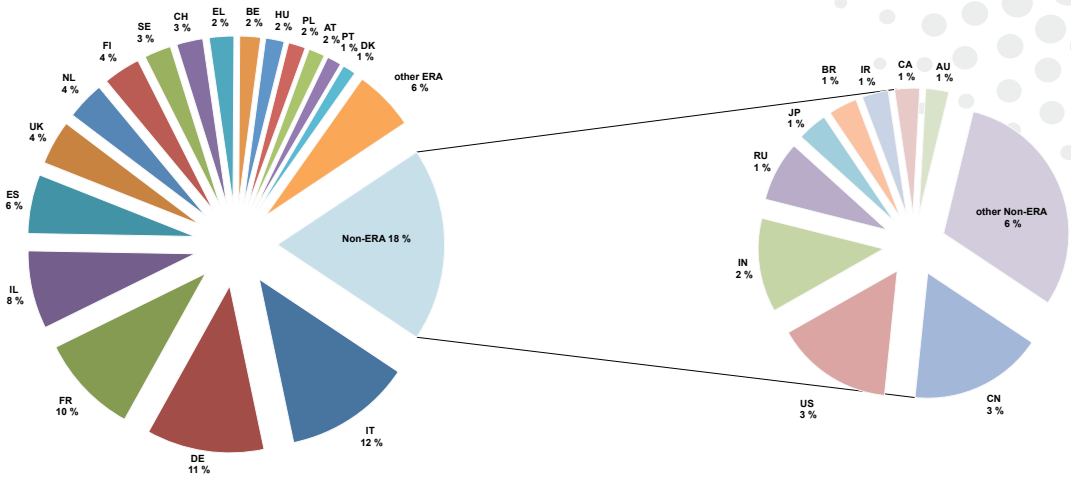
Figure 3.10: **Composition of ERC project teams**



The analysis of this sample shows that staff members in ERC project teams also reveal important dimensions of the ERC contribution towards gender balance. Current estimates show that some 38 % of team members are women, which is a higher share than the number of women grantees (20 %). The share of female team members in Life Sciences as well as in the Social Sciences and Humanities is already reaching 50 % of all team members (23 % in Physical Sciences and Engineering). The majority of them are postdocs or PhD students at the start of their research career and this can be seen as an encouraging sign for a better representation of women in cutting-edge research in the future.

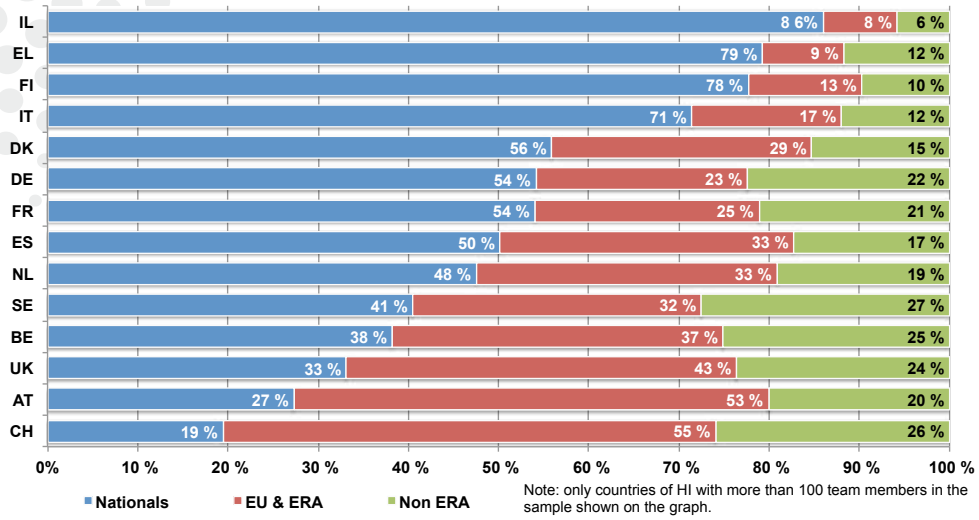
Through the training of excellent young researchers, the ERC is achieving yet another important strategic goal: internationalisation and widening participation. Around half of all ERC team members hold a nationality that is different from that of the Principal Investigator of their project. Furthermore, ERC team members are represented by nationalities of almost all of the European Research Area (ERA) countries and another 55 nationalities from outside the ERA. This surely demonstrates the true global character of the ERC programme.

Figure 3.11: **Distribution by nationality of ERC team members**



In the sample of close to 1 000 teams, Italians, Germans and French are in the lead when looking at the distribution of ERC team members by nationality, reaching a 10 % share of all ERC team members. The teams however remain very colourful and diverse in terms of nationality. As much as 18 % of the team members (close to 5 000 in terms of absolute numbers by the end of FP7) are overseas nationals, with many of them nationals of the big EU research and innovation competitors: China, the US, India and Russia. For about half of these researchers coming from overseas, the decision to move to Europe was directly triggered by the opportunity to work on an ERC project.

Figure 3.12: **Team members by nationality per country of Host Institution**

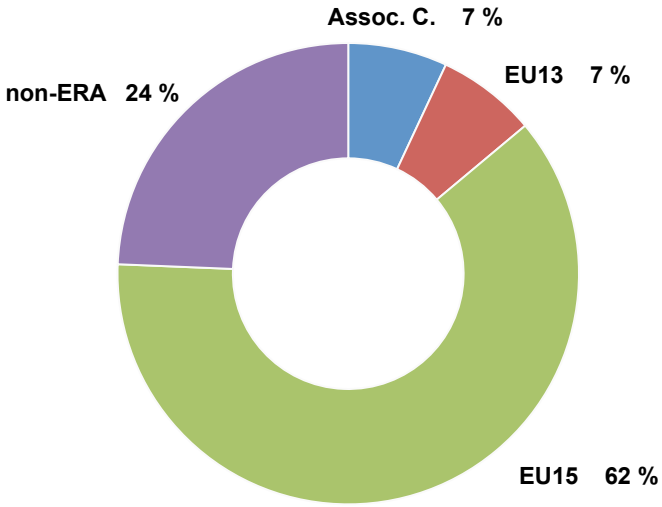


Note: only countries of HI with more than 100 team members in the sample shown on the graph.

The distribution of ERC team members by nationality, broken down per country of Host Institution, reveals some differences between ERA countries in attracting ERC researchers from abroad: Switzerland is the country with by far the highest share of foreign ERC team members; the United Kingdom and Sweden attract a relatively high share of team members from overseas; while ERC projects hosted at institutions in Israel, Greece, Finland and Italy seem to be less open to researchers from abroad.

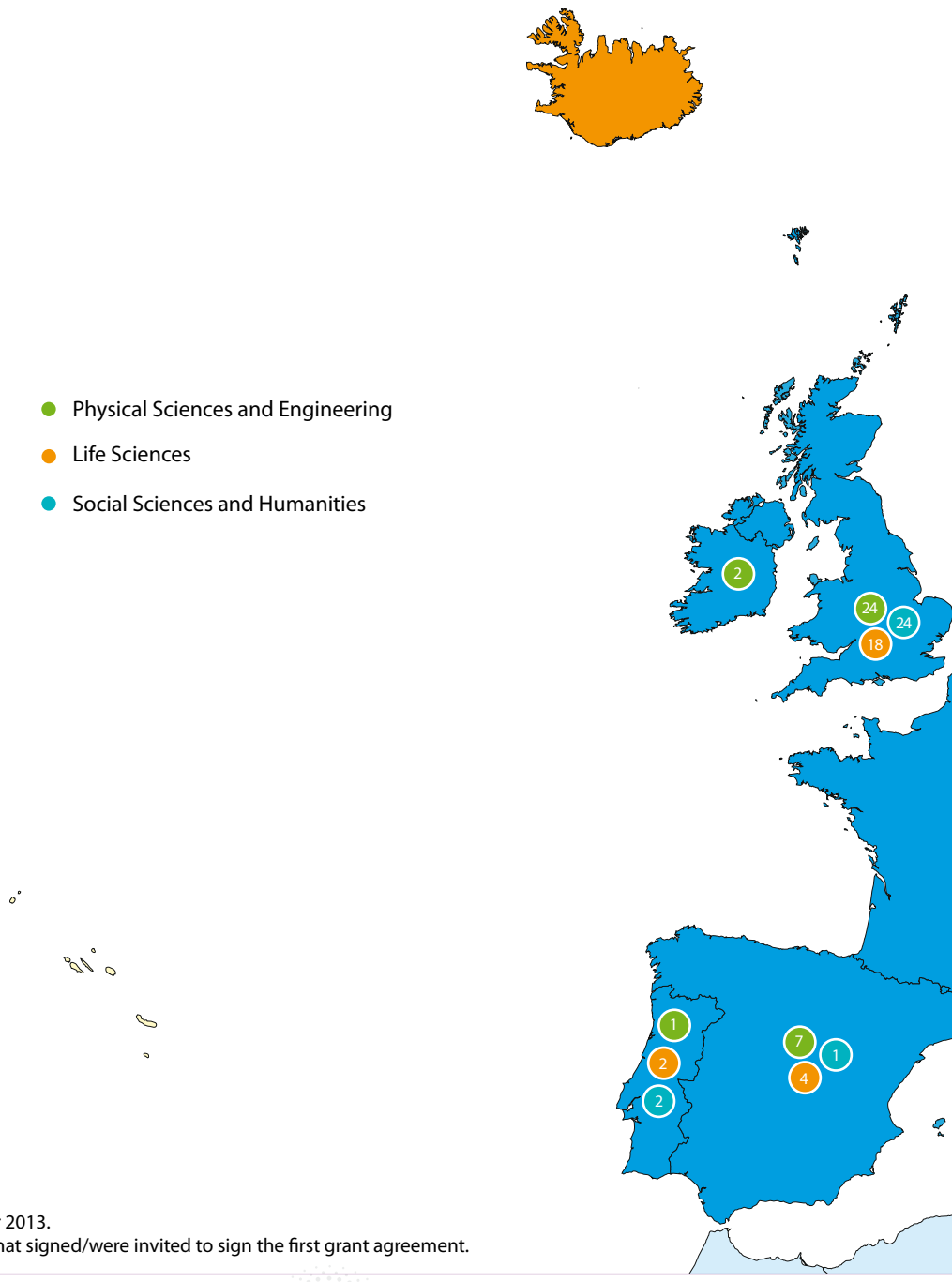
The composition of ERC research teams also reveals the important interdisciplinary character of ERC projects. On average about 10 % of research staff on ERC projects attained their last degree in a scientific domain other than the ERC project in which they are engaged. Social Sciences and Humanities show the highest cross-domain character, with 7 % of ERC team members funded in this domain holding their last degree in Life Sciences and another 7 % in Physical Sciences and Engineering.

Figure 3.13: **ERC team members: completed PhD during ERC project by nationality of the team member**



Within this sample, 100 individual PhD projects were reported as being successfully concluded by PhD students during their work as team members in a ERC-funded group, a number that is expected to grow exponentially in future as more projects reach their final stage. Being trained by the leading researchers at the frontier of science, many of them are expected to follow their mentors and soon apply to the ERC themselves.

Figure 3.5: **ERC Starting Grant: 2013 Call**
Geographical distribution of grant holders



Data as of December 2013.
Host organisations that signed/were invited to sign the first grant agreement.

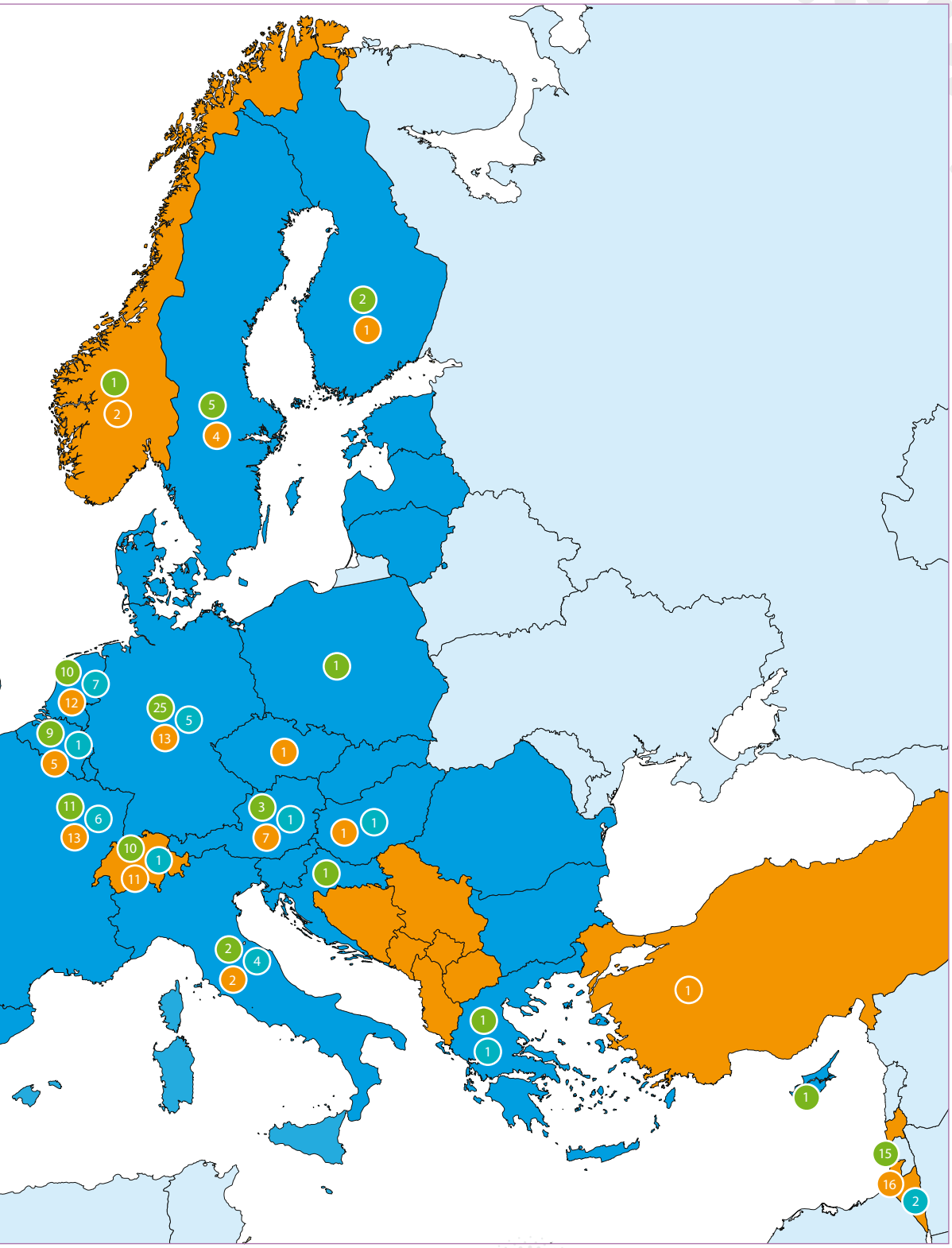
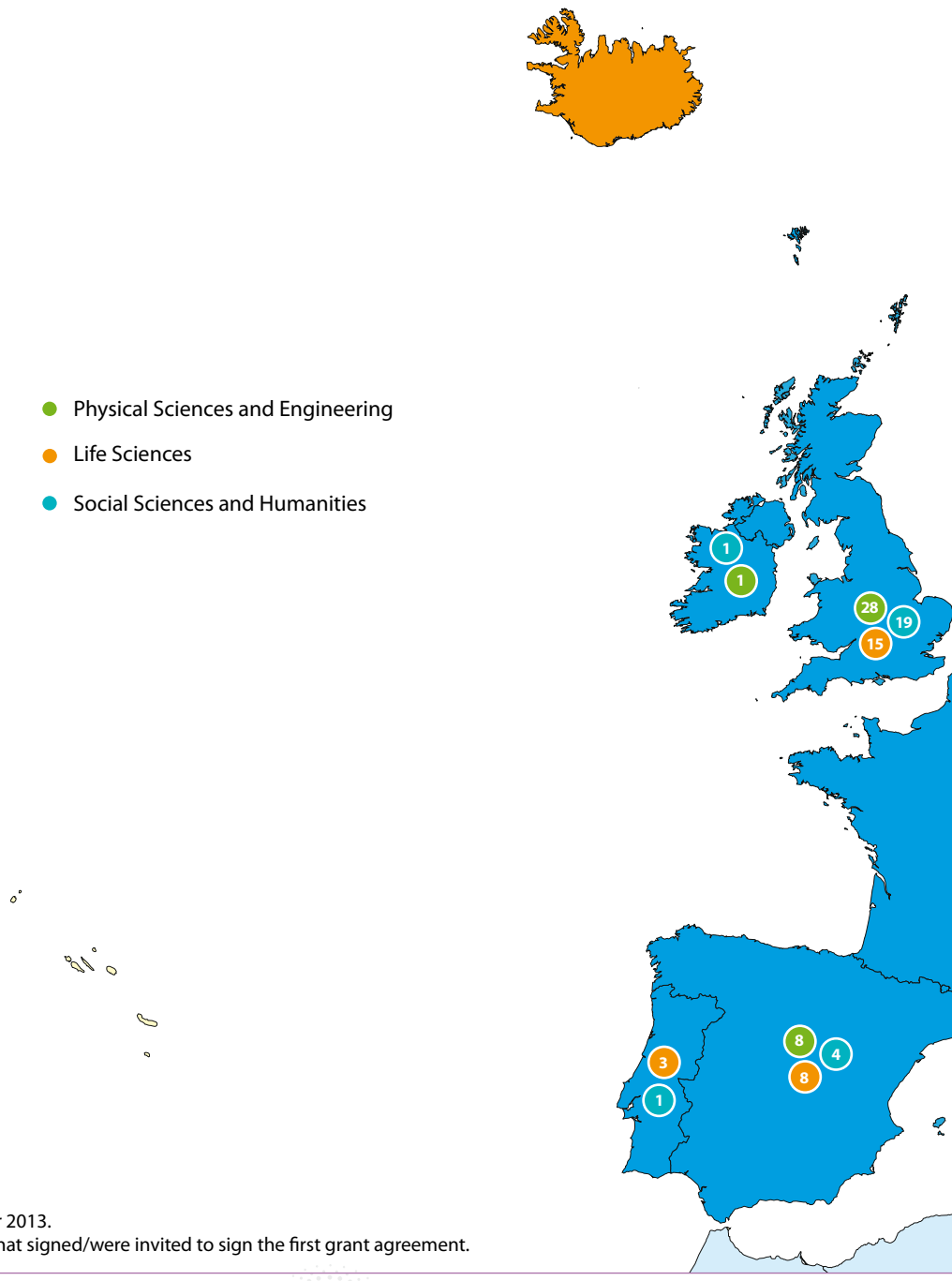


Figure 3.6: **ERC Consolidator: 2013 Call**
Geographical distribution of grant holders



Data as of December 2013.
Host organisations that signed/were invited to sign the first grant agreement.

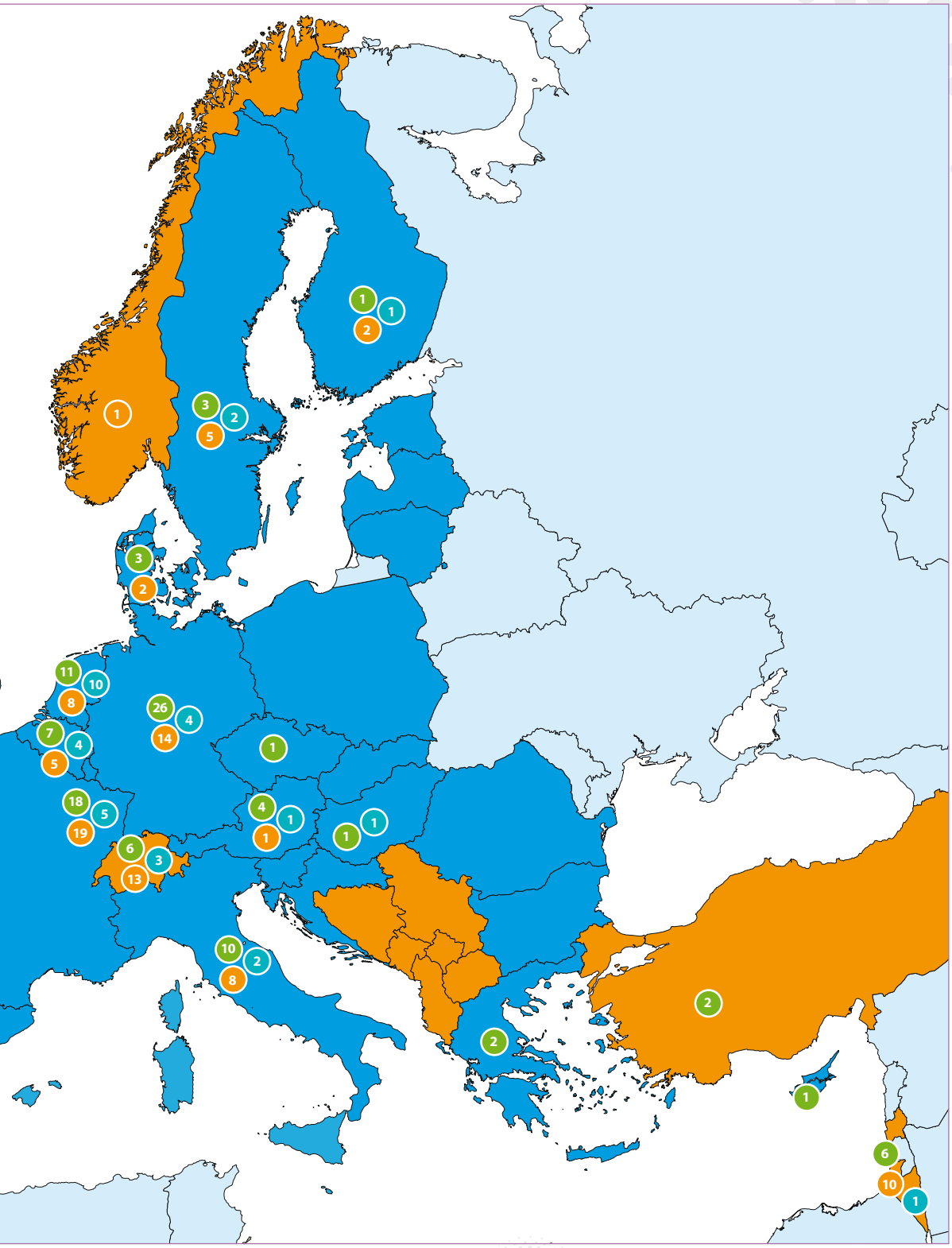
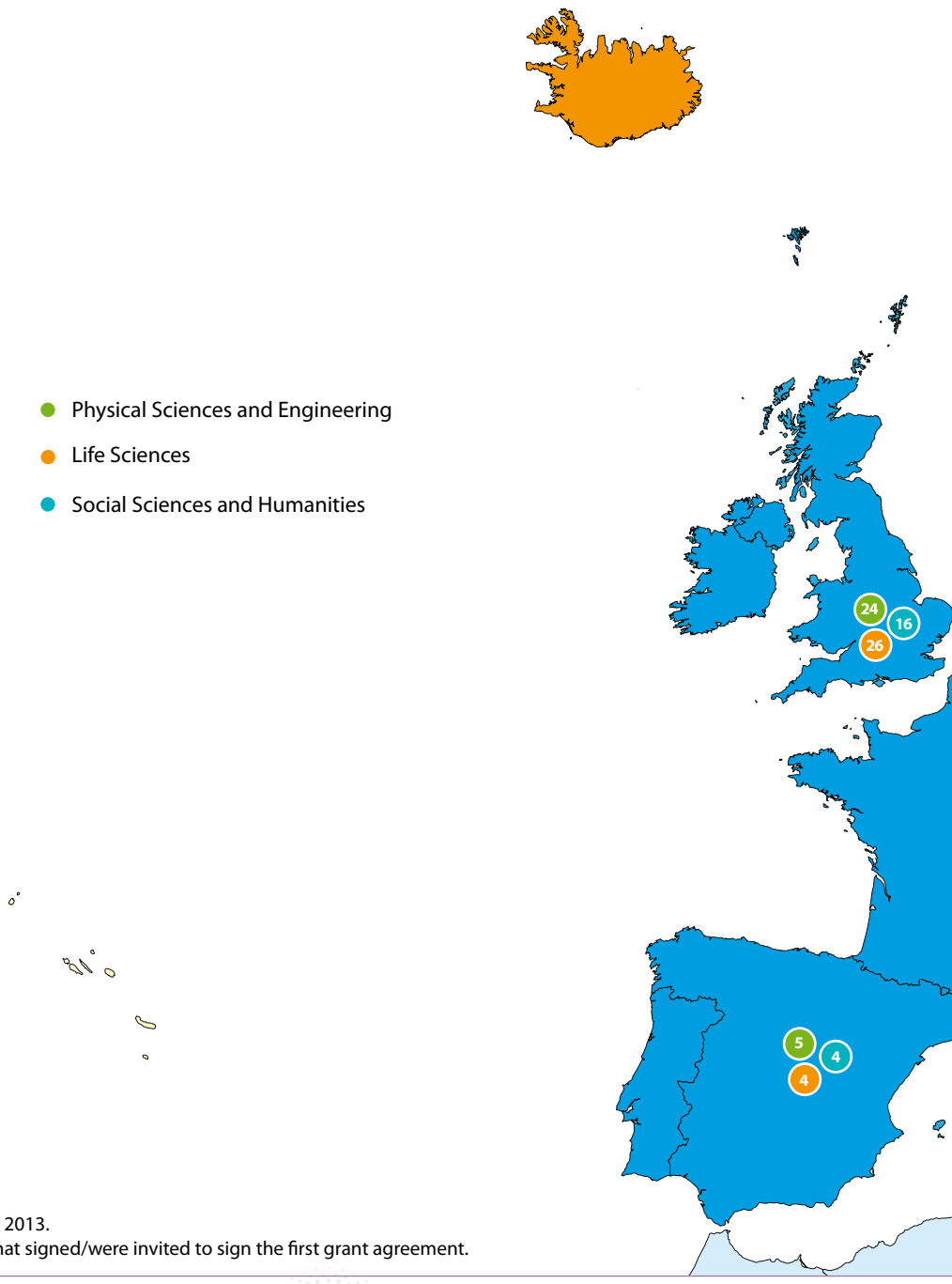
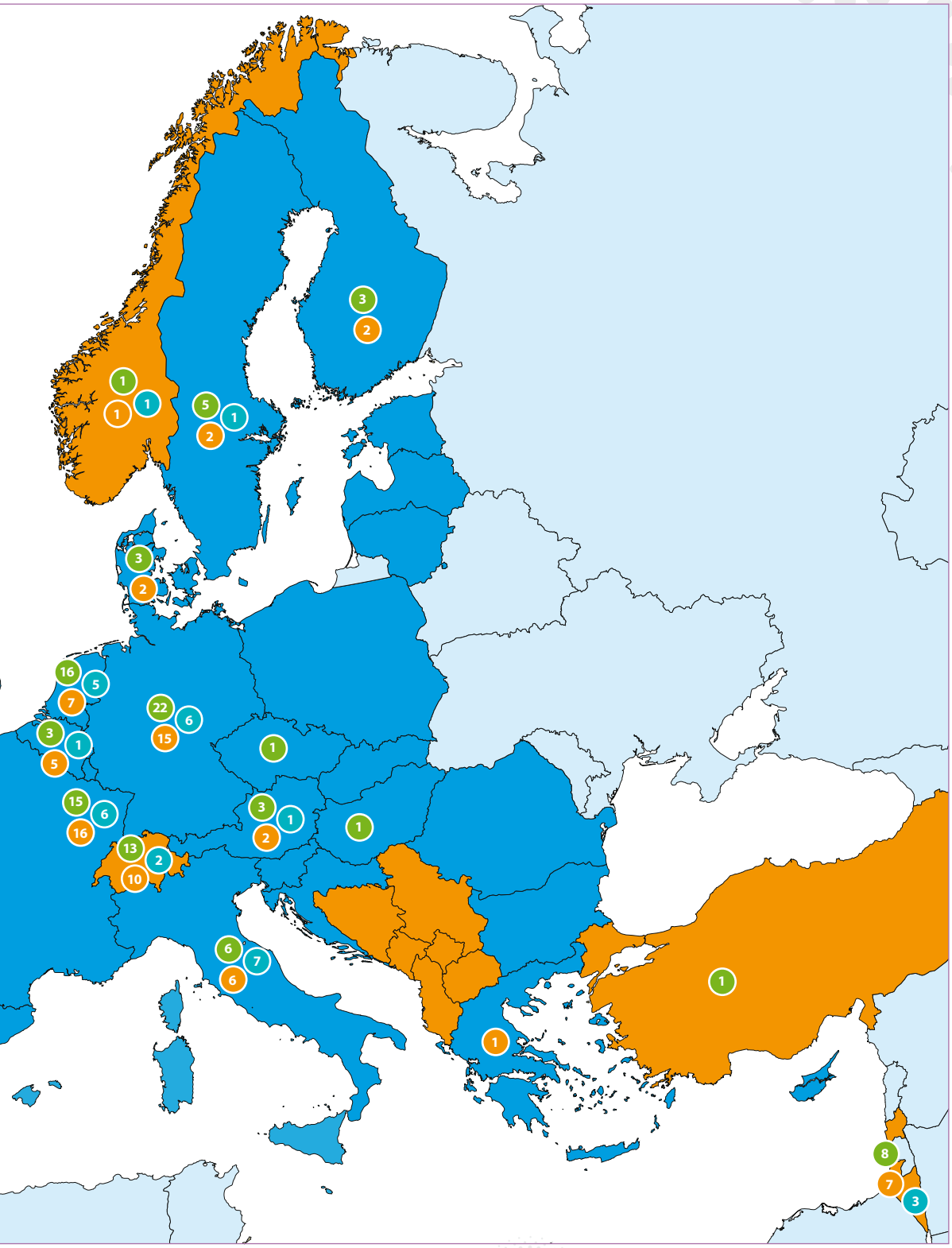


Figure 3.7: **ERC Advanced Grant: 2013 Call**
Geographical distribution of grant holders



Data as of December 2013.
Host organisations that signed/were invited to sign the first grant agreement.



4

ERC Scientific Council and Executive Agency

4.1 The ERC Scientific Council

The Scientific Council has the responsibility of establishing 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, selected on the basis of the criteria set out in Commission Decision 2007/134/EC of 2 February 2007 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 based on their undisputed reputation as leaders and for their independence and commitment to research.

The names of the 22 members of the Scientific Council who served in 2013 can be found on pages 78-79 of this report. The list includes five of the founding members whose term of mandate was renewed in 2011; the seven new members appointed in 2011 for the first stage of the renewal of approximately one third of the Scientific Council; two members who were appointed in 2009; and the eight members, appointed at the end of 2012 as part of the second stage of the renewal, who started in early 2013.

The term of four members of the Scientific Council, including President Helga Nowotny, came to an end in December 2013 and they will be replaced by the new ERC President and three new members who will start their term at the beginning of 2014:

- Prof. Nils Chr. Stenseth, Centre for Ecological and Evolutionary Synthesis, University of Oslo
- Prof. Martin Stokhof, Department of Philosophy, Faculty of Humanities, University of Amsterdam
- Prof. Michel Wieviorka, Fondation Maison des sciences de l'homme, École des hautes études en sciences sociales, Paris

New ERC President

Prof. Jean-Pierre Bourguignon

On 17 December 2013, Jean-Pierre Bourguignon, an internationally respected mathematician — who was Director of the Institut des Hautes Études Scientifiques near Paris from 1994 to 2013 — was announced as the new President of the ERC. He will take office on 1 January 2014 for a four year term, renewable once.

He was appointed by the Commission following a transparent recruitment process based on the recommendations of an independent dedicated search committee and with the approval of the Scientific Council.

The role of the president is to chair the Scientific Council and ensure its leadership, to work closely with the ERCEA and to act as an ambassador for the ERC in the world of science. In order to help ensure even closer scientific governance of the ERC, under the new *Horizon 2020* legislation, the ERC President will be remunerated at a level commensurate with the Commission's top management and will reside in Brussels for the duration of the appointment.

Meetings

The Scientific Council held regular meetings in 2013 both in Brussels and across Europe, usually at the invitation of national authorities. Meeting in different countries, which are either EU Member States or associated countries, is a way of making the ERC more visible. The meetings are also considered important events 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 2013: in January, March and December in Brussels (Belgium), in June in Bratislava (Slovakia) and in October in Utrecht (the Netherlands).

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 (CoIME) and the second dealing with the selection of evaluation panellists. The Executive Agency supports the operational activities of the two committees, which both met three times in 2013.

The members of the Scientific Council also meet in working groups (WGs) addressing specific issues. In 2013, various meetings of the ERC working groups on innovation and relations with industry, open access, internationalisation and gender balance were organised by the Executive Agency. The WGs carry out analyses and contribute to the ERC's scientific strategy through proposals to be adopted by the Scientific Council in plenary in the areas covered by their mandates: to examine the ERC's relationship with the industrial/business sector and the impact of ERC-funded research on innovation; to develop an ERC position on open access; to ensure that the ERC is at the forefront of best practice with regard to the gender balance in research and to explore suitable mechanisms to increase the participation of researchers in ERC calls both from countries outside of the EU (internationalisation aspect) and within the EU (increased participation of researchers from the EU's less research-performing regions).

A new group started its activities in 2013, the WG on key performance indicators (KPIs). Its mission is to develop a roadmap for monitoring and evaluating the ERC's accomplishment of its mission, beyond indicators and targets and to support the short-, medium- and long-term policies of the Scientific Council.

Scientific Council meeting in Utrecht (the Netherlands)

Support to the Scientific Council

Due to its specific governance model, the Scientific Council's plenary meetings are prepared with the organisational and administrative support of the unit 'Support to the Scientific Council' in the Executive Agency. The unit also provides advice and analysis to facilitate the work of the Scientific Council.

In response to relevant requests by the Scientific Council, the unit continuously advises them in their activities by providing analysis and intellectual input through the drafting of various documents, which reflect the Scientific Council's main orientations. These include the 'Ideas' annual work programme and this Annual Report. In 2013, the unit prepared briefings, presentations and data analysis on the ERC performance for the ERC President (20), several members of the Scientific Council (37) and the Secretary General (27) for their participation in various events worldwide. A series of other working documents and in-depth analyses were prepared during the year by the support unit, providing advice and assistance to the work of the Scientific Council and its standing committees and working 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. The senior management of the agency also attends these meetings. The Board met 10 times in 2013, in particular to prepare or give follow up on plenary meetings of the Scientific Council.

Case reporting on scientific misconduct

The ERC strategy on scientific misconduct provides for record keeping and reporting of cases in the ERCEA annual activity report and in the ERC Scientific Council annual report. The following is a report of cases dealt with in 2013.

The ERCEA and CoIME have analysed 10 cases of scientific misconduct in 2013: four cases of conflict of interests involving peer reviewers; one case of forgery; two cases of copy/paste of ERC applications; one case of plagiarism; one case of scientific misconduct allegedly committed by an ERC applicant in the past; and one case of cheating and double funding.

Conflict of Interest (CoI)

1. A shadow panel member, without declaring any conflict of interest, participated in the remote evaluation of proposals directly competing with an application of his/her partner, which was evaluated by the same panel. It was decided not to re-invite the shadow panel member to the next term of his/her active panel service.

2. The ERC was alerted that a panel member was married to a researcher who had submitted a proposal to the panel where the panel member was serving.

When asked for clarification, the panel member confirmed a family relation with the applicant but did not clarify which one. The panel member also claimed that he/she thought that 'this was understood and was declared' when a CoI with the applicant's proposal was acknowledged at an earlier stage. In fact, the declared CoI was related to the applicant and the panel member being in the same Host Institution, which had the consequence that the panel member did not evaluate the specific proposal, but could

evaluate competing proposals assigned to the same panel. When confronted with the fact that a strict family relation was a stronger conflict of interest than being colleagues in the same Host Institution, the panel member agreed to step down from the evaluation panel.

3. A panel member had declared at step 1 of the evaluation a CoI due to personal reasons with an applicant. The panel member did not evaluate that specific proposal due to the declared CoI.

It was later discovered that the panel member and the applicant had a close personal relationship and had received a joint offer to move to the same Host Institution. In the meantime the proposal of the applicant had been selected for step 2. The panel member clarified the situation and agreed to step down from the evaluation panel.

4. At the end of a step 1 meeting, the ERC was informed that an applicant, which was taken to step 2, was the son/daughter of the chair of the panel that had evaluated the proposal.

When contacted, the panel chair immediately resigned, adding that he/she believed that declaring a conflict of interest for personal relations (which he/she did) was enough and did not require panel members to be excluded from evaluating any proposal in the panel.

By reflecting on all these cases, the Scientific Council felt that the rules on CoI should be clarified in the instructions to panel members and remote referees. All recent cases seemed to indicate that the rules on CoI involving a personal relationship between an applicant and a panel member were not always understood as the ERC intended them to be. It was decided that a clarification was mandatory in some of the ERC documents dealing with the issue.

As a first step, an easy-to-read version of existing rules was distributed to all evaluators. As a second major step, rules on CoI for ERC experts were modified and strengthened in the new package of legislation accompanying the *Horizon 2020* framework.

Forgery

In late 2010 an applicant submitted a proposal to the StG2011 call with the wrong Host Institution template. The ERC contacted both the applicant and the Host Institution (HI) asking them to submit the HI letter in the correct format, at which point the HI informed the ERC that the signature of the HI representative in the letter was forged and that the proposal was plagiarised from a project by another researchers funded in a national call. The ERC declared the proposal ineligible and reported the case to the European Anti-Fraud Office (OLAF).

The same researcher applied again for a StG2013, stating a date for his/her PhD diploma different from the one on the 2010 application. The applicant was asked, with the HI in copy, for clarifications about the two dates appearing on the documents, under the suspicion that the date in the 2013 application was forged. In February 2013 the ERCEA received an official letter from the HI informing the ERC that no application by that researcher was supported by them.

The case was reported to OLAF and a letter was sent to the Rector of the HI stressing the ERC's concerns and asking them to keep the ERC informed about the actions that the university would be taking to deal with this case of misconduct.

Copy/paste ERC applications

1. Two proposals submitted to the 2013 Starting and Advanced Grant call respectively were found to be very much alike.

Whereas the StG applicant listed the AdG applicant as a collaborator, the AdG applicant did not do so. The StG applicant stated that the proposal submitted was indeed his/her original work, whereas the AdG applicant explained that there was no reason to modify the formulation of the research problems stated and shared by the StG applicant, because they both intended to solve them together. The StG application was passed to step 2. The AdG application was not.

The final decision was that the StG applicant did not commit any scientific misconduct and was therefore invited to the interview in step 2. With regard to the AdG applicant, even if the project did not pass to step 2, he/she was sent a letter stating that the ERC found that his/her behaviour was not in line with the respect of research integrity principles.

2. Through the IT 'similarity tool' used to identify proposals that contain text similar to other proposals submitted to the ERC, the ERCEA came across a case where scientific misconduct might have occurred. After a more careful examination, it appeared that the proposal contained concepts, goals and ideas which were essentially the same as those presented in a previous application by another PI. The applicant was contacted and, confronted with the allegations, replied with a request to withdraw his/her application.

Since the application had been withdrawn, there was no reason to move forward with the case, but a personal letter of reprimand, summarising the conclusions reached, was addressed to the applicant. In his/her reply, the applicant acknowledged his/her mistake and pleged to be vey accurate about the rules on scientific integrity in the future.

Plagiarism

A remote referee made the ERCEA aware that a researcher copied ad verbatim in his/her application extracts of a paper published by the remote referee's group. The paper was not cited in the proposal. In addition, the applicant 'borrowed language' from Wikipedia describing terms without quoting.

The applicant admitted the plagiarism, but down-played it saying that it was only related to technical matters and not to the substance of the proposal which was based on the applicant's original ideas.

The result of the case's examination was that the extracts in question were just part of the description of the 'state of the art' and were not part of the idea put forward for funding, in the sense that if the parts affected by the alleged plagiarism were removed, the proposal would not be affected. Therefore, this appeared to be a case of negligent omission of citation of another person's work, but with no intention of appropriating authorship and using such ideas to obtain the EU funding. The explanations provided by the applicant appeared plausible.

The decision was to continue with the interview and evaluation of the proposal. Nevertheless, the panel needed to be informed about these findings so they could take them into account in the course of the evaluation, in case evidence of plagiarism or other misconduct was found which would put in question the proposal itself. The proposal was finally not selected for funding.

Alleged misconduct committed in the past

A director at a research institute notified the ERC of a case of potential scientific misconduct concerning an applicant whose ERC StG application had made it to step 2, but failed at the interview and was therefore not awarded an ERC grant.

The applicant allegedly falsified data during his/her time as postdoc at the research institute of the complainant in 2008–10. What the applicant claimed to have discovered could not be repeated in the lab of the research institute after he/she had left for another country, and ex-colleagues came to the conclusion that data had been manipulated and that this was a serious case of misconduct. The scientific misconduct office of the research institute was informed and so were the colleagues working with the applicant at his/her new HI. The applicant was apparently confronted with these findings and seriously reprimanded for his/her misconduct in a letter from misconduct officers at the original HI but the case was not pursued further.

An explanation was requested and was received on the alleged facts both by the applicant and the research institute from which the allegation initially came. Finally, a letter of reprimand was sent by the ERC to the applicant.

Cheating and double funding

The ERCEA was informed that an ongoing ERC StG project was based on a proposal which was very similar to a project for which the Principal Investigator (PI) had already received funding from another funding institute. When contacted, the PI initially denied any scientific overlap between the two projects, but finally indicated that he/she was now planning to change the entire research methodology that he/she had originally proposed to the ERC. The PI finally submitted a request for amendment where he/she considerably changed the original project (according to his/her declaration, the change is about 70 %).

The ERC decided to carry out a more detailed technical review in order to assess the degree of the proposed changes, whether these changes were justified and whether the project objectives and research methodology still had relevance and breakthrough potential, which would justify the continuation of this ERC project. Independent scientific opinions on the proposed changes were asked from five experts (only one of them was among the evaluators of the original project). The experts' opinion showed that the alternative proposal would be viable, but it would no longer be considered as expected to lead to scientif breakthroughs and the proposal would probably not be funded if presented as an ERC application.

The other funding organisation was also contacted, both to provide them with the information in the possession of the ERC and to ask for clarifications from their side.

Based on the available facts, the experts' opinion and the reply from the other funding institution, it was concluded that the PI had deliberately committed serious irregularities in performing his/her grant and that his/her behaviour contravened fundamental ethical principles.

As a result the CoIME decided to recommend to the ERCEA Director that the grant agreement for this project be terminated with all the legal consequences resulting from this decision. The grant was suspended.

4.2 The ERC Secretary General

Prof. Donald Dingwell

Since the creation of the ERC in 2007, the Secretary General has had 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. As 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 ERCEA, he has overseen the implementation of the ERC's strategy and work programmes established by the Scientific Council.

Prof. Donald Dingwell, a prominent geoscientist, Professor at Ludwig Maximilian University, Munich (Germany) and currently President of the European Geoscience Union, was the last ERC Secretary General, with a term of office which ended on 31 December 2013.

The function of the ERC Secretary General will disappear from 2014, most of the Secretary General's responsibilities being taken over by the ERC President in accordance with the provisions established in the specific programme implementing *Horizon 2020*.

4.3 The ERC Executive Agency

The Executive Agency implements the specific programme 'Ideas' of FP7 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

Pablo Amor
Director

The organisational structure of the agency follows its operational and horizontal objectives. It consists of two operational departments (Scientific Management Department and Grant Management Department) and one Resources and Support Department. 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 to the Director (see page 88-89).

For the operational budget of the 'Ideas' specific 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).

In 2013 the Grant Management Department was reorganised to better serve business needs.

The original structure was made up of three units, each responsible for one phase of the grants' life-cycle (preparation, management and audit). This functional separation was becoming suboptimal with the ever-increasing workload. The existing staff was then reorganised into four units, with three units dealing with the complete life-cycle of just one type of grant each (StG, CoG, AdG) plus a fourth unit still in charge of the audit implementation. PoC and SyG grants were attributed to the CoG unit, as they are very limited in number.

The reorganisation will allow the Department to be even more resource-efficient, to balance the distribution of the workload between the units, to broaden the knowledge base of the staff, to be better prepared to process the legacy of the 'Ideas' programme and the arrival of *Horizon 2020*, and to offer a better service to Host Institutions and Principal Investigators.

Steering Committee

Robert-Jan Smits

The Steering Committee of the ERCEA is the body that supervises the operations of the agency. It adopts the agency's annual work programmes, administrative budget and annual reports.

It is composed of five members, appointed by the European Commission for a (renewable) period of two years and one observer, the ERC Secretary General.

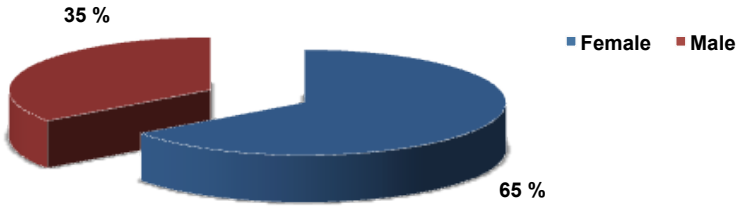
The Steering Committee in office until the end of 2013 was chaired by Robert-Jan Smits, Director-General of the Directorate-General for Research and Innovation (DG RTD) and comprised two representatives of the European Commission — the Director of Resources from DG RTD and the Permanent Rapporteur to the Consultative Committee on Appointments of the Directorate-General for Human Resources and Security (DG HR) — as well as two members of the ERC Scientific Council, Sierd Cloetingh and Tomasz Dietl.

Staff and recruitment

The 2013 operating budget provided for the employment of 100 temporary agents (TAs) and a budget for 281 contract staff (CAs) and 8 seconded national experts (SNEs), adding up to a total of 389 agents.

At the end of December 2013, the agency employed a total of 379 agents: 99 temporary agents, 270 contract agents and 10 seconded national experts.

Figure 4.1: **Gender balance of ERCEA staff**



Statistics of December 2013 show that the agency employs approximately 35 % men and 65 % women. As regards the 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 2013, the ERCEA employed nationals from 25 EU Member States.

Figure 4.2: **ERCEA staff by nationality**

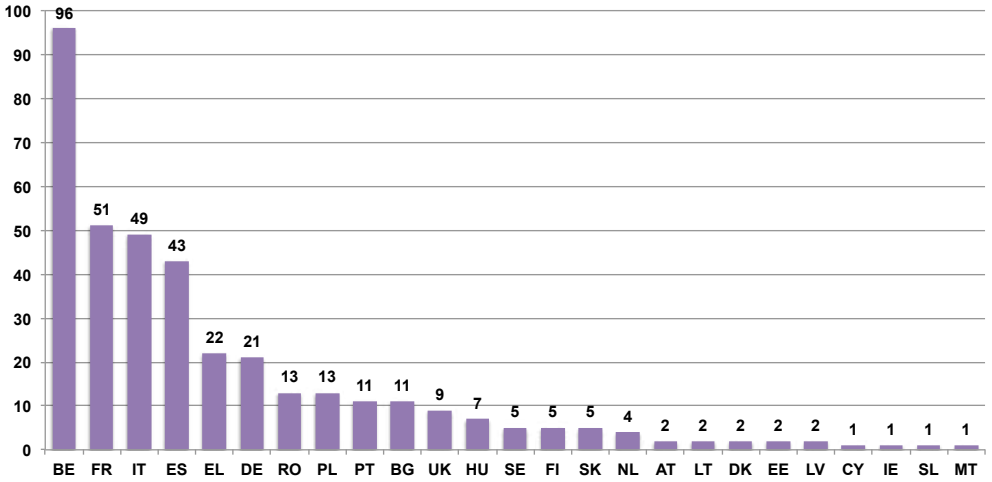
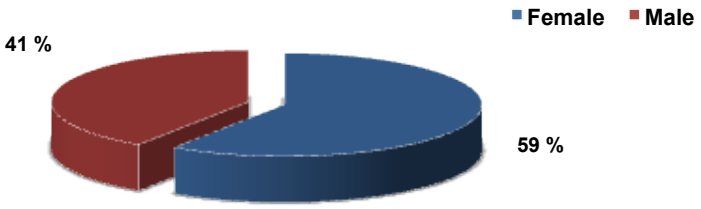


Figure 4.3: **Gender balance of ERCEA highly specialised staff**



4.4 Communication

The year 2013 saw significant key initiatives which were developed in the context of the future *Horizon 2020* programme and aimed at raising the ERC's visibility in Europe and overseas. The ERC and in particular its Communication Unit, intensified efforts with many press announcements covering the various ERC 2013 calls, as well as a great number of stories featuring ERC-funded research, videos, events involving the ERC, and other dissemination activities, which were all actively shared on social media networks.

A number of events, described earlier in this report, lent themselves well to communication and press activities. At the beginning of the year, in the context of both the celebration of the 3 000th ERC grantee, and at the ERC event at the Institute of Science and Technology Austria (IST) in Vienna, press briefings were organised which led to news coverage. On the occasion of the World Economic Forum (WEF) meeting in Davos, media outlets conducted interviews with the ERC delegation there, which yielded interesting press coverage. Later on, during the "Summer Davos" WEF meeting in China, the ERC organised a press conference and numerous media interviews, which resulted in very extensive coverage, notably in China. Another major press action in 2013 was the ERC/European Round Table of Industrialists joint letter that was published around Europe, including in the *Financial Times*.

Some 30 ERC press releases and highlights were published in 2013 and the media coverage of the ERC reached more than 4 350 items. The publication of call results attracted extensive media attention, with reports by various press agencies (e.g. *Austrian APA, Polish PAP, Slovenian STA*), by major European daily newspapers (e.g. *Lidové Noviny, Der Tagesspiegel, Frankfurter Allgemeine Zeitung, Le Monde, Diário de Notícias, Público, Gazeta Wyborcza, El Pais*) and by different radio/TV broadcasters (Spanish RTVE, Irish RTE, Italian Rai, etc.).

In addition, selected ERC stories were proposed to journalists alongside complementary audio-visual material (video, podcast and/or images), in particular for the ERC 3 000th grantee ceremony, the Scientific Council's plenary meeting in Bratislava, Slovakia, and the marine expedition of two ERC grantees.

On the ERC website, more than 30 stories or special features on ERC-funded research were published and promoted in cooperation with the European Commission and its representation offices in the EU Member States. During 2013, more than 460 000 visits to the ERC website were recorded. The 'funded projects and statistics' sections online were further refined and expanded to fulfil the different user requests; a number of webpages and functionalities were also redesigned according to identified users' needs.

The ERC Scientific Council plenary meeting in June was for the first time held in Bratislava. A press conference was organised with ERC President Helga Nowotny, Slovakian Research State Secretary Stefan Chudoba and Slovak grantee Ján Tkáč, and a press release was issued with wide national media coverage, including national TV, as a result. On this occasion, a public event hosted by the Slovakian Research Ministry and co-organised with the Slovakian Organisation for Research and Development Activities, was also organised to inform researchers about the ERC funding opportunities.

In September, the Lithuanian Presidency of the EU Council organised a conference addressing the benefits of investing in Social Sciences and Humanities (SSH) in Europe. Together with EU Commissioner for Research and Innovation Máire Geoghegan-Quinn and other high-level research personalities, the ERC President participated in several sessions along with other members of the ERC Scientific Council and ERC grantees, as well as a number of universities and research institutions. An open letter addressing the issue was signed by the ERC President on this occasion and was published by several major European media channels e.g. the *Guardian*, the science blog of *Libération*, *der Standard* and *Lietuvos žinios*.

To support communication around these events, the ERC Communication Unit produced a collection of 13 ERC-funded projects in the SSH field as well as another brochure featuring ERC projects based in seven countries of central and eastern Europe.

Finally, to mark the accession of Croatia to the EU, a story on a Croatian grantee was published in July and was also made available on the website of the Croatian Ministry of Education, Science and Higher Education.

With a view to increase the ERC's visibility and to attract more applicants from overseas, the international awareness-raising campaign, 'ERC goes Global', led by ERC Secretary General Donald Dingwell, continued to Argentina, Chile, Mexico, India, China as well as Australia and New Zealand

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ERC Delegation visiting Harbin Institute of Technology.
ERC goes Global campaign in China, September 2013

ERC leaders hold a press conference at the "Summer Davos" World Economic Forum meeting, Dalian, China, September 2013

ERC Press conference in Bratislava, Slovakia, with ERC President, Slovakia's State Secretary of Education, Science, Research and Sport, and ERC grantee, June 2013

ERC press point at the Widening participation event, IST Austria, February 2013

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to inform researchers about the ERC funding and to forge closer ties with key representatives and researchers from the leading universities in these countries. The campaign was well covered by the press, especially the visit to India, with reports by major Indian press agencies and newspapers such as the *Times of India* and the *Hindustan Times*. During the last quarter of the year, Donald Dingwell also talked for the first time at the Annual Meeting of African Science Academies meeting in Addis Ababa and at the launch event of the 2014 EU–Russia Year of Science.

In addition to these overseas visits, the ERC showed its presence at major international scientific conferences, events and exhibitions, as well as career fairs and workshops in Europe. ERC Scientific Council members, grantees' team members, and ERC Executive Agency staff have greatly contributed to many of these events and information campaigns, such as the European Month of the Brain awareness and communication campaign, the 63rd Lindau Nobel Laureate Meeting, the European Society for Cognitive Psychology conference, the European Economic Association, the European Sociological Association, the European Alpbach Technology Forum, the EMBO meeting and the Annual meeting of the Young Academy of Europe, as well as the World Water Week conference.

In North America, the ERC attended, as in the past, the annual meeting of the American Association for the Advancement of Science (AAAS) held in Boston in February 2013. An ERC scientific symposium on climate change with the ERC President and three ERC grantees took place. Prof. Nowotny also participated in a panel session on European science policy with Robert-Jan Smits, Director-General for Research and Innovation, Anne Glover, Science Adviser to the President of the European Commission, and Paul Boyle, from Science Europe. In the context of the ERC press briefing at the AAAS, the ERC announced the latest news regarding the initiative between the US National Science Foundation (NSF) and the ERC to attract top NSF scientists to work in ERC research teams. There was notably coverage in the *Irish Times,* the *Guardian/*the *Observer* and *Science*.

Several brochures were produced featuring ERC projects

Another press conference was organised on the occasion of the signature of a similar agreement with South Korea in November, which also resulted in some visibility in the press.

In addition, the ERC participated in the American Society for Cell Biology meeting (New Orleans) and actively contributed, with ERC Executive Agency staff, to the fourth and fifth editions of the Destination Europe conference, organised by the Directorate-General for Research and Innovation, back-to-back with the Massachusetts Institute of Technology (MIT) European Career Fair (Boston) and with the American Geophysical Union meeting (San Francisco), at which the ERC Communication Unit helped to further increase the ERC's visibility.

The National Contact Points (NCPs), based across Europe and serving as information multipliers to potential applicants, were continuously kept informed about ERC calls and changes also through biannual meetings organised in Brussels (in June and November 2013). For the first time, an *ad hoc* meeting for NCPs based outside the European Research Area was organised in Brussels.

The national angle was also highlighted when ERC-funded research was presented to media and stakeholders on the occasion of events targeted at grantees and organised by the ERCEA in Madrid (Spain) and Naples (Italy). At the Madrid event in June, which gathered around 60 ERC grantees in the CSIC premises, a dedicated communication training session for ERC grantees was organised by the ERCEA Communication Unit with the support of a Spanish Science journalist and an ERC grantee. Despite the absence of a national figure at the event, the meeting was covered by several sources, including science magazines *Materia and Agencia SINC*. During the event, several interviews with ERC grantees based in Spain were held to produce a video clip aimed at Spanish audiences.

In October, ERC President Helga Nowotny attended the *Città della Scienza* event in Naples to discuss scientific excellence with national and local authorities. Addressing more than 150 researchers, including some 70 outstanding scientists funded by the ERC, she highlighted the importance of supporting young researchers for the future of Italy and of Europe. The event was notably covered by the Italian public broadcaster Rai as well as by the main national press agencies (ANSA, AGI) and the most important regional newspapers (*Il Mattino, Il Corriere del Mezzogiorno, Il Denaro*).

More videos were also produced and effectively used in 2013, focusing on the national research angle in conjunction with the organisation of national public events, for instance in France, Poland, Slovakia and Spain.

ERC at the American Society for Cell Biology 53rd Annual Meeting, New Orleans, December 2013

5th Edition of the Destination Europe event, San Francisco, December 2013

As planned, four issues of the ERC's external electronic newsletter, 'Ideas', were published to inform more than 24 000 subscribers about ERC developments, its presence at events worldwide, as well as ERC-funded research and grantees.

In addition, major international prizes awarded to ERC grantees were highlighted during the year; e.g. the Wolf Prize in Physics awarded to ERC grantee Peter Zoller, which was covered by Austrian media, and the European Inventor Award 2013, granted to Patrick Couvreur by the European Patent Office and featured in *Le Monde*.

Concerning the presence on social media, the ERC has more than 5 500 followers on Twitter and 4 100 likes on Facebook. In particular Facebook was increasingly used as a flexible tool to showcase ERC projects: on the occasion of the Month of the Brain; the EU Year of Citizens 2013; for promoting grantees' achievements and their publications in scientific journals such as *Science* and *Nature*; and following press releases announcing ERC call results.

4 100 likes!. Facebook as a flexible tool to showcase ERC projects

ERC website featured more than 30 stories on ERC-funded research

ERC organised an information day at the conference centre of Città della Scienza in Naples, October 2013

Four issues of the ERC's external electronic newsletter, 'Ideas' are published each year

Outlook for 2014

Significant boost to ERC budget under *Horizon 2020*

The *Horizon 2020* programme was first proposed by the European Commission in November 2011. Negotiators for the Member States, the European Parliament and the Commission reached provisional agreement on the final texts of the package in June 2013. Following approval by plenary vote in the European Parliament on 21 November, EU Member States signed off on the programme at ministerial level on 3 December. This allowed the first work programmes and calls to be published early in December for the programme to start on time in 2014.

With a budget of nearly EUR 80 billion over seven years, *Horizon 2020* is the biggest EU research programme yet, and one of the biggest publicly funded worldwide. It is also one of only very few programmes in the next EU budget to see a strong increase in funding — a nearly 30 per cent jump in real terms over the current seventh framework programme. *Horizon 2020* is built on three pillars — Excellent Science, Industrial Leadership and Societal Challenges — it will fund all types of activities, from frontier science to close-to-market innovation.

One of the key elements of *Horizon 2020* is increased funding for the ERC, seen already as one of the world's premier frontier-research funding agencies. The ERC will receive over EUR 13 billion, around 17 % of the total budget. This represents an approximate 75 % increase of the ERC budget compared to the previous seven-year programme. However, due to the gradual increases in the yearly ERC budgets during FP7, the ERC budgets for the years 2014, 2015 and 2016 will actually be lower than that for 2013.

ERC calls and main features in 2014

Three ERC frontier research grants will be available under work programme 2014: Starting; Consolidator; and Advanced Grants.

ERC Principal Investigators will also continue to be able to apply for the Proof of Concept Grant.

The Scientific Council will analyse the pilot phase of the ERC Synergy Grant (calls were made under work programmes 2012 and 2013) before deciding on the scope and timing of future calls. There will be no Synergy call under work programme 2014.

As a result of very high, and rising, demand for ERC grants, the Scientific Council has decided reluctantly to extend the existing restrictions on applications in future. The ERC's calls are extremely competitive. Only exceptional proposals are likely to be funded and the number of applications has consistently risen faster than the available budget. In order to maintain the quality and integrity of the ERC's evaluation process the Scientific Council has therefore applied restrictions on applications since 2009. These restrictions are designed to allow unsuccessful Principal Investigators the time necessary to develop a stronger proposal. The extended restrictions will apply from the 2015 calls, based on the outcome of the evaluation of the 2014 calls.

Annexes

Members of the Scientific Council in 2013

Prof. Helga NOWOTNY

- President, European Research Council
- Professor emer. Social Studies of Science, ETH, Zurich
- Awards (among other): John Desmond Bernal Prize
- Foreign Member Royal Swedish Academy of Sciences
- Main research fields: Social Sciences

Prof. Pavel EXNER

- Vice-President, European Research Council
- Scientific Director, Doppler Inst., Prague
- JINR Prize in Theoretical Physics
- Member, Academia Europaea
- Main research fields: Mathematical Physics, Operator Theory, Quantum Systems

Prof. Carl-Henrik HELDIN

- Vice-President, European Research Council
- Director Ludwig Inst. for Cancer Research
- Prof. Molecular Cell Biology, Uppsala Uni.
- Large Medical Prize K. Fernströms, 1993; Pezcoller Award in Cancer, AACR 2002
- Main research fields: Cell Biology, Cancer

Prof. Klaus BOCK

- Danish Ministry of Science, Innovation & Higher Education
- Chair, Danish National Research Foundation, 2004-2012
- President , Danish Academy of Technical Sciences, 2009-2011
- Awards: International Carbohydrate Award 1986, Alexander von Humboldt for Research, Samuel Friedman Foundation Rescue

Prof. Nicholas CANNY

- Professor emer. History, Galway, Ireland
- Former President Royal Irish Academy; Fellow British Academy;
- Member: Academia Europaea, American Philosophical Society;
- Irish Historical Research Prize 1976 and 2001
- Main research fields: Early Modern History, Atlantic History

Prof. Dr Sierd CLOETINGH

- Head Tectonics Group, Dept. of Earth Sciences, Faculty of Geosciences, Utrecht Uni.
- President International Lithosphere Programme;
- Vice-President Academia Europaea
- Medal Stephan Mueller, European Geosciences Union & Leopold von Buch, German Geological Society; Chevalier de la Legion d'Honneur 2004
- Main research fields: Earth sciences, Tectonics

Prof. Tomasz DIETL

- Head of Laboratory for Cryogenic and Spintronic Research, Inst. of Physics, Uni. Warsaw
- Polish Academy of Sciences, Ordinary Professor at the Inst. Theoretical of Physics
- Agilent Technologies Europhysics Prize (2005); Foundation for Polish Science Prize (2006)
- Main research fields: Condensed Matter Physics, Spintronics, Semiconductors, Magnetic Materials

Prof. Daniel DOLEV

- Professor of Computer Science, Hebrew Uni., Israel
- Chairman Authority for Computation, Communication and Information
- Named 'Highly Cited Scientist', ISI ACM Fellow; Dijkstra Award
- Main research fields: Computer Algorithms

Prof. Athene DONALD

- Professor, Experimental Physic, Uni. Cambridge Fellow, Royal Society & Chair of its Education Committee,
- Dame Commander of the British Empire in 2010
- Member, Academia Europaea; Trustee Science Museum of London
- L'Oreal/UNESCO Prize for Women in Science, Laureate for Europe 2009
- Main research fields: Soft Matter & Biological Physics

Prof. Carlos DUARTE

- Research Professor Spanish Research Council (CSIC)
- Scientific Director International Laboratory for Global Change
- Spanish National Science Award 2007, Spain's King Jaime I Science Award 2009
- Main research fields: Marine ecology, Oceanography, Limnology, Global Change

Dr Barbara ENSOLI

- Director, National AIDS Center, Ist. Superiore di Sanità, Italy
- Vice-President: National AIDS Committee, Italian Ministry of Health
- Member, WHO-UNAIDS Vaccine Advisory Committee, European Molecular Biology Organisation (EMBO)
- Main research fields: HIV Pathogenesis; Development of HIV/AIDS Preventative & Therapeutic Vaccines

Dr Daniel ESTEVE

- Research Director, CEA Saclay Agilent
- Europhysics Prize 2004
- Member Académie des Sciences; Founder Quantronics
- Main research fields: Quantum Mechanics, Quantum Electronics, Mesoscopic Physics, Nanosciences

Prof. Reinhard GENZEL

- Director, Max Planck Inst. for Extra-terrestrial Physics
- Full Professor, Physics Dep., Uni. California, Berkeley
- Member of: Leopoldina, US Nat. Academy of Sciences, Royal Society of London
- Awards and honours: Crafoord Prize in Astronomy, Royal Swedish Academy of Sciences, 2012, Leibniz Prize, German Science Foundation,1990
- Main research fields: Infrared Astronomy; Massive Black Holes; Galaxy Evolution

Dr Tim HUNT

- Cancer Research UK (retired)
- Nobel Prize in Physiology or Medicine 2001 with Lee Hartwell and Paul Nurse
- Main research fields: Molecular Biology, Control of Cell Division

Prof. Dr. Ing. Matthias KLEINER

- Head, Inst. for Forming Technology & Lightweight Construction (IUL), Uni. Dortmund
- President, German Research Foundation (DFG) , 2007-2012
- Managing Director, Institute for Forming Technology & Lightweight Construction, 2004-2006
- DFG's Gottfried Wilhelm Leibniz Prize 1997

Prof. Eva KONDOROSI

- Research Professor, Biological Research Centre, Hungarian Academy of Sciences
- Research Director, Plant Science Institute, CNRS, France
- Main research fields: Rhizobium-legume Symbiosis with recent focus on plant controlled differentiation of bacteria.

Prof. Alain PEYRAUBE

- Directeur de recherche emer., CNRS
- Professor, Ecole des Hautes Etudes en Sciences Sociales
- Stanislas Julien Award 1989
- Honorary Professor, Uni. Peking; Honorary member Chinese Academy of Social Sciences; Member Academia Europaea, Corresponding Member Academia Sinica, Taiwan
- Main research fields: Linguistic, Chinese Studies

Prof. Mart SAARMA

- Academy Professor and Director Centre of Excellence Biotechnology Inst., Helsinki
- Nordic Science Prize 2008
- Main research fields: Neurosciences, Biotechnology

Prof. Nuria SEBASTIAN GALLES

- Professor in Psychology, Dept. of Technology, Uni Pompeu Fabra, Barcelona
- Main research fields: Neural Cognitive Mechanisms underlying learning & language processing, special emphasis: Bilingual Populations

Prof. Anna TRAMONTANO

- Chair, Professor of Biochemistry, 'Sapienza' Uni., Rome
- Prizes & Awards: Tartufari, Accademia dei Lincei, KAUST Global Research Partnership, Marotta National Academy of Sciences
- Member of: European Molecular Biology Organization, Scientific Council of Inst. Pasteur, Fondazione Cenci Bolognetti, EMBL, MPI for Molecular Genetics - Berlin, Swiss Institute for Bioinformatics, Centro Nacional de Biotecnología - Madrid, International Institute Molecular & Cell Biology -Warsaw
- Main research fields: Biophysics and Computational Biology

Prof. Isabelle VERNOS

- Research Professor ICREA (Institució Catalana de Recerca i Estudis Avançats), Centre de Regulació Genòmica, Barcelona
- Associated Professor Uni. Pompeu Fabra, Barcelona
- Member EMBO and ASCB
- Main research fields: Cell Biology

Prof. Dr Reinhilde VEUGELERS

- Full Professor, KU Leuven, Faculty Economics & Business, Belgium
- Senior Fellow at Bruegel; CEPR Research Fellow
- President, Belgian FNS-FNRS Scientific Committee on Social Sciences
- Member of: the Royal Flemish Academy of Belgium for Sciences, Innovation4Growth Expert Group
- Main research fields: Science & Innovation, Industrial Organisation, International Strategy

Panel Chairs of the ERC Peer Review Panels
ERC Starting Grant Panels 2013

Life Sciences

LS1 Molecular and structural biology and biochemistry
Panel Chair: Prof. Andrea Musacchio

LS2 Genetics, genomics, bioinformatics and systems biology
Panel Chair: Prof. Marja Makarow

LS3 Cellular and developmental biology
Panel Chair: Prof. Christer Betsholtz

LS4 Physiology, pathophysiology and endocrinology
Panel Chair: Prof. Nadia Rosenthal

LS5 Neurosciences and neural disorders
Panel Chair: Prof. Arthur Konnerth

LS6 Immunity and infection
Panel Chair: Prof. George Kollias

LS7 Diagnostic tools, therapies and public health
Panel Chair: Prof. Annette Peters

LS8 Evolutionary, population and environmental biology
Panel Chair: Prof. Pedro Jordano

LS9 Applied life sciences and biotechnology
Panel Chair: Prof Francisco Tomás-Barberán

Social Sciences and Humanities

SH1 Individuals, institutions and markets
Panel Chair: Prof. Maristella Botticini

SH2 Institutions, values, beliefs and behaviour
Panel Chair: Prof. Ronald Rogowski

SH3 Environment and society
Panel Chair: Prof. Mark Rounsevell

SH4 The human mind and its complexity
Panel Chair: Prof. Louise Elizabeth McNally Seifert

SH5 Cultures and cultural production
Panel Chair: Prof. Maria Luisa Catoni

SH6 The study of the human past
Panel Chair: Prof. Odd Arne Westad

Physical Sciences and Engineering

PE1 Mathematical foundations
Panel Chair: Prof. Janusz Grabowski

PE2 Fundamental constituents of matter
Panel Chair: Prof. Michele Leduc

PE3 Condensed matter in physics
Panel Chair: Prof. Yvan Bruynseraede

PE4 Physical and analytical chemical sciences
Panel Chair: Prof. Philippe Sautet

PE5 Material and synthesis
Panel Chair: Prof. Annemieke Madder

PE6 Computer science and informatics
Panel Chair: Prof. Bart Preneel

PE7 Systems and communication engineering
Panel Chair: Prof. Elisabeth André

PE8 Products and process engineering
Panel Chair: Prof. Guido Zacchi

PE9 Universe science
Panel Chair: Prof. Maria Lourdes Verdes-Montenegro

PE10 Earth system science
Panel Chair: Prof. Daniel Conley

The list of all Panel Members is available at:
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Panel Chairs of the ERC Peer Review Panels
ERC Consolidator Grant Panel 2013

Life Sciences

LS1 Molecular and structural biology and biochemistry
Panel Chair: Prof. Reinhard Jahn

LS2 Genetics, genomics, bioinformatics and systems biology
Panel Chair: Prof. Søren Brunak

LS3 Cellular and developmental biology
Panel Chair: Prof. Pascal Genschik

LS4 Physiology, pathophysiology and endocrinology
Panel Chair: Prof. Michael D. Schneider

LS5 Neurosciences and neural disorders
Panel Chair: Prof. Andreas Kleinschmidt

LS6 Immunity and infection
Panel Chair: Prof. Maria Grazia Roncarolo

LS7 Diagnostic tools, therapies and public health
Panel Chair: Prof. Seppo Ylä-Herttuala

LS8 Evolutionary, population and environmental biology
Panel Chair: Prof. Lars Chittka

LS9 Applied life sciences and biotechnology
Panel Chair: Prof. Martin Kuiper

Social Sciences and Humanities

SH1 Individuals, institutions and markets
Panel Chair: Prof. Jordi Galí

SH2 Institutions, values, beliefs and behaviour
Panel Chair: Prof. Ann Marilyn Strathern

SH3 Environment and society
Panel Chair: Prof. Aura Reggiani

SH4 The human mind and its complexity
Panel Chair: Prof. Luciano Fadiga

SH5 Cultures and cultural production
Panel Chair: Prof. Simon Goldhill

SH6 The study of the human past
Panel Chair: Prof. Jane Burbank

Physical Sciences and Engineering

PE1 Mathematical foundations
Panel Chair: Prof. Helge Holden

PE2 Fundamental constituents of matter
Panel Chair: Prof. Sune Svanberg

PE3 Condensed matter physics
Panel Chair: Prof. Sergio Ciliberto

PE4 Physical and analytical chemical sciences
Panel Chair: Prof. Michael Ashfold

PE5 Materials and synthesis
Panel Chair: Prof. Jeffrey Hubbell

PE6 Computer science and informatics
Panel Chair: Prof. Stefan Jähnichen

PE7 Systems and communication engineering
Panel Chair: Prof. Piet Demeester

PE8 Products and process engineering
Panel Chair: Prof. Guy Marin

PE9 Universe sciences
Panel Chair: Prof. Georges Meylan

PE10 Earth system science
Panel Chair: Prof. Massimo Cocco

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Panel Chairs of the ERC Peer Review Panels
ERC Advanced Grants Panels 2013

Life Sciences

LS1 Molecular and structural biology and biochemistry
Panel Chair: Prof. Joel Sussman

LS2 Genetics, genomics, bioinformatics and systems biology
Panel Chair: Prof. Peer Bork

LS3 Cellular and developmental biology
Panel Chair: Prof. Anne Ridley

LS4 Physiology, pathophysiology and endocrinology
Panel Chair: Prof. Johan Henri Auwerx

LS5 Neurosciences and neural disorders
Panel Chair: Prof. Roger A. Barker

LS6 Immunity and infection
Panel Chair: Prof. Luke O'Neill

LS7 Diagnostic tools, therapies and public health
Panel Chair: Prof. Dimitrios Boumpas

LS8 Evolutionary, population and environmental biology
Panel Chair: Prof. Michael Akam

LS9 Applied life sciences and biotechnology
Panel Chair: Prof. Regine Kahmann

Social Sciences and Humanities

SH1 Individuals, institutions and markets
Panel Chair: Prof. Fabrizio Zilibotti

SH2 Institutions, values, beliefs and behaviour
Panel Chair: Prof. Arne Kalleberg

SH3 Environment and society
Panel Chair: Prof. Susan Fainstein

SH4 The human mind and its complexity
Panel Chair: Prof. Michel Denis

SH5 Cultures and cultural production
Panel Chair: Prof. Martin Puchner

SH6 The study of the human past
Panel Chair: Prof. Mitchell G. Ash

Physical Sciences and Engineering

PE1 Mathematical foundations
Panel Chair: Prof. Rolf Jeltsch

PE2 Fundamental constituents of matter
Panel Chair: Prof. Elisabeth Giacobino

PE3 Condensed matter physics
Panel Chair: Prof. Laurens W. Molenkamp

PE4 Physical and analytical chemical sciences
Panel Chair: Prof. Claudine Noguera

PE5 Materials and synthesis
Panel Chair: Prof. Henz-Dieter Fenske

PE6 Computer science and informatics
Panel Chair: Prof. Carlo Ghezzi

PE7 Systems and communication engineering
Panel Chair: Prof. Alessandro De Luca

PE8 Products and process engineering
Panel Chair: Prof. Viggo Tvergaard

PE9 Universe sciences
Panel Chair: Prof. Rolf-Peter Kudritzki

PE10 Earth system science
Panel Chair: Prof. Jean Jouzel

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Panel Chairs of the ERC Peer Review Panels
ERC Synergy Grant Panels 2013

STEP 1 PANEL

Life Sciences

SyG3 **Panel Chair: Prof. Ilka Hanski**

SyG4 **Panel Chair: Carlos Martinez-Alonso**

Social Sciences and Humanities

SyG5 **Panel Chair: Prof. Gretty Mirdal**

Physical Sciences and Engineering

SyG1 **Panel Chair: Prof. Hans Mooij**

SyG2 **Panel Chair: Prof. Peter Wasserscheid**

STEP 2 PANEL

Panel Chair: Prof. Alan Green

The list of all Panel Members is available at:
http://erc.europa.eu/evaluation-panels

Organisations hosting at least 30 ERC Principal Investigators* by funding scheme

Host Institution	County of HI	Starting/Consolidator	Advanced	Total
National Centre for Scientific Research (CNRS)	FR	142	66	208
University of Oxford	UK	63	58	121
University of Cambridge	UK	69	49	118
Max Planck Society	DE	67	45	112
University College London	UK	56	30	86
Swiss Federal Institute of Technology Zurich (ETH Zurich)	CH	35	46	81
Swiss Federal Institute of Technology Lausanne (EPFL)	CH	44	36	80
Weizmann Institute	IL	51	28	79
Hebrew University of Jerusalem	IL	43	30	73
Imperial College	UK	34	27	61
National Institute of Health and Medical Research (INSERM)	FR	39	18	57
University of Leuven	BE	30	15	45
University of Edinburgh	UK	24	21	45
French Alternative Energies and Atomic Energy Commission	FR	34	9	43
Spanish National Research Council (CSIC)	ES	25	15	40
University of Bristol	UK	18	21	39
University of Munich (LMU)	DE	14	24	38
Radboud University Nijmegen	NL	25	12	37
University of Amsterdam	NL	20	17	37
Leiden University	NL	20	15	35
Technion - Israel Institute of Technology	IL	25	8	33
University of Zurich	CH	18	15	33
Utrecht University	NL	20	13	33
National Institute for Research in Computer Science and Automatic Control	FR	19	12	31
King's College London	UK	22	9	31
University of Geneva	CH	14	17	31
Tel Aviv University	IL	17	14	31
Karolinska Institute	SE	18	12	30
University of Helsinki	FI	16	14	30

* ERC calls 2007-2013, organisations that signed/were invited to sign the first grant agreement. Data as of December 2013

DIR
Director
P. ANDR

IAC
Internal Audit Capability
A. ROMANO

EAC
Chief Accountant
B. WALA

B
Scientific Management Department
J. LABAJETTA

C
Grant Manag
Departm
M. MA

B1
Process Management and Review
B. TUBBING

B2
Call and Project Follow-up Coordination
A. MARTIN-HOBDEY

B3
Scientific Advisor
A. LÖNNROTH

C1
Grant Preparation
T. PROST

C2
Grant Implement
N. AZZOUZ

Agency structure

A1
Support to the Administrative Council

T. PAPAZOGLOU

A2
Communication

M. GALLO INA

D
Resources & Support Department

C-E. TE KOLSTE

D0
Administrative Budget

R. FRIZON

D3
Audit
Management and Implementation

M. HENNEBURY

D1
IT Tools
Development and Management

M. VAN BERVLIET

D2
Human Resources, Infrastructure, and Document Management

C. LENARDUZZI

D3
Programming, Monitoring, Legal Matters and Risk Management

M. DUVAN AVILES

European Commission

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