



European
Commission

Horizon 2020
European Union funding
for Research & Innovation

Annual Report on the ERC activities and achievements in 2015

Prepared under the authority of the
ERC Scientific Council

RESEARCH & INNOVATION
POLICY



European Research Council

Established by the European Commission



EUROPEAN COMMISSION

Directorate-General for Research and Innovation
ERC EA — The European Research Council Executive Agency
Unit A.2 — Communication

E-mail: erc-info@ec.europa.eu

European Commission, ERC Executive Agency





EUROPEAN COMMISSION



Annual Report on the ERC activities and achievements in 2015

ERC
European Research Council



European Research Council
Established by the European Commission

2016



EUR 27543



**Europe Direct is a service to help you find answers
to your questions about the European Union.**

Freephone number (*):

00 800 6 7 8 9 10 11

(* The information given is free, as are most calls (though some operators, phone boxes or hotels may charge you).

LEGAL NOTICE

Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use which might be made of the following information.

The views expressed in this publication are the sole responsibility of the author and do not necessarily reflect the views of the European Commission.

More information on the European Union is available on the internet (<http://europa.eu>).

Luxembourg: Publications Office of the European Union, 2016

ISBN 978-92-9215-048-8 (print version); ISBN 978-92-9215-047-1 (PDF version)
doi:10.2828/980974 (print version); doi:10.2828/37878 (PDF version)

© European Union, 2016

Reproduction is authorised provided the source is acknowledged.

Printed in Luxembourg

PRINTED ON RECYCLED PAPER



Highlights - 2015 in review 11

Research highlights 31

Advancing frontier research 49

ERC Scientific Council and Executive Agency 59

Annexes 73



Contents





© European Union, 2015



Commissioner's introduction

The mission of the European Research Council is to support frontier research across a broad range of disciplines in science, engineering, social science and humanities. In the eight years since it was set up by the European Union, the ERC has provided competitive frontier research funding and played an unprecedented role in promoting European excellence in science. The ERC is one of the European Union's biggest success stories and a household name in research, made possible by close cooperation with the European scientific community.

The beauty of the ERC is that progress is made in research without any far-removed administration telling researchers what to do. Instead, scientists decide what they want to explore and how they want to explore it. Then, competitive EU-funded ERC grants give top researchers the freedom to pursue their work. Work that results in breakthrough discoveries or the development of new technologies. Scientific work that could solve complex global problems related to public health, migration, ecosystem preservation or climate change mitigation to name just a few examples.

To keep our economy competitive we must remain at the forefront of research, science and innovation and to remain at the forefront, we must encourage researchers to take risks. Only by enabling our top talent to explore the unknown can we stretch the limits of our understanding and break new ground. For every project and attempt that is unsuccessful there is still the further opportunity to learn from what went wrong. Europe needs to encourage its thinkers and risk takers. Secured funding in the form of ERC grants frees researchers from concerns about the immediate impact of their work, filling out multiple grant applications and the constant pressure to publish, so that they can spend their energies doing what they do best.

In 2015 alone, ERC-supported research was acknowledged in many publications of discoveries in many different areas of research. An ERC-funded team in Scotland discovered that Focal Adhesion Kinase (FAK) – a protein often overproduced in tumours – changes the immune system, so that it protects cancer cells rather than destroying them. This research revealed that blocking FAK could be a promising new way to help the immune system recognise and fight cancer.



Another team of ERC-funded researchers in Scandinavia published a discovery that could change how we consider the history of infectious disease. They reported that the plague had been infecting people for far longer than previously thought, tracing it back as far as the Bronze Age. With time, these studies could help us better understand the formation, origin and development of diseases past, present and future.

ERC-funded researchers in the Netherlands conducted an experiment providing evidence on one of the central points of quantum theory: the idea of nonlocality or what Albert Einstein called “spooky actions at a distance”. They reported demonstrating that objects separated by great distance can instantaneously affect each other’s behaviour.

What’s more, ERC-funded teams are also taking strides in science-based companies, start-ups and spin-offs, even winning accolades from angel investors such as “most investable company”. This is wonderful news for the European economy and proves the economic importance of investing in frontier research.

When I travel around Europe, I meet researchers who tell me that the ERC and its grants are the best thing to have happened in their professional life. This has strengthened my resolve to maintain the European Commission’s support to fundamental research and has provided me with a deeper understanding of the importance of giving researchers the independence they need to pursue their best ideas.

Ultimately, I want to build on the work of organisations like the ERC, so that Europe remains an exciting destination for world-class research and becomes the home of open innovation, open science and open to the world.



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



Personal message from the ERC President

2015 has been a very busy year for all people involved in the ERC: the scientists (some 9 000!) who worked hard at preparing an application, many of them very ambitious; a group of some 1 000 selected scientists who evaluated these proposals and discussed their merits during meetings held in Brussels; some 6 000 other scientists who contributed to the evaluation through remote referee reports; the members of the staff of the Executive Agency (ERCEA) who run a great variety of operations from submission to granting, from evaluation to communication; and, last but not least, the members of the ERC Scientific Council, which I am very proud to chair, who engaged in intense discussions to monitor how the programme develops and to shape its future, addressing some of the challenges it presently faces.

2015 was also the year when the landmark 5 000th grant was signed. This was a great opportunity to celebrate the success of the ERC in an event associating stakeholders: the European Commission, with the supportive presence of Commissioner Carlos Moedas; and the European Parliament through a hearing by its committee dealing with research issues. This came at a moment where the ERC got confirmation that its budget for the coming years would not be affected by the establishment of the European Fund for Strategic Investments.

This year, almost 1 000 grants were signed, mainly as a result of the 2014 calls. It should be noted that, in line with the efforts set by the ERC Scientific Council when it established its action plan concerning gender balance, for the first time the average success rate of women applying to the ERC was higher than the one of men in several calls.

The quality of the evaluation process, as ensured in particular through the scientists involved in it, is crucial for the success of the ERC. The Scientific Council is very conscious of this, and the three Vice-Presidents should be particularly thanked for all the hard work they put in it. Therefore, this year as well, it carefully monitored the process, working thoroughly on the composition of the evaluation panels. It also tries to anticipate shifts happening in scientific fields to adapt the descriptors of the evaluation panels, in order to allow researchers to optimally submit their applications.

In late May, the Scientific Council held a retreat for a full day in order to discuss broadly and openly some more key questions concerning the functioning of the ERC: How to better deal with interdisciplinary applications? How to tackle differences in success rates? Which modifications of the ERC programme should be prepared in the short term? And in the long term? The work on providing answers and solutions to these questions is ongoing, and it will keep both the Scientific Council and the ERCEA busy in the year to come.

The Scientific Council held two plenary sessions outside Brussels: in Strasbourg, France, in June, and in Tallinn, Estonia, in October. On each of these occasions events promoting ERC were arranged by the local organisers with the direct involvement of members of the ERC Scientific Council. These were great opportunities to interact with local scientists, and in particular with ERC grantees.

In 2015 a number of international agreements with foreign funding agencies were signed, allowing scientists based outside Europe to come and visit ERC teams. The countries which joined this year through various national organisations are: the People's Republic of China, Japan, South Africa, Argentina and Mexico. Further efforts are pursued to involve more key scientific counterparts in other countries. This shows without doubt ERC's visibility and prestige on the world stage, contributing in this way to make Europe a leading attractor for research.

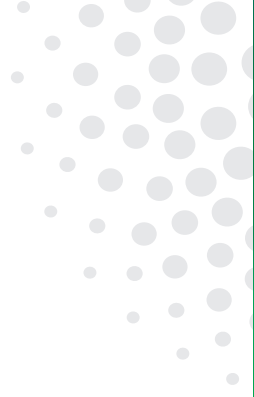
The Communication Unit of ERCEA has been actively engaged in the promotion of ERC, which has been visible through a number of booths and sessions set up at major scientific events, such as congresses and symposia. A number of ERC grantees contributed, holding lectures, making presentations and participating to round tables, sometimes at their own initiative, some other times solicited by the ERC. In this category, I like to recall a few events: the World Economic Forum in Davos, the Annual meeting of the American Association for the Advancement of Science in San Jose, USA, the Alpbach Technology Forum in Austria, the Annual Meeting of New Champions in Dalian, China, the World Science Forum in Budapest, Hungary.

From all these different points of view, 2015 was a very fruitful year for the ERC, fulfilling its core mission to support ambitious projects proposed by scientists. Some of these will certainly result in ground-breaking research pushing ahead the frontiers of human knowledge, indispensable to open the way to radical innovations. This is key in the battle for keeping Europe an exciting place to be and strengthening its capacity to deal with the numerous challenges it has to come to grips with.



Prof Jean-Pierre Bourguignon
ERC President and Chair of its Scientific Council





Highlights - 2015 in review

1.1 Mission

The European Research Council (ERC) was created under the 2007-2013 European Communities framework programme for research and development (FP7) and it is continuing its activities pursuant to the Specific Programme implementing the Horizon 2020 framework programme. Composed of an independent Scientific Council and a dedicated implementation structure in the form of an Executive Agency (ERCEA), the ERC has rapidly gained wide recognition as a world-class research funding agency and has attained an excellent reputation within the scientific community across Europe as well as worldwide.

Inspiring other funding organisations and policymakers, and having established itself as an essential component of the Union's research funding landscape, its label of excellence has raised the level of science across Europe. Supporting the best researchers in any field of research on the sole criterion of scientific quality aiming at excellence is expected to have a direct impact through advances at the frontier of knowledge, opening the way to new scientific and technological results that can lead to innovation.

Three 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; 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); Advanced Grants (AdG) are designed to support outstanding and established research leaders by providing them with the resources necessary to continue the work of their teams in expanding the frontiers of scientific knowledge.

An increasing, though still modest, part of the ERC budget is dedicated to the Proof of Concept Grants (PoC), which offer ERC grant holders the possibility to establish the innovation potential of ideas stemming from their ERC frontier grants. This funding scheme is aimed at helping them bridge the gap between research and social or commercial innovation. Evaluated by professionals of translation of research, it has a success rate of around 40 %.

The ERC Work Programme, which is established annually by the Scientific Council and adopted by the European Commission, aims at reinforcing excellence, dynamism and creativity in European research by providing attractive, competitive, long-term funding to support the best investigators and their research teams to pursue ground-breaking, high-risk, high-gain research. Research funded by the ERC is expected to lead to advances at the frontiers of knowledge and to set clear and inspirational target for frontier research across Europe.

By promoting excellence, the ERC has a fundamental role in reinforcing and making the whole system of research and innovation more engaging for researchers. Its curiosity-driven, competitive approach has allowed the ERC to fund a broad portfolio of projects, including some addressing current grand challenges and fundamental questions. The ambition is to lay the foundations for solving future unpredictable challenges that European society may face.



1.2 Main outcomes in 2015

In the seven year period of the Horizon 2020 programme, the ERC's budget is EUR 13.1 billion. This represents around 17 % of the entire Horizon 2020 budget. For 2015, the total annual budget was EUR 1.7 billion. After three years with a budget lower than the one of 2013 (FP7 last year), the call budgets will be gradually increasing each year from 2017 on.

In 2015, commitment credits of EUR 1.7 billion and payment credits of EUR 426.6 million were fully executed.

The ERC calls from the 2015 Work Programme for the core ERC schemes (Starting, Consolidator and Advanced Grants) yielded a total of 6 924 proposals, representing a 14 % decrease compared to 2014 (11 % decrease for Starting, 19 % decrease for Consolidator and 15 % decrease for Advanced Grants), in large proportion due to stricter submission restrictions introduced by the Scientific Council to ensure that the evaluators are not overwhelmed. 349 Starting and 302 Consolidator projects have been selected for funding through a rigorous peer review process bringing the total to over 1 500 ERC Horizon 2020 grantees. The Advanced Grant 2015 proposals were still under evaluation at the moment of printing this report. The evaluation process was organised as usual into 25 different evaluation panels per call, involving over the first two years of Horizon 2020 more than 2 000 panel members and over 11 700 external reviewers.

At the same time 339 proposals were submitted to the Proof of Concept 2015 call with three deadlines (a decrease of 23 % compared to 2014, also due to the introduction of stricter submission rules), of which 135 projects have been selected for funding.

ERC-funded projects are highly productive and ERC-funded research is largely present in high-impact journals. By December 2015, the ERCEA had collected more than 95 000 publications from ERC funded projects from both online bibliographic databases and project reports.

The efficient operation of all the calls during 2015 underlines the successful organisational development of the ERCEA, which at the end of 2015 counted 417 staff members, a small number in view of the tasks to be performed.

Annual Meeting 2015



Courtesy to WEF

Press conference at WEF Davos

ERC at the Davos summit: placing science in “the new global context”

This year the ERC took part again in the World Economic Forum in Davos, to debate the importance of cutting-edge research in an ever more competitive world. The European Commissioner for Research, Innovation and Science, Carlos Moedas, and the ERC President Jean-Pierre Bourguignon participated, along with eleven ERC-funded top researchers. Amongst them were two Nobel laureates: Konstantin Novoselov, who spoke about materials for future technologies, and Christopher Pissarides, who shared insights into lowering unemployment in Europe.

The theme of this year’s Davos summit, which took place from 21 to 24 January, was “the new global context.” In total, the ERC took part in 15 sessions and one press conference where Carlos Moedas, Jean-Pierre Bourguignon and Christopher Pissarides addressed the importance of investing in ground-breaking research at the frontiers of knowledge to stimulate innovation, growth and competitiveness in Europe. They also discussed the ERC’s mission to reverse “brain drain” by funding top researchers, including in particular young talent.

The ERC at AAAS 2015: ground-breaking European research presented in the US

From 12 to 16 February, the ERC took part in the American Association for the Advancement of Science (AAAS) annual meeting in San Jose, USA. The ERC President Jean-Pierre Bourguignon participated, along with eight ERC-funded top researchers. The ERC discussed the need to go beyond the frontiers of knowledge for Europe to stay competitive.

The AAAS, the world's largest and most influential general scientific society, annually gathers thousands of leading scientists, engineers, educators, policy-makers, and journalists from around the world to discuss recent developments in science and technology. The theme of this year's edition was "Innovations, Information, and Imaging".

The ERC attended the annual meeting for the eighth consecutive year, and this time it held three scientific sessions focusing on the future of cancer research, the use of new information technologies in analysing historical data, and on space inspirations in the built environment.

The ERC celebrates the funding of the 5 000th top researcher

Eight years after its launch, in June 2015 the ERC celebrated a significant milestone: the funding of its 5 000th researcher. To mark this occasion, a debate in the European Parliament and a symbolic awarding of the grant took place in Brussels.

The 5 000th grantee, Iva Tolić, is a leading Croatian cell biophysicist. An ERC Consolidator Grant will allow her to study the forces acting on the chromosomes during cell division. Her research could be critical for the development of new therapies against cancer. Dr Tolić will carry out her project at the Ruđer Bošković Institute in Zagreb.

The celebration of the 5 000th ERC grantee took place through a series of events. Invited by the European Parliament (EP), the ERC took part in an exchange of views in the EP's Committee on Industry, Research and Energy (ITRE), where the ERC President addressed the committee. Dr Tolić, as well as another ERC grantee, Nicola Pugno, highlighted what the ERC funding means for researchers. In addition, a festive grant signing ceremony took place in the evening, with high-level speakers, including Commissioner Carlos Moedas, and ERC grantees.



ERC President J.P. Bourguignon, MEP C. Moody, Latvian Minister M. Seile, 5 000th grantee I. Tolić, Commissioner C. Moedas, ERCEA Director P. Amor

The driving forces of cell division



© Iva Tolić

With her ERC grant - the 5 000th awarded to a leading scientist in Europe - Iva Tolić wants to push forward the frontiers of knowledge on the mechanical principles of cell division. After spending several years in the USA, Denmark, Italy and Germany, she moved back to Croatia, where she is currently investigating the principles and rules of self-organisation inside a cell and the functioning of the mitotic spindle in particular.

In her research, Dr Tolić challenges the current theories on the role played by microtubules during cell division, i.e. the fibrous rods in charge of aligning and separating chromosomes, during this highly precise process. The present hypothesis is that the kinetochore fibres are the only structures that exert force on the chromosomes as they attach to them from opposite sides. Dr Tolić focuses instead on a specific and so far uncovered class of microtubules that connect the kinetochore fibres like bridges, exercising also significant force on the chromosomes.

By combining a variety of experimental and theoretical techniques, including molecular biology, imaging, optical engineering, computer science and theoretical physics, Dr Tolić is on the way to identify how these bridging microtubules could drive the movements of sister kinetochores and therefore, play a key role in chromosome segregation. The first results of her ERC research, published in *Nature Communications* in September 2015, lead to a better understanding on how the cell controls the pulling forces on the chromosomes. The outcomes could also be critical for the development of new therapies against cancer, as this disease results from a cell duplication process that, for some reason, is not regulated correctly.

In July 2015, Iva Tolić was awarded the “EBSA Young Investigators’ Medal and Prize”.

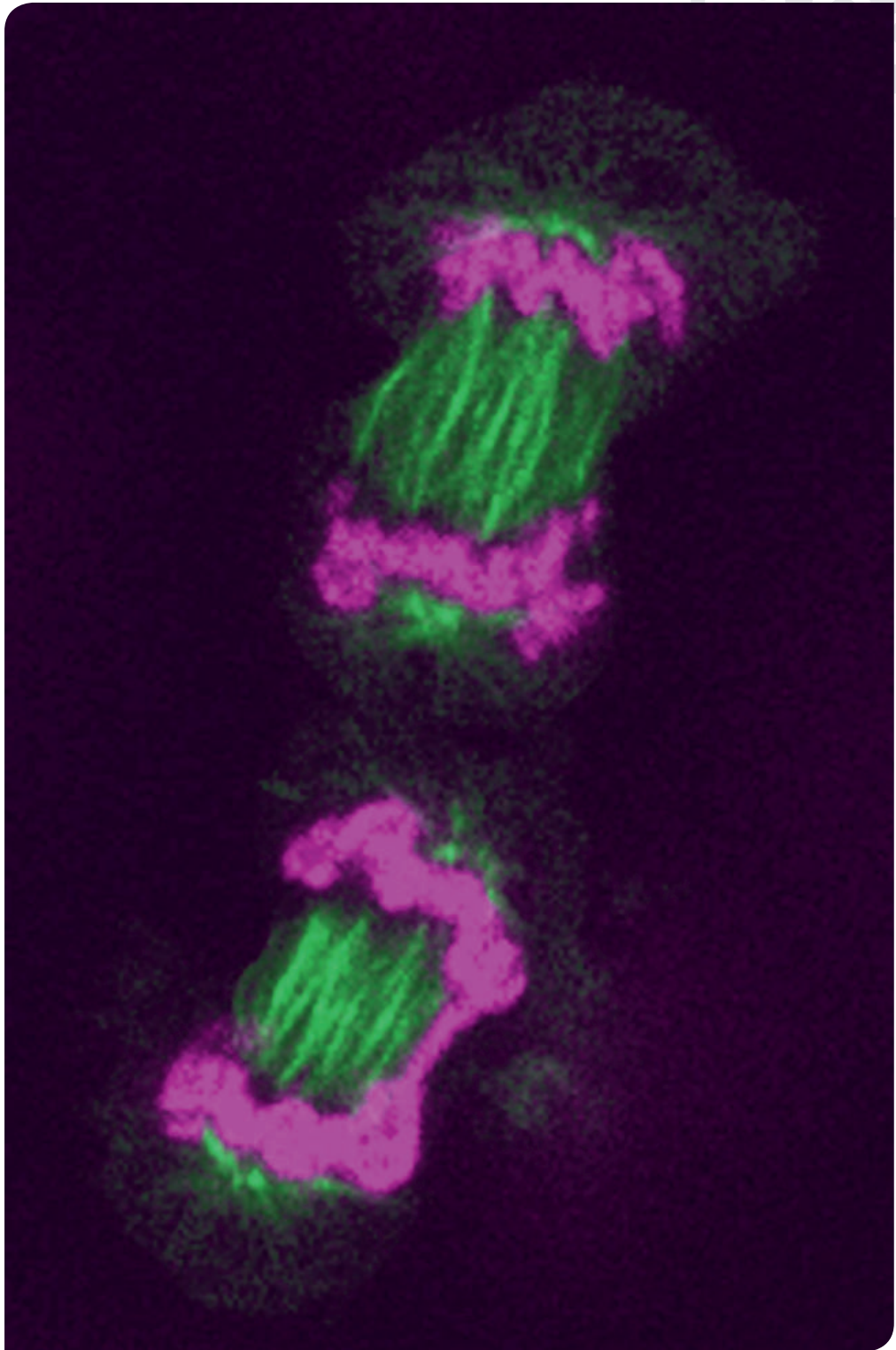
ERC grantee: Iva Tolić

Host Institution: Ruđer Bošković Institute (Croatia)

ERC project: A new class of microtubules in the spindle exerting forces on kinetochores (NEWSPINDLEFORCE)

ERC call: Consolidator Grant 2014

ERC funding: EUR 2.1 million for five years



© Iva Tolić

Microtubules in action during chromosome division



Global Research Council

President Jean-Pierre Bourguignon represented the ERC at the 4th annual meeting of the Global Research Council (GRC), which took place in Tokyo, Japan from 26 to 28 May 2015. The Japan Society for the Promotion of Science (JSPS) and the National Research Foundation (NRF) of South Africa were the host organisations. This was a high-level event bringing together the heads of around 60 research councils from around the world as well as observers from global science agencies, university associations and research policy organisations.

The main topics for discussion were research funding for scientific breakthroughs and building research and education capacity.

The participants endorsed a statement of principles for funding scientific breakthroughs. These principles include freedom and flexibility for researchers, fostering interdisciplinary, encouraging risk-taking; using a diversified portfolio of funding approaches, exploring novel and effective review processes to identify cutting-edge ideas and high potential for breakthroughs and international collaborations.

They also endorsed a statement of approaches to be shared within the global research community as key elements in building research and education capacity.

The summit had been prepared through five regional meetings, including a meeting in Israel to which the ERC contributed.

The ERC at the Alpbach Technology Forum

In August 2015, the ERC participated in the Alpbach Technology Forum, an important part of the European Forum Alpbach, an annual event gathering politicians, industrialists and renowned scientists from all areas in the Austrian Alps.

The ERC President, Jean-Pierre Bourguignon, and four ERC grantees held a plenary session within the Technology Symposium, which was searching for the causes, future developments and consequences of InEquality, the overall theme of the 2015 Alpbach Forum. The focus of the ERC session was in particular to emphasize “complexity”, focusing on its rapid rising in an increasingly interconnected world.

Mikael Lindahl, from Uppsala University (Sweden) talked about his ERC-funded research that uses Swedish registry data to learn about mechanisms behind intergenerational correlations between outcome variables, such as education and income, for parents and children. The ERC grantee Maarten van Ham, from Delft University of Technology (The Netherlands) explained how he is trying to come to a better understanding of the relationship between socio-economic inequality, poverty and neighborhoods. Stefani Scherer, from the University of Trento (Italy) spoke about her ERC-funded investigations on social change in European societies, in particular the change in social and economic inequalities associated with new welfare-work-family equilibria. Finally, Clémentine Cottineau from University College London (UK) spoke about research she conducted as a post-doc in the team of ERC grantee Michael Batty on morphology, energy and climate change in the cities, touching upon issues like urban models, complexity science, energy and social physics.



“Summer Davos”: the ERC brings science into the debate on growth

From 9 to 11 September 2015, the ERC took part in the Annual Meeting of the New Champions (AMNC) in Dalian, China, to highlight the role of science in charting a new course for economic growth. The AMNC, dubbed “Summer Davos”, provides a platform for emerging leaders, young researchers and entrepreneurs from around the world to engage with leading figures from industry, politics and science, and to discuss global challenges. More than 1500 participants from over 90 countries attended the event this year.

Alongside the ERC President Jean-Pierre Bourguignon and the Vice-President Núria Sebastián Gallés, 18 ERC grantees shared their cutting-edge research. Twelve of them were invited as Young Global Scientists - representing one third of all selected scientists in this prestigious World Economic Forum (WEF) programme that gathers outstanding young talent.

ERC speakers participated in eight of the AMNC sessions. Prof Bourguignon was a panellist in a session on the factors enabling long-term innovation, and Prof Sebastián Gallés explained how the notion of being human is redefined by new research findings. Four ERC grant winners, Ellen Backus, Santiago Badia, Frédérique Battin-Leclerc and Anna Fontcuberta i Morral, addressed the question of the energy sources of tomorrow in the ERC Ideas Lab session.

Frontiers of space science and technology, a joint ESA-ERC scientific networking event

Young and senior ERC grantees met European Space Agency (ESA) scientists on 10-11 November 2015 at ESA/ESTEC premises in Noordwijk, The Netherlands. The aim of the event was to foster future collaborations between research groups and individuals from the two communities for the benefit of European science and technology.

The event was co-chaired by Sierd Cloetingh, Vice-President of the ERC Scientific Council, and Chris Rapley, Chair of ESA's High-level Science Policy Advisory Committee – HISPAC.

The event opened with a series of high scientific level keynote presentations(*), which were followed by concrete discussions in parallel sessions along four disciplines: universe science, physics and materials science, earth sciences, and life sciences. During the second day of the event, three new parallel sessions of an interdisciplinary nature were organised following ESA's “Grand science themes”. These represent long-term scientific developments benefitting the scientific and technological activities of ESA (terrestrial and cosmic climate, understanding gravity & cosmic radiation and magnetism, life in the universe). The participants discussed about areas of common interest in the scientific domain, various possibilities for collaboration and potential funding sources and reported the conclusions in different plenary sessions.

The ex-post reaction of the participants to this event was very positive. They agreed that it would be very good to establish an ongoing series of similar inter-community brainstorms on a periodical basis. A wish list of mission ideas/objectives resulted from the event together with a set of recommendations for the ESA Director General and the ERC Scientific Council.

(*) Keynote presentations on ERC website: <https://erc.europa.eu/media-and-events/events/joint-esa-erc-scientific-networking-eventworkshop-%E2%80%99Cfrontiers-space-science-a>



The secrets of the Earth's deep interior

The inner core of our planet was discovered more than 65 years ago and since then Earth scientists have been investigating to understand more about its precise structure and geodynamic properties.

The Earth's inner core is a solid ball of the size of the Moon, made of iron and nickel, surrounded by an outer core of flowing liquid iron alloy. As no direct samples of the inner core, outer core and of the mantle can be taken, our knowledge of their structure and properties relies on seismology, the only tool that allows us to "see through" the Earth.

Seismometers measure the waves generated by earthquakes and these data are interpreted to evaluate the Earth's composition, density and velocity.

In the ERC-funded project that she presented at the ESA-ERC scientific networking event, Dr Arwen Deuss coupled seismic observations of whole Earth oscillations, which make the Earth ring like a bell, with expertise in fluid dynamics and mineral physics. Her team developed pioneering tools to focus on some specific deep parts of our planet, something which had not been possible before due to a lack of appropriate theory. Applying this novel theory and analysing data from large earthquakes all around the globe - including the 2011 devastating seismic event in Japan - the team made a new comprehensive model of the inner core leading to several exciting discoveries.

Dr Deuss' work has shown that the top of the inner core is divided into two hemispheres with very sharp boundaries. They are so different that they might be the equivalent of the continental and oceanic regions on the Earth's surface - limiting the phenomenon of inner core superrotation to less than one degree per million years. They also found that a few weight percent of light elements, such as silicon or oxygen, needs to be present in the solid inner core in order to explain their observations of seismic attenuation anisotropy. These observations suggest that the geodynamic process at the origin of the Earth's inner core is much more complex than was initially thought. The inner core heterogeneity might also be linked to places where the magnetic field of the Earth is stronger or weaker.

Dr Deuss has recently been awarded a Consolidator Grant (Attenuation tomography using novel observation of Earth's free oscillations, ATUNE) that will help her consolidate her team at Utrecht University (The Netherlands).

ERC grantee: Arwen Fedora Deuss

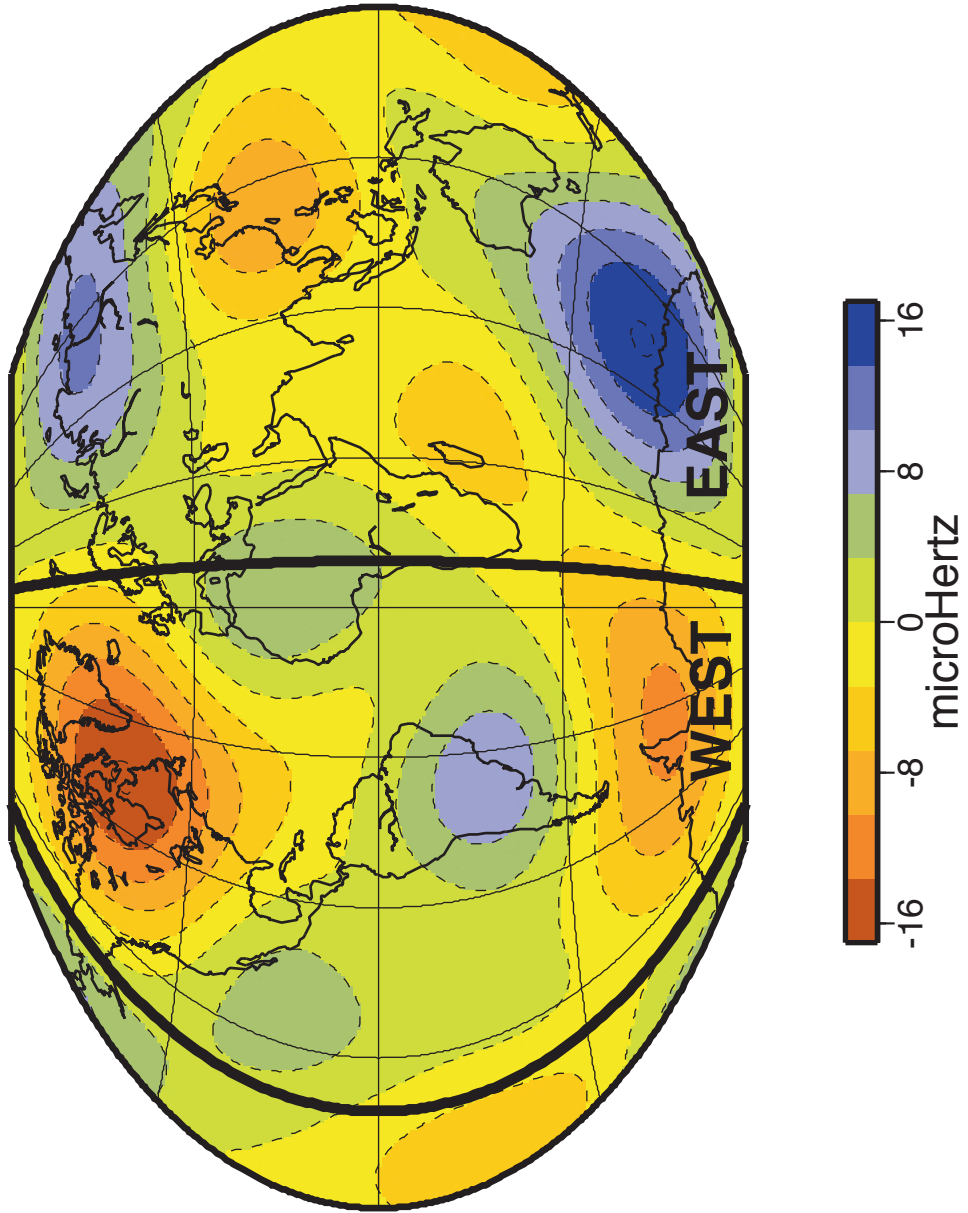
Host Institution: University of Cambridge (United Kingdom)

ERC project: Thermal and compositional state of the Earth's inner core from seismic free oscillations (EARTH CORE STRUCTURE)

ERC call: Starting Grant 2007

ERC funding: EUR 1.2 million for five years

Whole Earth oscillation observation



Seismic observation of hemispherical division in the Earth's inner core, made using whole Earth oscillation data.

© Deuss et al.



Statement by the ERC President Jean-Pierre Bourguignon regarding the EFSI budget agreement

On 29 May 2015, on the occasion of the agreement between the European Commission, the European Parliament and the Council of the European Union regarding the European Fund for Strategic Investments (EFSI), The ERC President Jean-Pierre Bourguignon, on behalf of the ERC Scientific Council, welcomed the outcome of the negotiations. The compromise concerning the budget was considered a clear sign that frontier research has an important role to play in Europe and that its support will always be given proper consideration. President Bourguignon saw this decision as a vote of confidence for the ERC whose fundamental action is to select ambitious researchers on the basis of their most innovative ideas. It will allow the ERC to pursue its mission to make Europe more competitive and to enhance its capacity to attract top talent from near and afar.

Continued commitment and support to Open Access

2015 saw the continued commitment and support of the ERC to Open Access (OA). The Working Group of the Scientific Council dealing with OA and related topics intensified its contacts with organisations active in the field, such as OpenAIRE, the Research Data Alliance and Knowledge Exchange. The ERC actively contributed to several international meetings on Open Access and on Research Data, and the Chair of the Working Group, Nicholas Canny, presented the ERC's approach to OA at a number of national and international events.

A new ERC Coordination and Support Action (CSA) to support the OAPEN library for OA books was launched at the end of the year. This will be of importance in particular for researchers in the Social Sciences and Humanities. The ERC also made a commitment to support Europe PubMed Central, a major OA infrastructure in the Life Sciences, for a further five years, and renewed its support to arXiv, an OA repository for the Physical Sciences and Mathematics.

Opening ERC teams to the world

ERC grantees can benefit from a set of international agreements that make it easier for scientists from Argentina, China, Japan, Mexico, South Korea, South Africa and the United States to join ERC research teams for short periods of time. The programme is open to grantees who are at least 18 months away from finishing their projects. The partner research funding agencies contribute financially to the visits.

The purpose of these agreements is to foster scientific cooperation between the European Union and some of the leading research agencies outside the EU, boosting the global circulation of talent. This allows ERC grantees to draw on the experience and new ideas of young international researchers. They are signed in the form of an 'Implementing arrangement' of the existing scientific and technological cooperation agreements between the EU and non-EU counterparts. The first arrangement of this kind was signed in July 2012 with the US National Science Foundation (NSF) to provide opportunities for NSF researchers to join ERC-funded teams. In November 2013, a similar arrangement was signed with South Korea.



Five implementing arrangements were signed in 2015:

- On 13 March an arrangement was signed to boost opportunities for Argentinian top scientists of the National Scientific Technical Research Council (CONICET) to be part of ERC-funded teams for six to twelve months or multiple short-term visits.
- On 29 May a similar initiative was launched to encourage young top scientists in Japan to join ERC research teams in Europe. The ERC-JSPS (Japan Society for the Promotion of Science) initiative is open to recipients of the JSPS's Research Fellowships for Young Scientists, who can come to Europe for scientific visits.
- On 29 June another initiative was launched to facilitate young Chinese researchers coming to Europe on scientific visits and joining ERC-funded teams. The ERC/NSFC (National Natural Science Foundation of China) initiative is open to active holders of NSFC grants. They can undertake single (6-12 months) long-term or multiple short-term research visits (e.g. for joint experiments).
- On 26 October, another arrangement was signed with the National Science Foundation (NSF) of South Africa.
- On 12 November one more agreement was concluded to encourage Mexico's most promising young researchers to come to Europe and temporarily join research teams led by ERC grant holders. It provides the opportunity for research or postdoctoral fellows of Conacyt (Mexican National Council of Science and Technology) to undertake six to twelve month research visits.

The ERC regional widening participation events in Tallinn and Budapest

Two regional ERC widening European participation events with the title "ERC funding opportunities: supporting excellent researchers all over Europe" took place in 2015, as a tangible action of the ERC to facilitate systematic debate and interactions with relevant national authorities in order to promote better local support for promising scientists in Europe's weak research-performing regions.

The first one was organised under the auspice of the ERC Vice-President Mart Saarma on the occasion of the ERC Scientific Council plenary meeting in Tallinn (8 October, Estonian Academy of Sciences), and addressed ERC stakeholders from Estonia, Lithuania, Latvia, Finland and Poland.

The second one, hosted by the Chair of the ERC Working Group on widening European participation, Eva Kondorosi, and addressing ERC stakeholders from Hungary, Bulgaria, Czech Republic, Slovakia, Poland and Romania, took place in Budapest, at the margins of the world science forum, a high-level international meeting of policy makers, scientific community and representatives of civil society from all over the globe (4 November, Hungarian Academy of Sciences).

Both events were designed as a forum for open dialogue, exchange of experiences, and networking between various ERC stakeholders in order for them to better support frontier research, nurture scientific excellence, and strengthen the level of their competitiveness in ERC competitions. Each meeting conveyed around 100 invited participants, including all national actors relevant for the

successful application to the ERC: ERC grantees and potential candidates, managers of major research institutes and universities, heads of national research councils, political actors responsible for research. They discussed together with ERC Scientific Council members and staff from the ERC Executive Agency the best possible ways of supporting outstanding scientists in the region and helping them in their applications to ERC calls.

The flagship theme of both events was a newly introduced initiative agreed by the ERC in support of widening European participation in its calls: a nationally supported fellowship programme to visit ERC teams in order to help potential ERC candidates from weak participating regions strengthen their research vision and build up confidence within an internationally competitive research environment. The initiative of a national "Fellowship to visit ERC grantee (*)" scheme was welcomed by all ERC stakeholder groups with some national authorities already endorsing it.

(*) https://erc.europa.eu/sites/default/files/document/file/Fellowship_Visit_ERC_Grantee.pdf

© Prof Ülo Niinemets



How do stressed plants affect climate change?

Plants form a key interface between the Earth's surface and the atmosphere by exchanging carbon, water and energy with their environment. They also release chemicals called "volatile organic compounds" (VOCs) in the atmosphere. However, the overall impact of these gas compounds is poorly understood. Ülo Niinemets and his team look at the role of plants in large-scale Earth processes and how they affect air quality and the Earth surface temperature, solar radiation and precipitation. Their work was presented at the ERC regional widening participation event in Tallinn.

Apart from fixing atmospheric CO₂ and releasing oxygen, plants produce numerous gases that evaporate into the atmosphere. This plant process controls the formation of toxic gases, such as ozone, and of secondary organic aerosols, and initiates a process of cloud condensation. Plant physiologist Prof Niinemets specifically focuses on "trace" gases and VOCs emitted by vegetation in conditions of stress. While a few plant species are well-known as constitutive emitters, all species can be triggered to produce VOCs under stress situations often encountered in nature, in response to an excess in temperatures or when they are attacked by pathogens and herbivores for example. This could mean that plant emissions worldwide have been vastly underestimated.

Prof Niinemets aims to test this hypothesis and provide fundamental insight into the stress responsiveness of plants. Among other biological stress factors, his team looks at European oaks infected by the powdery mildew fungus. The researchers have also studied an outbreak of leaf beetles in alder trees. Both infestations lead to major elicitation of volatile organic compounds and the SIP-VOL+ team tries to evaluate their impact on the formation of organic aerosols and cloud condensation.

The project attracted visiting collaborators from Asia and the USA, who contributed to the design of a new model for gas emissions developed by the team. The model links the severity of a stress experienced by plants and the amount of gases they consequently produce. The team will now scale the model up to ecosystems and landscapes at the regional and global levels to better understand the roles of plant-generated gases and their impact on the Earth's climate.

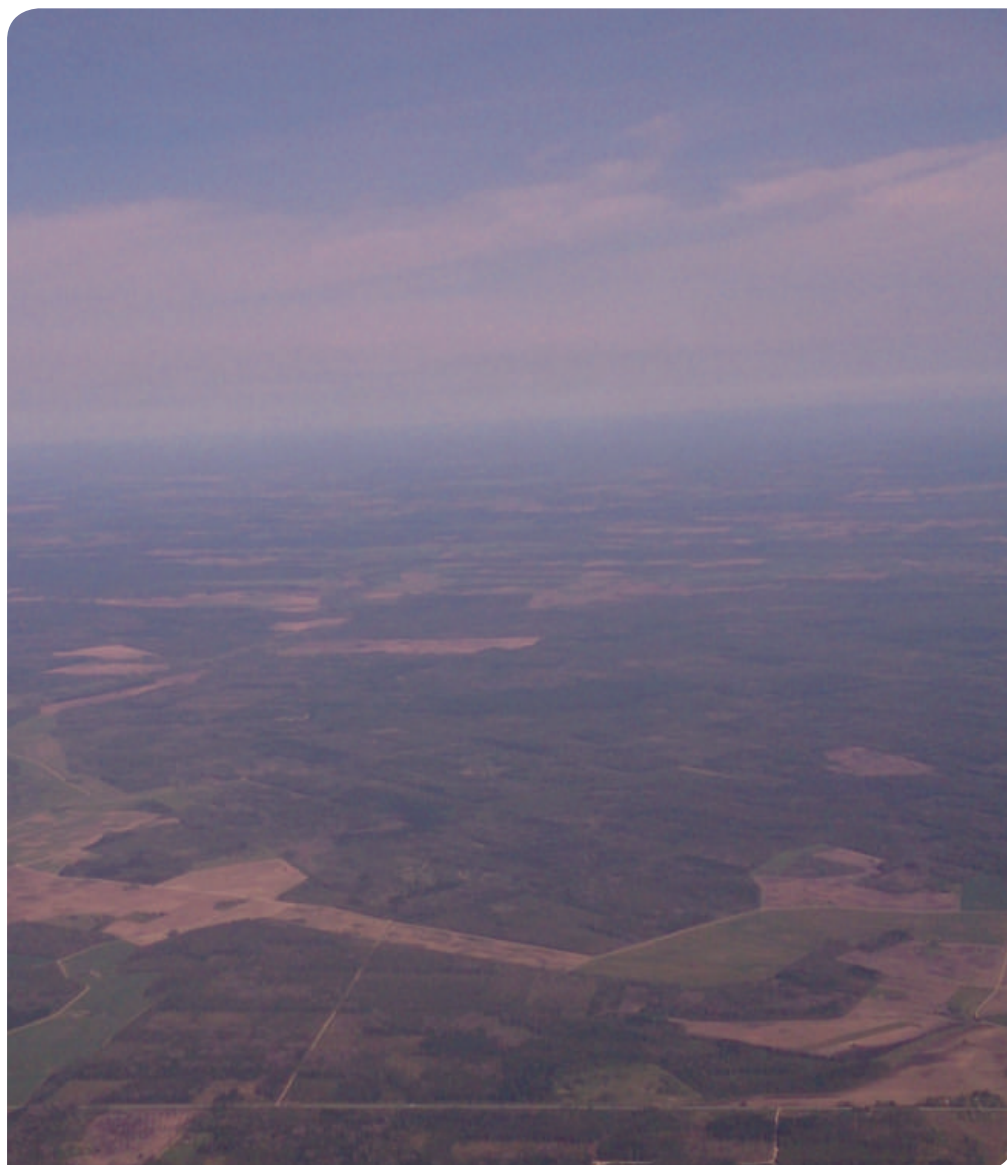
ERC grantee: Ülo Niinemets

Host Institution: Estonian University of Life Sciences (Estonia)

ERC project: Stress-Induced Plant Volatiles in Biosphere-Atmosphere System (SIP-VOL+)

ERC Call: Advanced Grant 2012

ERC funding: EUR 2.3 million for five years



© Prof Ülo Niinemets

“Blue haze” formed by secondary organic aerosol formation over Estonia in April 2015, due to a start of activity of coniferous forest trees. The higher aerosol concentration leads to reduced solar radiation penetration, and a cooling effect of the Earth’s climate.

The ERC at the Gender Summit 2015

On 6 November, the ERC took part in the Gender Summit 2015, with its representatives Jean-Pierre Bourguignon (ERC President) and Isabelle Vernos (the Chair of the Scientific Council Working Group on gender balance).

Prof Bourguignon gave a presentation at one of the plenary sessions on “Stimulating ambitious bottom-up proposals by scientists” while Prof Vernos chaired an ERC session under the title “Gender perspectives from the ERC: from application to funding”.

Prof Vernos opened the session by showing ERC data on female applicants, grantees and panel members. In addition, she gave an overview of the activities of the Scientific Council Working Group on gender balance and of ERC gender funded projects. Three speakers contributed to the session. The first speaker was Anne McMunn (ERC grantee) who presented her project, “Health effects of social change in gender, work and family”, focused on gender research. She also shared her personal experience in regards to submitting an application to the ERC. The second speaker was Mieke Verloo (ERC panel member in the Social Sciences and Humanities domain). She gave a gender perspective from her evaluation panel and domain. The third speaker was Conny Aerts (long time ERC panel member and two times holder of an ERC Advanced Grant) who shared her views from the Physical Sciences & Engineering domain, as well as her experience in terms of gender equality with other funding agencies compared to the ERC.

The ERC participation at the Gender Summit was very much appreciated and contributed to raising awareness about the ERC in general and about its actions in terms of gender equality, for which it was commended.



Prof Isabelle Vernos



ERC grantees meet business angels

The ERC and nine of its funded Proof of Concept (PoC) projects took part in the European Business Angel Network (EBAN) Winter University from 16 to 18 November in Copenhagen, a global summit on venture finance and innovation in science, space, technology and the creative industries, gathering 300 representatives of the early stage financing industry and entrepreneurs from all over the world.

Nine ventures, all supported by an ERC Proof of Concept funding, were amongst the European start-ups attending. ERC representatives also spoke at the event: The ERC Vice-President, Sierd Cloetingh, gave a keynote speech on “ERC blue-sky researchers, rising stars in innovation”, while ERC Scientific Council member Klaus Bock took part in a workshop on “Redefining public private partnerships in funding innovation in science”. Jens Rostrup-Nielsen, a former member of the ERC Scientific Council, participated in a panel discussion on “High stakes for business angels: science-based high risk/high gain projects”, together with the ERC grantee Deniz Kirik (Lund University) whose successful start-up company, created thanks to an ERC PoC, recently signed an agreement with a regional council in southern Sweden to build a state-of-the-art gene therapy centre.

The ERC participation was very successful. A prize for “Innovation in science venture finance” was awarded to the ERC by the EBAN President, Candace Johnson, in recognition of the ERC’s efforts to explore the innovation potential of the research it funds.

This recognition followed two more prizes awarded the day before at the global investor forum, where 11 judges (business angels, investors and coaches) from eight countries came to pick the “most investable company” from 30 rigorously pre-selected entrants pitching their projects. Eight of the 30 pitches were given by ERC PoC grantees and their start-ups. The jury awarded two prizes:

- Prize to the “most investable company” to StemCell2MAX, a biotechnology start-up in the field of regenerative medicine with proven market track record: an internationally recognised innovating discovery (patented and published in Nature) and growing sales. This venture is supported by the PoC grant StemCell2MAX, led by Dr Henrique Veiga Fernandes at the University of Lisbon;
- Prize to the “technology to watch” to FabliTec, a Technical University Munich (TUM) spin-off company focused on state-of-the-art technology for 3D scanning which has developed customised solutions for the consumer market and for the medical domain (orthopaedics and plastic surgery). This venture is supported by the PoC Grant COPYME3D, led by Prof Daniel Cremers at the TUM.



Joining forces for a novel gene therapy centre

Parkinson's disease is a neurodegenerative brain disorder affecting people's ability to regulate their movements, body and emotions. There is currently no definite cure for it. Deniz Kirik, professor of neuroscience at Lund University in Sweden, implemented what the industry calls disruptive technology: introducing harmless viruses into brain cells to deliver therapeutic genes in a controllable and personalised manner.

In 2009, Prof Kirik received an ERC Starting Grant to collect scientific evidence that such a treatment could reverse the disease's symptoms and replace the lost brain functions in animals. As his project was making progress, three years later he applied for an ERC Proof of Concept Grant to test the market potential of his findings. The grant enabled him to get help from business experts to start a new company, Braingene. He contacted venture capital firms and industry leaders, and applied for patents.

As a result, the Skåne regional council in southern Sweden decided to form a jointly owned company with Braingene to build a specialised hospital dedicated to the implementation of gene therapies. This is the first time in Nordic countries that the public sector engages in implementing a future clinical treatment facility with a small spin-off company. The facility will focus on early and later-stage clinical trials leading to new drug approvals, and will ultimately make these future therapies available for clinical practice.

The regional authorities also gave Prof Kirik a mandate to establish a Centre for Gene Therapy under the direct management and control of the region. The centre will not only conduct pioneering clinical trials, taking cutting-edge technology to the clinics, but it will also train the doctors and nurses to meet the competence requirements of these highly specialized treatments. It has the potential to become a flagship project in brain diseases and in other conditions where gene therapy is becoming a reality, for example genetic forms of blindness or hemophilia. Prof Kirik's aim is to bring the most promising therapies faster to the patients and to help keeping frontline research in Europe, as well as to encourage more international researchers and entrepreneurs to locate their operations in the region.

ERC grantee: Deniz Kirik

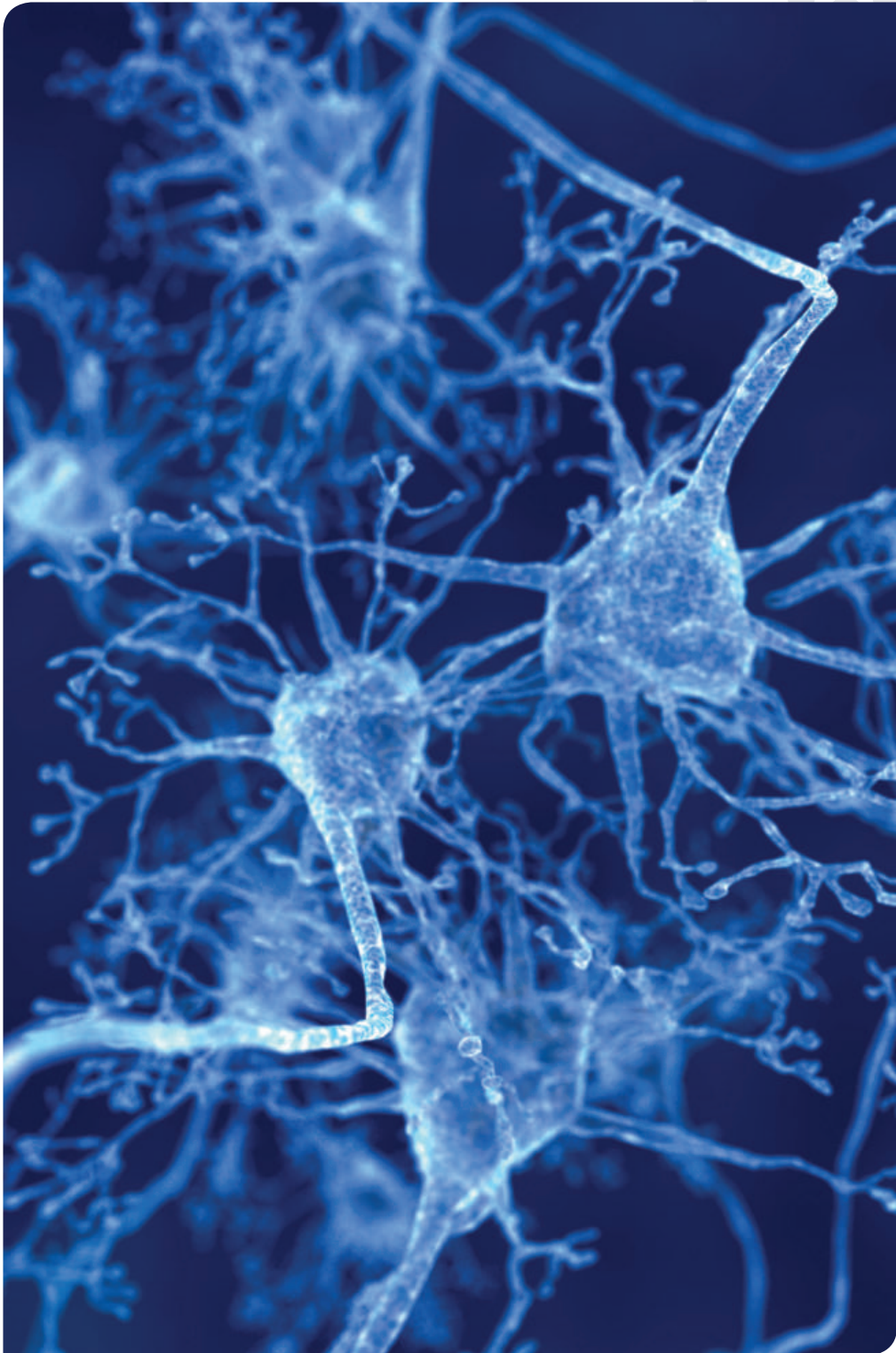
Host Institution: Lund University (Sweden)

ERC projects: Cell and gene therapy based approaches for treatment of Parkinson's disease: from models to clinics (TREATPD) + A novel mechanism to regulate gene expression in the brain (DD-PD)

ERC call: Starting Grant 2009 + Proof of Concept Grant 2012

ERC funding: EUR 1.5 million for five years + EUR 150 000





© istockphotos.com





Research highlights



This part of the Annual Report showcases research across the three ERC domains: Life Sciences, Physical Sciences and Engineering and Social Sciences and Humanities. The aim is to provide a 'snapshot' of the kinds of research the ERC funds. The projects portrayed this year are chosen to highlight not only the excellent science that characterises all of them, but also their different impact in terms of landmark contributions to science, effects on the researchers' careers, translation of science into business or social innovation and major contributions to a specific research field.

Landmark contributions to science

ERC-funded result amongst top 10 physics discoveries of the last decade



© Sam Rentmeester

In physics, scientists can predict the existence of a particle which is eventually, soon after or considerably later, observed experimentally. The Higgs boson is one of the most striking recent examples. ERC grantee Leo Kouwenhoven has recently made such a demonstration proving the existence of the "Majorana fermion", a particle theorised in the 1930s. Detecting Majorana's particles is not only exciting for particle physicists; thanks to their properties they could prove useful as stable "quantum bits" of information that could make quantum computers a reality.

Prof Kouwenhoven studies semiconductor systems at the nanoscale. With his ERC project, he successfully designed nanowire structures that could act as interfaces between electronic and optic systems at the level of single particles, conducting electrons and light photons. The technologies he developed, such as the novel "nanowire quantum light source", could find applications in quantum information networks.

With one of these nanowire devices, Prof Kouwenhoven's team managed to demonstrate the existence of particles behaving like "Majorana fermions" under certain conditions. The discovery was reported in *Science* in May 2012, acknowledging ERC funding (*). In 1937, the particles were described by the Italian physicist Ettore Majorana as particles able to behave simultaneously like matter and antimatter – they could be their own anti-particle. However, these had not been observed yet.

This first piece of evidence was then confirmed by other research teams, including that of ERC grantee Moty Heiblum (***) at the Weizmann Institute. Prof Heiblum went on to win a second ERC grant in 2014 where he proposes, among other things, to further detect and study Majorana's particles.

In October 2015, the result of Prof Kouwenhoven's team was listed among the top 10 physics discoveries of the last 10 years by *Nature Physics*. The properties of the Majorana fermions could bring us one step closer to the much-talked-about high-speed quantum computers. In theory, the nature of the particles that can simultaneously be their own opposite could become a building block for quantum information processing and transmission.

Leo Kouwenhoven received an ERC Synergy Grant in 2012 together with Lieven Vandersypen and Carlo Beenakker to further work on bridging the gap between science and engineering in the field of quantum computing. The researcher was also part of a team who demonstrated, in 2015, that niobium titanium nitride (NbTiN), a material which behaves as a superconductor in high magnetic fields, can form a very stable host material for a Majorana circuit (***). This discovery could confirm the practical possibility to read-out and manipulate quantum states encoded in prospective Majorana qubits in the context of quantum information computing.

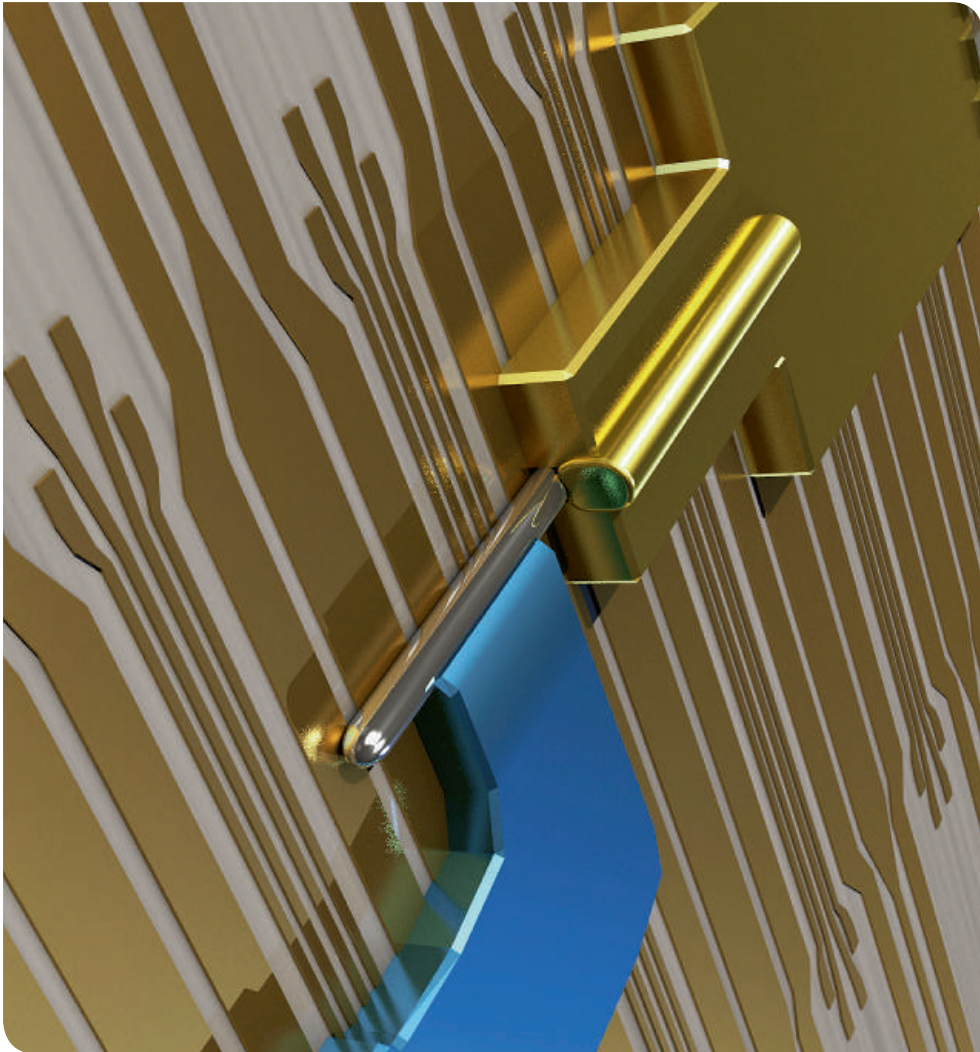
ERC grantee: Leo Kouwenhoven

Host Institution: Delft University of Technology (TU) (The Netherlands)

ERC projects: Quantum Opto-Electronics (QuantumOptoElectr) + Quantum Computer Lab (QC-LAB) with Co-PIs Lieven Vandersypen, Delft University of Technology (TU), and Carlo Beenakker, University of Leiden (The Netherlands)

ERC call: Advanced Grant 2008 + Synergy Grant 2012

ERC funding: EUR 1.8 million for four years + EUR 15 million for five years



© TU Delft 2012

Conceptual close-up of the Majorana nano-device. The device is made of an Indium Antimonide nanowire, covered with a Gold contact and partially covered with a Superconducting Niobium contact. The Majorana fermions are created at the end of the Nanowire

(*) V. Mourik, K. Zuo, S. M. Frolov, S. R. Plissard, E. P. A. M. Bakkers, L. P. Kouwenhoven (2012): Signatures of Majorana Fermions in Hybrid Superconductor-Semiconductor Nanowire Devices, *Science* 336 (6084): 1003-1007. DOI: 10.1126/science.1222360

(**) Anindya Das, Yuval Ronen, Yonatan Most, Yuval Oreg, Moty Heiblum & Hadas Shtrikman (2012): Zero-bias peaks and splitting in an Al-InAs nanowire topological superconductor as a signature of Majorana fermions, *Nature Physics* 8, 887-895. DOI: 10.1038/nphys2479

(***) David J. van Woerkom, Attila Geresdi & Leo P. Kouwenhoven (2015): One minute parity lifetime of a NbTiN Cooper-pair transistor, *Nature Physics* 11, 547-550. DOI:10.1038/nphys3342



New landmark in epigenetics: understanding the silencing of the X-chromosome

While women inherit two X chromosomes, the expressions of one of them is shut down during embryonic development. Men have one X chromosome and one Y chromosome. The switching off of women's second X chromosome is thought to compensate for the presence of only one X in males versus two in females, to balance for X-linked gene products between the sexes. X-chromosome inactivation is also one of the clearest examples of what epigenetic mechanisms do to our genetic material: the DNA of the genes on the X is still present but not actively expressed or needed. Prof Edith Heard

was awarded ERC grants to understand the intricate processes behind the phenomenon, with unexpected results that changed the way gene regulation is now looked at.

Prof Heard's team (working at the Institut Curie in the INSERM/CNRS unit of Genetics and Developmental Biology) uses X-chromosome inactivation as a model to understand how differences in gene expression states can be established and then perpetuated thanks to epigenetics. How do cells express or silence their genes, why is this sometimes reversible and can this process change in diseases such as cancer? How do cells recognise that they have two X chromosomes, not one, and trigger X inactivation?

One of the aims of Prof Heard's ERC project EpigenetiX was to study how the initiation of X inactivation is regulated. Thanks to the acquisition of a super-resolution (OMX) microscope, originally designed by her co-PI on this grant, Prof John Sedat (University of California, San Francisco) and the use of novel molecular techniques (chromosome conformation capture, or 5C, in collaboration with Job Dekker, UMass, USA), her team was able to investigate the way that DNA was folded within the X-inactivation centre, the master regulator of initiation of X inactivation. This provided unique insights into the regulatory potential and organisation of the Xic, as well as chromosome folding in general, as it led to the discovery of a new level of folding of the genome into Topologically Associating Domains (TADs) (*).

Her team also showed how TAD organisation of the genome is linked to biological function. The regulatory elements that affect the expression of a gene usually lie within the same TAD as the gene. Also genes that lie within the same TAD, show coordinated expression during development, while genes in separate TADs can show very different dynamics (*). This partitioning of the genome into TADs could also explain why the alteration of DNA sequences can have an impact on a gene even at a long distance, within the same TAD (**) (***). Beyond the study of X inactivation, Prof Heard's team explored the extent to which monoallelic epigenetic regulation affects autosomal genes (****). These discoveries have had an impact on the study of gene regulation, opening unexplored lines of research in the field of epigenetics. For example by studying the role monoallelic gene expression during development and in the fully-developed body, the research opened new fields of investigation for the study of genetic diseases and cancer. The processes described could also advance regenerative medicine.

During the term of her grant, Prof Heard was elected Professor of the Collège de France (2012) and Fellow of the Royal Society (2013). With a second ERC Advanced Grant, awarded in 2015, she will use cutting edge approaches including CRISPR/Cas9 to decipher the molecular mechanisms behind X inactivation at the level of genes. Her results could uncover principles involved in healthy gene regulation and in the deregulations that occur as tumorous cells develop.

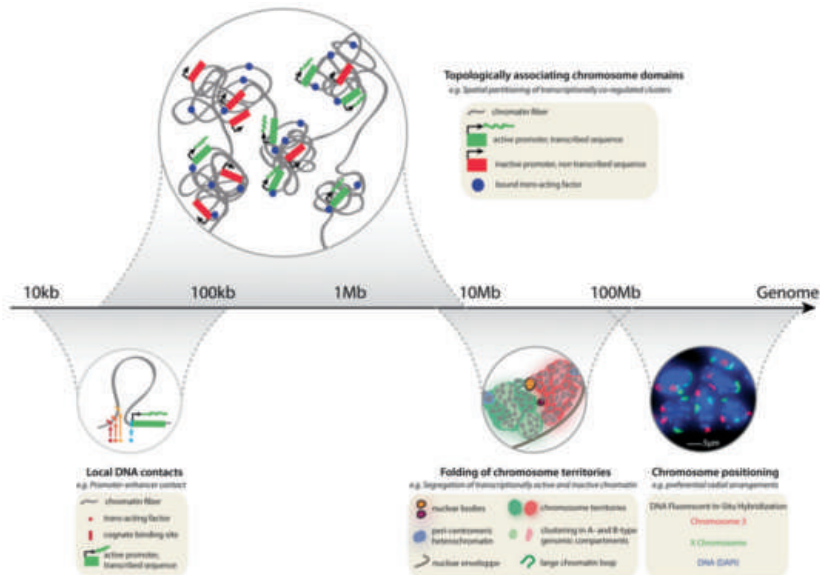
ERC grantee: Edith Heard

Host Institution: Institut Curie (France)

ERC project: Epigenetic regulation and monoallelic gene expression: the X-inactivation paradigm and beyond (EpigenetiX)

ERC call: Advanced Grant 2009

ERC funding: EUR 2.8 million for five years



Scheme showing different levels of genome organisation and TAD partitioning at the sub-megabase scale



Edith Heard and Elphège Pierre Nora

(*) Nora *et al.* (2012): Spatial partitioning of the regulatory landscape of the X-inactivation centre, *Nature* 2012 Apr 11;485(7398):381-5. doi: 10.1038/nature11049.

(**) Nora *et al.* (2013): Segmental folding of chromosomes: a basis for structural and regulatory chromosomal neighborhoods?, *Bioessays* 2013 Sep;35(9):818-28. doi: 10.1002/bies.201300040. Epub 2013 Jul 5.

(***) Giorgetti *et al.* (2014): Predictive polymer modeling reveals coupled fluctuations in chromosome conformation and transcription, *Cell*. 2014 May 8;157(4):950-63. doi: 10.1016/j.cell.2014.03.025.

(****) Gendrel *et al.* (2014): Developmental dynamics and disease potential of random monoallelic gene expression, *Dev Cell*. 2014 Feb 24;28(4):366-80. doi: 10.1016/j.devcel.2014.01.016.



Critical moral anthropology: a new research domain

Since their foundation, both sociology and anthropology have dealt with the way people think and act according to norms and principles, affects and values. Yet, the corresponding moral and ethical domain has not been fully explored until recently. The ambition of Prof Didier Fassin's ERC project, MORALS, was to propose both a theoretical framework and an empirical approach to delineate what he termed 'critical moral anthropology'.

With his interdisciplinary team of anthropologists, sociologists and political scientists, Prof Fassin elaborated an intellectual cartography of the social studies on morality and ethics. In particular, he distinguished between the tradition of the Kantian ethics of duty adopted by Durkheim, and the legacy of the Aristotelian ethics of virtue reinterpreted by Foucault. Whereas the first gave birth to the analysis of the moral codes of various societies, the second emphasises the freedom exercised in our decisions and actions. Both, however, tend to view morality and ethics as pure facts which can be isolated. Prof Fassin, by contrast, considers that, unlike philosophers, social scientists are confronted with complex moral issues and ethical questions raised through dynamic processes combining the social, political, economic and aesthetic dimensions. These situations are never clear in advance and are always impure. Humanitarianism is an example of a moral and ethical practice that is inseparable from other dimensions, making it an interesting case study.

With this in mind, Prof Fassin employs an inductive method, using in-depth studies of 'real life cases', to generate innovative interpretations of morality and ethics. In his ethnography of the state, five public institutions were studied: the police, the justice and prison systems, social work and mental health services. Although based on very different roles and professions, they often deal with similar populations, including low-income individuals and ethnoracial minorities. During their interactions with them, the agents apply various principles; fairness and discretion, compassion and resentment, all corresponding to moral subjectivities observable in their everyday work. But these behaviours do not occur in a void: they are informed by, and in turn influence, what Prof Fassin phrased as 'moral economies'. This expression, borrowed from the historians E.P. Thompson and Lorraine Daston, is redefined as the production, circulation and appropriation of affects and values. Moral characterize facts that are problematized in a certain way by society, for instance crime, poverty, immigration, or asylum. This paradigm that combines moral subjectivities and moral economies has been developed via a genealogical and ethnographic approach, retracing the moral history of the institutions and observing the moral work of their agents.

MORALS has led to the publication of an edited international volume and a critical reader, two single-authored monographs on the police and prison systems, two collective volumes of the team's research and numerous scientific articles. These works have been made accessible to a broad audience and debated in the public sphere. As a result, the project has generated research and teaching programs across the world along with wide media coverage and interactions with policy-makers and activist groups in France and beyond.

Didier Fassin is Professor of Social Science at the Institute for Advanced Study of Princeton and Director of Studies at the École des Hautes Études en Sciences Sociales in Paris. He was the founding director of IRIS, the Interdisciplinary Research Institute for Social Sciences.

ERC grantee: Didier Fassin

Host Institution: École des Hautes Études en Sciences Sociales (France)

ERC project: Towards a critical moral anthropology (MORALS)

ERC call: Advanced Grant 2008

ERC funding: EUR 1.2 million for four years



© istockphotos.com

Translation of science into business innovation

© Henrique Veiga Fernandes



Stem cells: from frontier research project to promising spin-off company

Haematopoietic Stem Cells (HSCs) are blood cells located in the bone marrow. These cells are extensively used in research to develop treatments for many severe diseases, including HIV and multiple sclerosis, and their transplant is a key therapy for certain types of cancer like leukemia and multiple myeloma. However, the use of HSCs is seriously constrained by their limited availability since growing them in the lab does not produce very large quantities. There is therefore an urgent need for methods allowing scientists to multiply HSCs, without losing any of their properties.

Through his RETIMMUNEFUNCTION project, funded by the ERC, Dr Henrique Veiga Fernandes, focusing on the functioning of immune cells, discovered that some proteins - called neurotrophic factors - have a boosting effect on the HSCs expansion when introduced in culturing media. This process, that ensures a 20-fold increase in the amount of HSCs generated, has been internationally recognized as a ground-breaking innovation and is protected by a patent. As these findings could have a strong impact on research and healthcare business, the ERC supported Dr Veiga Fernandes with an additional Proof of Concept Grant to initiate a market survey and establish contacts within the biotech industry with the aim of commercializing the newly-found technology.

Thanks to the contribution of the Portuguese Busy Angels Venture Capital Investors, in 2014 Dr Veiga Fernandes and associates were able to set up StemCell2MAX, a start-up based in Portugal. One year after its creation, in November 2015, StemCell2MAX was awarded the Prize as the Most investable company at the Global Investor Summit, organised by EBAN, the European Business Angels Network, in Copenhagen.

The increase in the production of HSCs at a reduced price could drive research in stem cell biology and could bring huge societal benefits: HSC transplants would be applicable and affordable to many more patients and novel treatment options for many diseases could be explored. Moreover, it represents a significant commercial opportunity as world-leading pharmaceutical companies increasingly turn to the development of stem cell therapies.

ERC grantee: Henrique Veiga Fernandes

Host Institution: University of Lisbon - Institute of Molecular Medicine (Portugal)

ERC projects: Role of the proto-oncogene Ret during lymphocyte development and function (RETIMMUNEFUNCTION) + A novel solution to efficient Haematopoietic Stem Cell regeneration (STEMCELL2MAX)

ERC call: Starting Grant 2007 + Proof of Concept Grant 2013

ERC funding: EUR 1.9 million for five years + EUR 150 000



© istockphotos.com

Cell culture in 24-well plate for fluorescent analysis



High accuracy measurements to meet manufacturing needs

In recent years, freeform surfaces are being manufactured more frequently and are being used in a wide variety of products such as optical systems, energy-efficient jet engines, human joint implants, solar panels. As freeform surfaces - also called complex surfaces - have often no symmetries at all, it is complicated to ensure good quality during their manufacturing. With the requirements imposed by continuous technological development, the need to make and measure these surfaces to a very high precision becomes more and more important.

Xiangqian Jiang took on this challenge and, using mathematical models, explored new basics and principles for measuring and characterizing non-planar surfaces at nano-precision level. With her multi-disciplinary team, she succeeded in designing nanometer-accurate instruments which possess non-contact and high speed qualities, are easy to use and can be produced at affordable costs, paving the way to the 21st century advanced surface measurements. Processes, sensors and instruments developed during this ERC project have applications for many products (e.g. flexible photovoltaic cells, flexible/printable electronics, roll-to-roll flat panel displays, solar concentrators) as well as in the automotive, aerospace, semiconductor, bio-engineering and food packaging sector. These technologies guarantee an optimal performance, reduce manufacturing costs and could help the industry move towards a more environmentally-friendly production (zero waste and carbon neutral production). So far, more than ten world-leading companies in these fields in Europe and the USA have expressed their interest in the results of this research led by the University of Huddersfield.

The technology transfer has already taken place through patents and strong cooperation with industries. To this purpose, Prof Jiang, supported by an ERC Proof of Concept Grant, launched the technical optimization, product prototype design and technological licensing to finally bring to the market three instruments: the wavelength scanning interferometer (NWSI), the white-light channelled spectrum interferometer (WLCSI), and the dispersed reference interferometer (DRI).

The momentum generated by the ERC funding led to the creation in 2011 of the Centre for Innovative Manufacturing in Advanced Metrology (UK) of which Prof Jiang is the director. Building on the results of the SURFUND project, completed in 2015, she is currently pursuing her research to apply the developed technologies to the manufacturing of cells contributing to cell-based therapies and regenerative medicine.

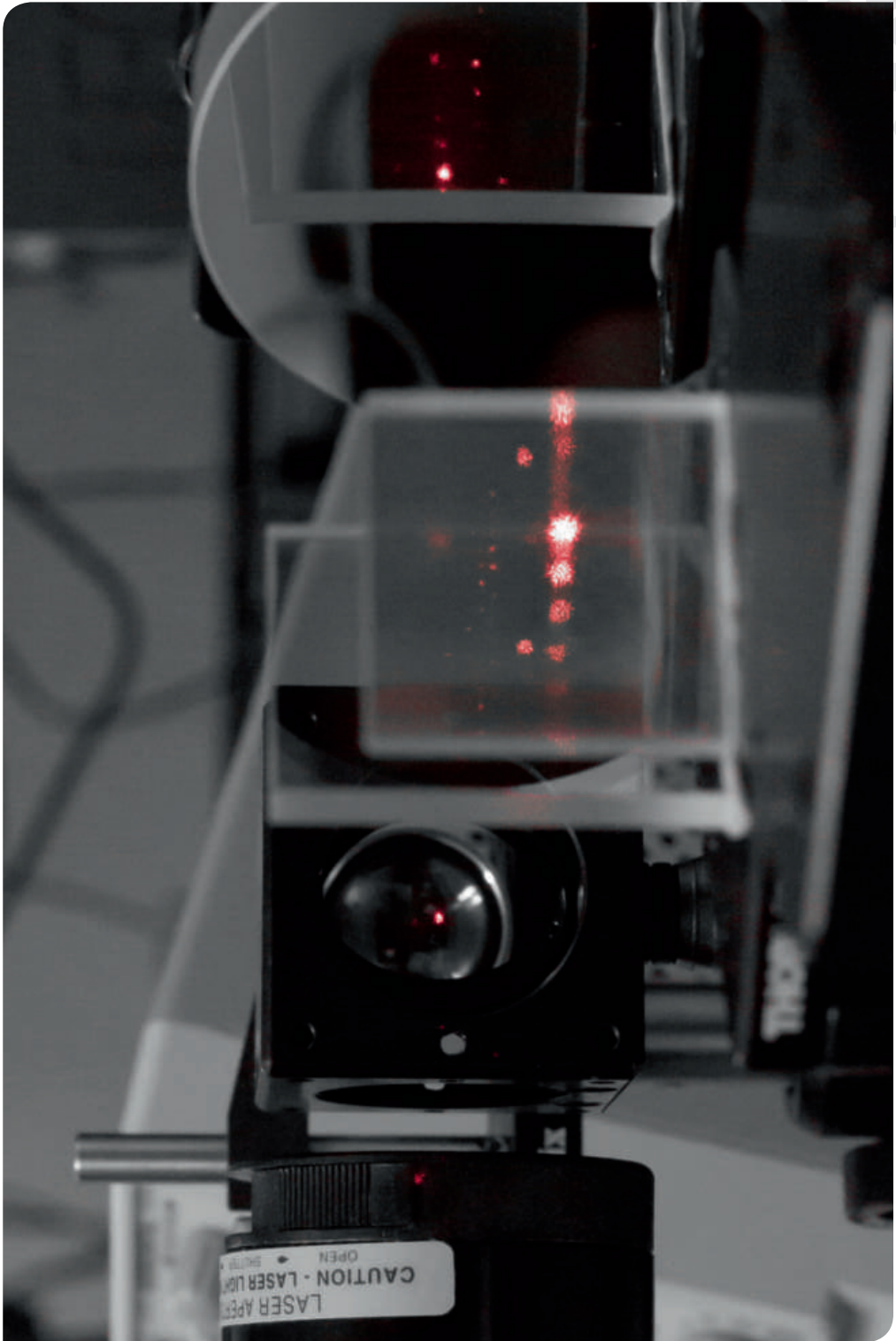
ERC grantee: Xiangqian Jiang

Host Institution: University of Huddersfield (United Kingdom)

ERC project: Fundamentals and principles for measurement and characterisation of 21st century science and engineering surfaces (SURFUND) + Development of a New Wavelength Scanning Interferometer for Embedded Metrology (EMInstr)

ERC call: Advanced Grant 2008 + Proof of Concept Grant 2014

ERC funding: EUR 1.9 million for five years + EUR 150 000



Dispersed reference interferometer (DRI)

© University of Huddersfield

Translation of science into social innovation



Human rights under pressure

Since its establishment in 1959, the European Court of Human Rights (ECHR) has delivered more than 10,000 judgments. Verdicts are rendered on State parties that, having ratified the European Convention of Human Rights, have nonetheless violated the civil and political rights set in this international treaty and its protocols.

Through her ERC research, Eva Brems questioned the accountability and reliability of this supranational court. Is it fit for purpose? How does the ECHR deal with the increasing pressure on human rights and current rights inflation? How do judges rule on claims referring to conflicting or competing human rights? What about the rights of non-dominant and minority groups?

For Prof Brems, in the past years the ECHR has shown increasing signs of weakness. The dynamic interpretation of the Convention has led to inconsistent case laws, undermining the credibility and persuasiveness of the Court's reasoning. To strengthen the European human rights protection system, Prof Brems identified new technical solutions and tools, combining an empirical and a normative approach. With the support of the ERC, she provided an extensive critical analysis of consistency and transparency issues in the Court's judgments. With her ERC team, she also developed new legal tools for the accommodation of the particularities of non-dominant groups, a framework for minimum and maximum approaches to human rights protection, a script for a consistent approach to conflicting human rights and an analysis on the delimitation of the scope of human rights and of the ECHR. Several normative proposals were presented to the Court for adoption.

The project methodology was also novel. To analyse the ECHR case law, the team used NVivo - a qualitative data analysis computer software package – combined with qualitative social science methods – such as interviews and focus groups - and discourse analysis.

The research project triggered significant public and media attention. Six international expert seminars and one international conference were organised and various journal articles, papers and books have been published from it.

ERC grantee: Eva Brems

Host institution: Ghent University (Belgium)

ERC project: Strengthening the European Court of Human Rights: More accountability through better legal reasoning (ECHR)

ERC call: Starting Grant 2009

ERC funding: EUR 1.4 million for four years



European Court of Human Rights, Strasbourg, France

© Council of Europe, Ellen Wuirbaux

Impact on researchers' careers



Building a career to discover how babies develop their understanding of others

The Theory of Mind - the ability to understand that others may have thoughts, beliefs, desires, and intentions different from ours - develops in early childhood and is considered as a key process to explain our social interactions. How do children acquire this ability? What are the cognitive and brain mechanisms that allow human beings to learn from others, to predict their behaviour and to communicate with them? These are some of the questions Dr Ágnes Melinda Kovács addresses, thanks to an ERC grant, in her laboratory in Budapest.

The path of this young scientist shows how ERC funding can support young promising researchers in having an independent career. After her university studies in Romania, Dr Kovács spent five years in Italy, where she completed her PhD, focusing on two areas of cognitive development, bilingualism and the Theory of Mind. She then moved to the Hungarian Academy of Sciences to carry out a research project backed by a Marie Curie fellowship. Two years after the award of her PhD, she submitted a proposal for the REPCOLLAB project in the ERC competition based on an idea stemming from her results. Her idea proved to be successful as she won a Starting Grant in 2011 to establish her own group and equip a state-of-the-art laboratory at the Central European University, launching her career as an independent researcher.

Dr Kovács currently leads a team of ten, including two postdoctoral researchers and six PhD students, who combine neuroscience investigation methods with philosophical thinking. They study the mechanisms dedicated to understanding the minds of others through a series of experiments on infants and adults based on modern brain imaging and behavioral techniques. Some of the studies have been performed in collaboration with researchers from Ghent University (Belgium). Four years after the start of her project, Dr Kovács has shown the potential to open new research avenues in her field. She has published scientific papers in top journals, chapters in books and has been invited to give talks and presentations in Europe and in the USA. Her reputation goes beyond the academic circles as she is often featured in major media outlets.

ERC grantee: Ágnes Melinda Kovács

Host Institution: Central European University (Hungary)

ERC project: Representational preconditions for understanding other minds in the service of human collaboration and social learning (REPCOLLAB)

ERC call: Starting Grant 2011

ERC funding: EUR 1.4 million for five years



© European Research Council

Major contributions to a specific research field



International recognition for ERC-funded research in archaeology

During the 3rd and 2nd millennium BC, the European continent experienced important social and cultural transformations, with the introduction of metal and the emergence of new languages and identities. Recent theories suggest that these major changes were triggered by people's migrations and cultural transmissions, challenging the perception of European prehistory as a series of unrelated local developments.

Kristian Kristiansen, a specialist in Bronze Age archaeology, was awarded an ERC grant to shed more light on the forging of new identities and new types of interaction during these two millennia in temperate northern Europe. These movements were highly relevant for the whole continent's later historical and cultural developments, including the spread of Indo-European languages. Prof Kristiansen's team has adopted an original interdisciplinary approach that combines archaeological methodology with modern biomolecular investigation techniques.

Strontium isotope tracing and study of ancient DNA is used to test people's provenance, migration and diet, as well as the origin of wool and textiles. Lead isotope is observed to trace the origin of copper in order to reveal the extent of trade. This work has attracted a wide interest in the European archaeological community and many researchers and institutions have offered samples to Prof Kristiansen's team allowing them to expand the geographical scope of the project, finally covering all Western Eurasia.

With this material and information at hand, they were able to conduct the first and largest continental-scale ancient DNA study - on 526 ancient individuals - and test some of the main hypotheses regarding societies, human migrations and transcultural flows in the Bronze Age. In fact, genomes obtained from ancient biological remains can provide information on past populations' history that is not retrievable from contemporary individuals. In 2015, the team reported on finding strains of *Yersinia pestis* as long as 5 000 years ago (*). This bacterium, which causes plague, was never found in such ancient remains; this discovery could mean that plague epidemics in the Bronze Age may have led to waves of migrants in the regions decimated by the deadly disease. The team also applied innovative methods of strontium isotopic tracing of human hair on a Bronze Age woman from Denmark, which made it possible to reconstruct her travels between south Germany and Denmark during the last two years of her life (**). Other results obtained so far suggest a highly organised international trade in textiles and copper.

These outcomes as well as the study on Population Genomics of Bronze Age Eurasia (***) had a resounding effect in the world press and won Prof Kristiansen a Research Award at the Second Shanghai Archaeology Forum (China) in December 2015. On this occasion, another four projects funded by the ERC received the same prestigious award, showing that the support of the ERC has been crucial for the top recent achievements in archaeological research.

ERC grantee: Kristian Kristiansen

Host Institution: University of Gothenburg (Sweden)

ERC project: Travels, transmissions and transformations in temperate northern Europe during the 3rd and 2nd millennium BC: the rise of Bronze Age societies (The Rise)

ERC call: Advanced Grant 2010

ERC funding: EUR 2.5 million for five years



© National Museum of Denmark

The Egtved coffin of a young high-ranking 18 year old woman, whose hair allowed to reconstruct her travels by applying strontium isotopic tracing



Map that shows the migrations from the early 3rd millennium BC through DNA of 101 prehistoric genomes (documented in Nature article)

(*) Simon Rasmussen *et al.* (2015): Early Divergent Strains of *Yersinia pestis* in Eurasia 5 000 Years Ago, *Cell*, Volume 163, Issue 3, p571–582, 22 October 2015

(**) Frei, K.M., Mannering, U., Kristiansen, K., Allentoft, M.E., Wilson, A.S., Skals, I., Tridico, S., Nosch, M. L., Willerslev, E., Clarke, L. & Frei, R. (2015): Tracing the life story of a Bronze Age girl with high societal status, *Nature Scientific Reports* 5, article number 10431

(***) Allentoft, M.E., Sikora, M., *et al.* (2015): Population genomics of Bronze Age Eurasia, *Nature* 522, 167–172





Advancing frontier research



ERC calls 2015

ERC Starting Grant call 2015

The 2015 ERC Starting Grant call was published in October 2014 with an indicative budget of EUR 430 million. In total, 2 920 proposals were received, distributed by domain as follows: 1 269 proposals in Physical Sciences and Engineering (44 %), 940 in Life Sciences (32 %) and 711 in Social Sciences and Humanities (24 %). A total of 349 proposals were selected for funding (data as of February 2016). Around EUR 520 million were awarded with an overall average grant size of around EUR 1.5 million.

The share of female applicants to Starting Grant 2015 was 35 % of all applicants. The share of female Principal Investigators was 28 % of all selected Principal Investigators in the call. Their success rate was 10 % compared to 13 % for male Principal Investigators.

ERC Consolidator Grant call 2015

The 2015 ERC Consolidator Grant call was published in November 2014 with an indicative budget of EUR 585 million. In total, 2 051 proposals were received, distributed by domain as follows: 959 proposals in Physical Sciences and Engineering (47 %), 627 in Life Sciences (30 %) and 465 in Social Sciences and Humanities (23 %). A total of 302 proposals were selected for funding (data as of February 2016). About EUR 600 million were awarded with an overall average grant size of around EUR 2 million.

The share of female applicants in the Consolidator Grant 2015 call was 29 % of all applicants. The share of female Principal Investigators was 31 % of all selected Principal Investigators in the call. Their success rate was 16 % compared to 14.5 % for male Principal Investigators.

ERC Advanced Grant calls 2014 and 2015

The 2014 ERC Advanced Grant call was published in June 2014 with an indicative budget of EUR 450 million. A total of 2 287 proposals were received, distributed by domain as follows: 1 057 proposals in Physical Sciences and Engineering (46 %), 705 in Life Sciences (31 %) and 525 in Social Sciences and Humanities (23 %). The evaluation process was finalised in June 2015 and 192 proposals were selected for funding. Around EUR 450 million were awarded with an overall average grant size of around EUR 2.3 million.

The share of female applicants to Advanced Grant 2014 was 14 % of all applicants. The share of female Principal Investigators was 10 % of all selected Principal Investigators in the call. Their success rate was 6 % compared to 9 % for male Principal Investigators.

The 2015 ERC Advanced Grant call was published in February 2015 with an indicative budget of EUR 630 million. In total, 1 953 proposals were received, distributed by domain as follows: 887 proposals in Physical Sciences and Engineering (45 %), 643 in Life Sciences (33 %) and 423 in Social Sciences and Humanities (22 %). The share of female applicants in the Advanced Grant 2015 call was 17 % of all applicants. The evaluation process was still in progress at the moment of printing this report.

ERC Proof of Concept call 2015

The 2015 ERC Proof of Concept call was published in November 2014, with a first deadline on 5 February, a second deadline on 28 May and a third one on 1 October, and a budget of EUR 20 million.

A total of 96 proposals were received for the first deadline, 107 for the second and 136 for the third.

The evaluation process resulted in a total of 45 proposals being retained for funding for the first deadline, 44 for the second and 46 for the third, for a total of 135 for the whole 2015 call (data as of February 2016).

The share of female applicants in the Proof of Concept 2015 call is 18 % of all applicants. The share of female Principal Investigators is 18 % of all selected Principal Investigators in the call. Their success rate was 41 % compared to 42 % for male Principal Investigators.

Table 1: ERC calls for proposals

ERC Call	Applications received	Of which		
		Evaluated *	Funded	Success rates (%) **
Starting Grant 2014	3 273	3 204	375	12 %
Starting Grant 2015	2 920	2 862	349	12 %
Starting Grant total	6 193	6 066	724	12 %
Consolidator Grant 2014	2 528	2 485	371	15 %
Consolidator Grant 2015	2 051	2 023	302	15 %
Consolidator Grant total	4 579	4 508	673	15 %
Advanced Grant 2014	2 287	2 250	192	9 %
Advanced Grant total	2 287	2 250	192	9 %
StG, CoG and AdG total	13 059	12 824	1 589	12 %
Proof-of-Concept 2014	442	426	121	28 %
Proof-of-Concept 2015	339	323	135	42 %
Proof-of-Concept total	781	749	256	34 %

** ineligible and withdrawn proposals not taken into account

Data as of February 2016

** basis: evaluated proposals"

Host Institutions

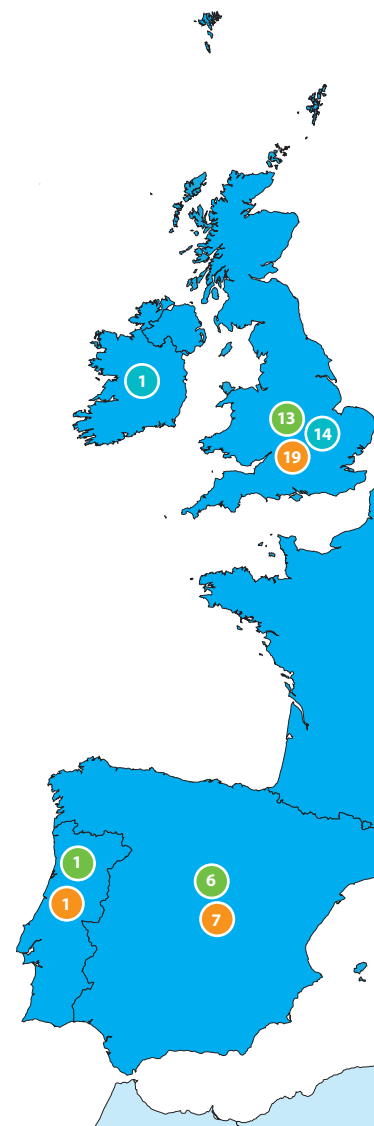
ERC competitions are open to any researchers anywhere in the world who want to conduct research in an EU Member State or a framework programme Associated Country. After the completion of ERC calls from 2007-2015, over 670 research institutions from 33 countries, both EU Member States and Associated Countries, host at least one ERC grantee. One third of the host research organisations have at least five ERC grantees.

The majority of the ERC grantees (86%) are hosted by institutions located in the EU and 14 % have a Host Institution in an Associated Country.

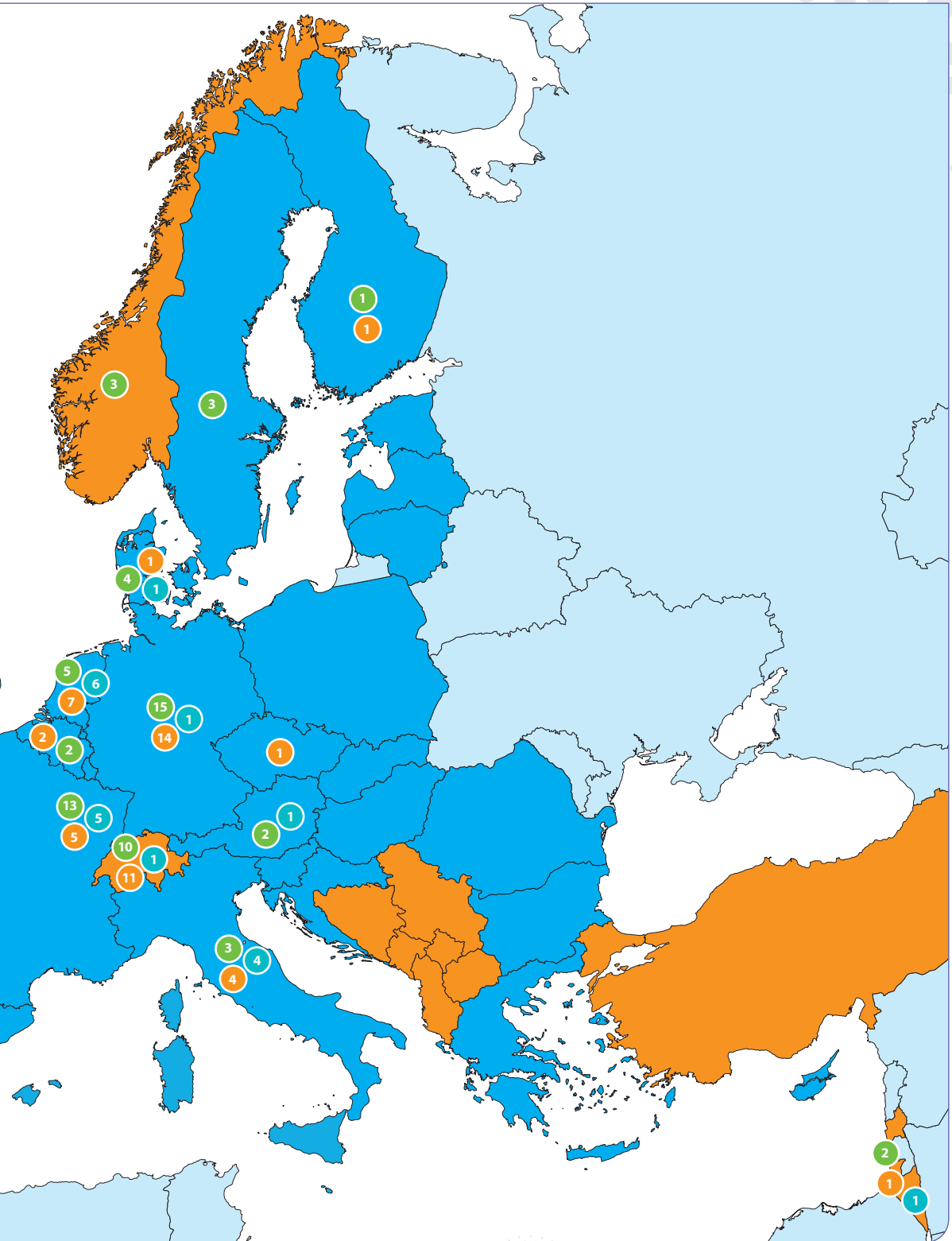
The ERC list of grantees also displays 67 nationalities, as declared by the Principal Investigators at the time of granting, which consists of all EU nationalities, eight Associated Countries and 31 nationalities outside the European Research Area (ERA). US nationals are by far the most common with 199 grantees, representing 43 % of all non-ERA grantees. Overall 8 % of ERC grantees are nationals of countries outside the ERA.

Map 1: ERC Advanced Grant: 2014 Call
Geographical distribution of grant holders

- Physical Sciences and Engineering
- Life Sciences
- Social Sciences and Humanities

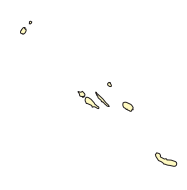
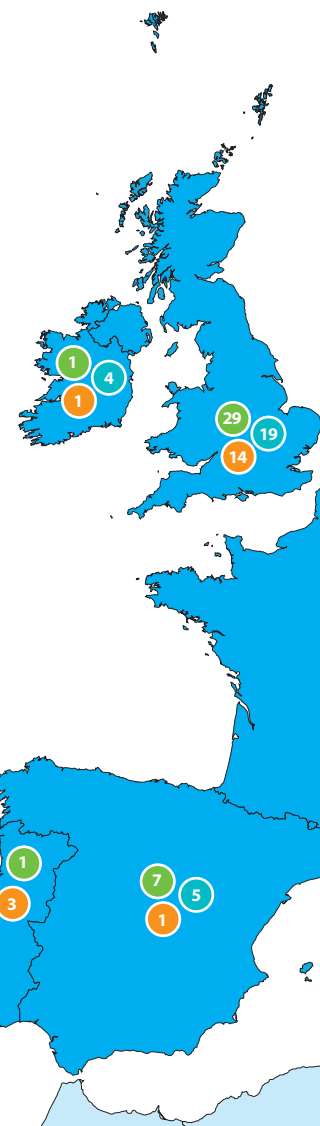


Data as of February 2016.
Host organisations that signed/were invited to sign the first grant agreement.

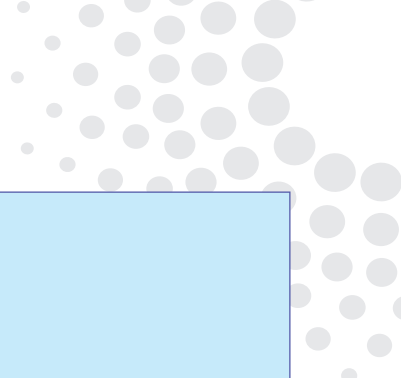
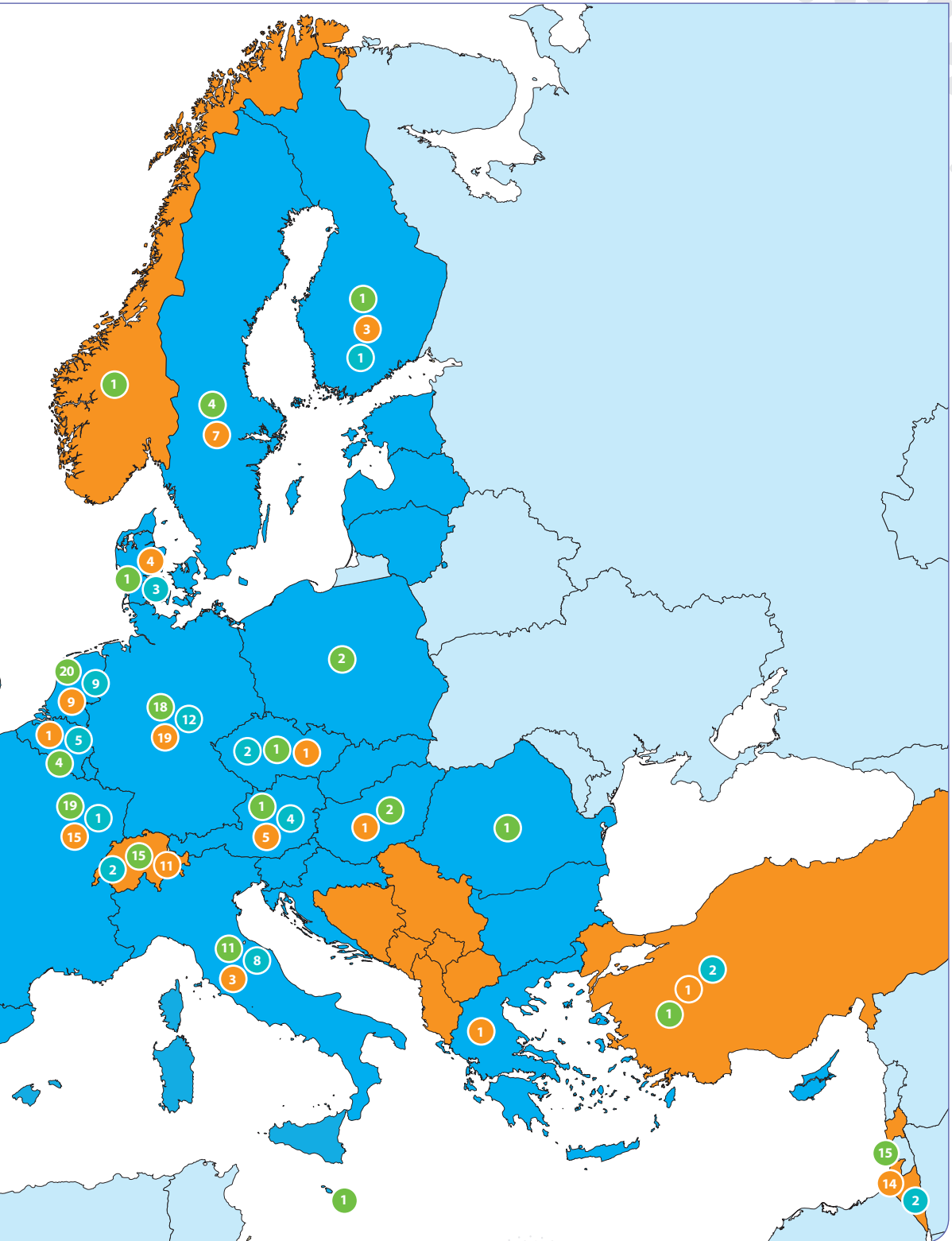


Map 2: ERC Starting Grant: 2015 Call
Geographical distribution of grant holders

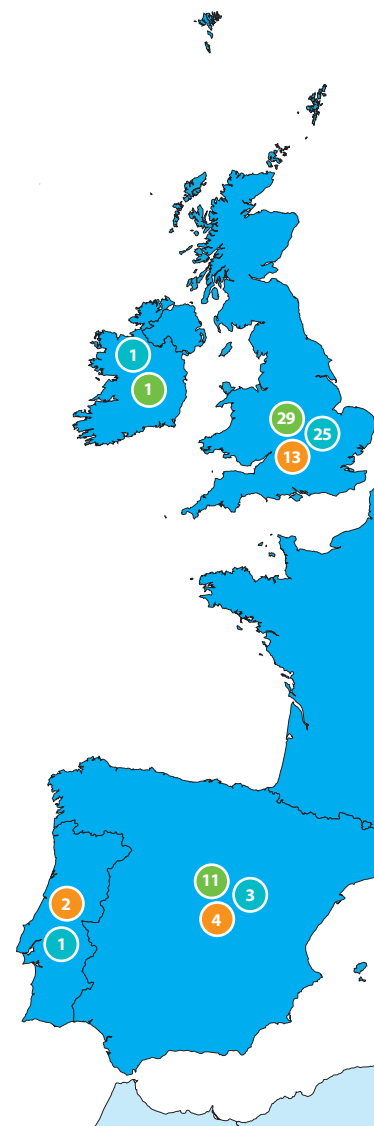
- Physical Sciences and Engineering
- Life Sciences
- Social Sciences and Humanities



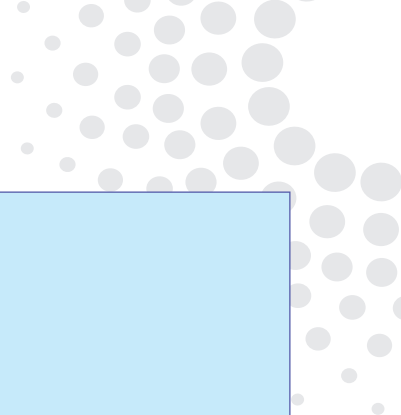
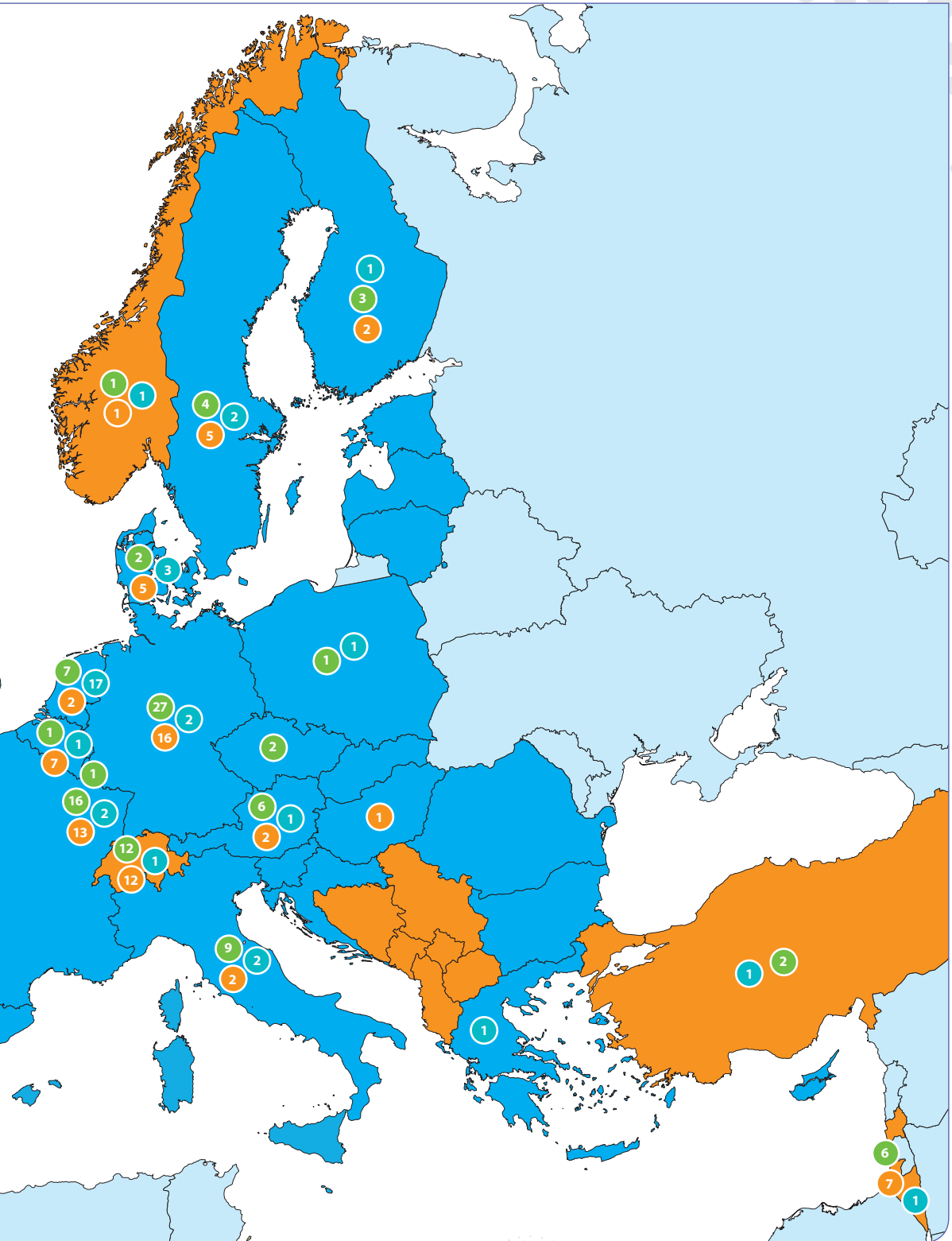
Data as of February 2016.
Host organisations that signed/were invited to sign the first grant agreement.



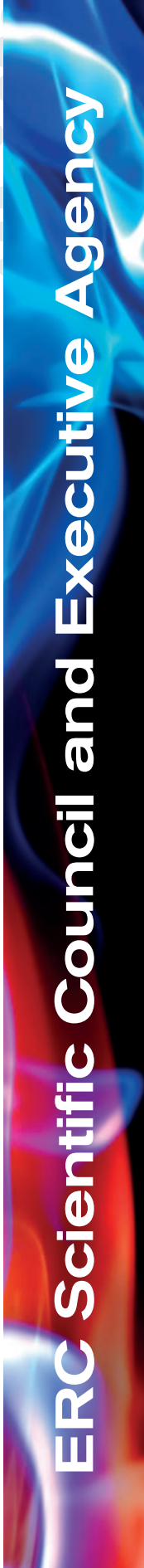
- Physical Sciences and Engineering
- Life Sciences
- Social Sciences and Humanities



Data as of February 2016.
Host organisations that signed/were invited to sign the first grant agreement.







4.1 The ERC Scientific Council

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

In 2007, 22 members were appointed by the European 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 scientific leaders and for their independence and commitment to research. Their term of office shall be limited to four years, renewable once, on the basis of a rotating system which shall ensure the continuity of the work of the Scientific Council.

Scientific Council members, appointed by the European Commission, are selected following a transparent procedure by an independent committee of seven highly respected personalities in European research. The identification procedure is agreed with the Scientific Council and includes consultation of the scientific community at large.

At the beginning of 2015, two ERC Vice-Presidents, Pavel Exner and Carl-Henrik Heldin, handed over their responsibilities to Sierd Cloetingh and Mart Saarma, who had already served on the ERC Scientific Council. At the same time, the Scientific Council welcomed three new members in February: Tomas Jungwirth, Janet Thornton and Fabio Zwirner; and two more in July: Margaret Buckingham and Michael Kramer. The names of the members of the Scientific Council who served in 2015 can be found on page 74 of this report.

ERC President



Prof Jean-Pierre Bourguignon

Jean-Pierre Bourguignon, an internationally respected mathematician — who was Director of the Institut des Hautes Études Scientifiques near Paris from 1994 to 2013 and a CNRS fellow all his professional life — took office as new President of the ERC on 1 January 2014 for a four year term, renewable once.

He was appointed by the European 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 Horizon 2020 legislation, the ERC President is employed as Special Adviser to the European Commission, and resides in Brussels for the duration of the appointment.



Meetings

The Scientific Council held regular meetings in 2015 both in Brussels and across Europe, usually at the invitation of national authorities. Meeting in different countries, 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 2015: in February, April and December in Brussels (Belgium), in June in Strasbourg (France) and in October in Tallinn (Estonia).

Retreat (end-May 2015) - The Scientific Council ran its retreat at the Mathematisches Forschungsinstitut in Oberwolfach (MFO) during the weekend of 30-31 of May. Following a general introduction and some historical perspective, in its discussions, the council addressed among others, the following areas: funding of interdisciplinary research; mechanisms that may improve wider European participation; the functioning of the Scientific Council; coverage of scientific domains and disciplines during evaluation. The debate was concluded focussing on the future outlook of the ERC, in terms of its funding strategy as well as its functioning.

Standing Committees and Working Groups - 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 to provide guidance on conflicts of interest, scientific misconduct and ethical issues (ColME) and the second to deal with the selection of evaluation panellists (Committee on Panels). The Executive Agency supported the operational activities of the two committees, which met two and four times respectively in 2015.

The members of the Scientific Council also meet in Working Groups (WGs) addressing specific issues. In 2015, various meetings of the ERC WGs on innovation and relations with industry, open access, strengthening international participation, gender balance, key performance indicators and widening European participation were organised by the Executive Agency. A series of working documents containing analyses and key messages on the specific issues dealt with by the WGs and by the standing committees were prepared by the Executive Agency, in collaboration with members of the groups.

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 gender balance in research; to explore suitable mechanisms to increase the participation of researchers in ERC calls from countries outside the EU; to develop a roadmap for monitoring and evaluating the ERC's accomplishment of its mission, beyond indicators and targets, to support the short-, medium- and long-term policies of the Scientific Council; and to encourage Central and Eastern European countries to better nurture their scientific talent and invest more in research.



Two new groups started their activities in 2015, a Taskforce on interdisciplinary research and a Working Group on “Science Behind the Projects”.

Taskforce on interdisciplinary research: as a follow up of discussions during its retreat in Oberwolfach on 30-31 May, the Scientific Council decided to set up a Taskforce to propose possible measures to explicitly encourage the funding of innovative, interdisciplinary projects and to address any shortcomings in the selection process which may hinder the funding of interdisciplinary projects.

The Taskforce, chaired by the ERC Scientific Council member Martin Stokhof, considered various options and submitted its recommendations to the December plenary meeting of the Scientific Council. The Taskforce proposed to maintain the current policy of mainstreaming the evaluation of proposals whose research lines span more than one evaluation panel. In this context it was discussed to systematically invite to evaluation meetings of a given proposal those experts who have performed the review in the other evaluation panel. As a possible measure to encourage the funding of interdisciplinary projects, the Taskforce proposed a new funding scheme which would target high-risk and innovative proposals that explicitly explore new forms of interdisciplinarity.

In plenary, the Scientific Council decided that this idea of a new scheme will be considered in the context of the discussions about the future of the Synergy funding scheme.

“Science Behind the Projects” is an ex-ante content analysis of the ERC-funded projects, using expert judgment (i.e. the ERC scientific officers) that will enable ERC to systematically report on the research areas/topics/fields that are funded, including on funding trends.

The role of the new Working Group on “Science Behind the Projects” is to elaborate the methodology of this exercise and construct the data model. The data collection is expected to begin in September 2016 and continue over the entire Horizon 2020.

The exercise builds on the experience gained in the previous similar analysis conducted on the ERC projects funded during the FP7.

In 2015, a group chaired by the Scientific Council Vice-President Sierd Cloetingh and including ERC Scientific Council members supported by three external experts conducted a series of site-visits to the Synergy projects currently funded and finalised the **assessment of the Synergy Grant scheme**. The group presented its outcome during the December plenary meeting of the Scientific Council and recommended reintroducing the Synergy scheme in the 2018 Work Programme as it was considered to be a valuable addition to the current portfolio of the ERC funding schemes because of its high international recognition and the fact that it puts European research on the global map, often in a leading position. The Scientific Council decided to establish a Taskforce to work out the implementation arrangements including the resources needed, aspects of the evaluation process and the development of a new funding scheme which would support the exploration of innovative forms of interdisciplinarity.

The Taskforce will present its recommendations for considerations for the 2018 Work Programme.



Support to the Scientific Council

Due to the 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 to fulfil its tasks.

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 ERC annual Work Programme and this Annual Report. In 2015, briefings, presentations and data analysis on the ERC's performance were prepared by the unit for the ERC President (57) and several members of the Scientific Council (47) 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 unit also produced and published the report "ERC funding activities 2007-2013 - Key facts, patterns and trends" (https://erc.europa.eu/sites/default/files/publication/files/ERC_funding_activities_2007_2013.pdf).

The ERC Board

To further assure its liaison with the European Commission and the Executive Agency, the President and Vice-Presidents of the Scientific Council 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 ten times in 2015, in particular to prepare or provide follow up to meetings of the Scientific Council.


Case reporting on scientific misconduct and conflict of interest

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. In 2015 the CoIME gave its advice on 12 cases of alleged scientific misconduct, including three cases of peer reviewers' conflict of interest. The following is a report of the six cases dealt with and closed in 2015. In six more cases (including the three cases of conflict of interest) the final decision was still pending at the end of the year.

Cases of scientific misconduct

Plagiarism

An allegation on potential scientific misconduct was sent to the ERC by a panel member who seemed to have identified a plagiarism case in one of the proposals assigned to his/her evaluation panel: the background section of one part of the application seemed to have been copied from the introduction of a paper and a figure seemed to have been copied from another paper. The case was closed with the proposal being kept in evaluation, but the applicant received a letter warning him/her about the inappropriateness of extensive rephrasing from other authors. The director of the applicant's HI was also informed.



In a second case of alleged plagiarism, a remote referee alerted the ERC that an applicant had reused text from a research article in a proposal submitted to the ERC. The case was closed with a letter of reprimand sent to the applicant letting him/her know that proper acknowledgement of sources was expected.

A third case of alleged plagiarism examined by the CoIME in 2015 referred to a pending case. The ERCEA received an allegation from a scientist arguing that some of the concepts related to an ERC-granted project and published by the PI and co-authors had been presented by the complainant earlier, at a conference in 2004 and then published. A close comparison of concepts and texts of the papers published respectively by the PI and the complainant led to the conclusion that there was no sign of lack of originality or evidence of plagiarism in the PI's publications. No scientific misconduct was detected in this case.

Discrepancy in order of authorship

The ERCEA was alerted by a panel chair that in an application to the ERC there were discrepancies in the order of authorship in the 10-years publication record of the PI compared to SCOPUS. In particular, for two Nature publications the order of authorship in the application did not correspond to the order in the published papers. The CoIME concluded that the behaviour of the PI was to be considered ethically incorrect, but of a relatively minor nature. Also, as the outcome of the evaluation was negative for this proposal, there was no need for any further action.

Accusation of mismanagement of institutional funds

The former director of an Institute in the HI of an ERC-funded PI accused the PI of “unbecoming conduct” bringing forward arguments concerning conversations about discontent on the way the Institute was functioning. The complaint seemed rather to result from internal tensions within the HI and should therefore be addressed by the governing body of this research centre, since this was not a case of scientific misconduct related to the ERC grant.

Unauthorised use of unpublished information

A researcher warned the ERC that he/she had some reasons to fear that the PI of an ERC proposal would make use of his/her team's still unpublished research results. The complainant believed that it was important for the ERC to take this aspect into consideration when deciding about the proposal. Following a request for clarification, the CoIME was satisfied with the explanation given by the PI that neither he/she nor any other member of the research group had ever received or was ever made aware of any confidential or unpublished or even partially published information about experiments made by the “competing group”. This was confirmed by members of the “competing group”. No scientific misconduct was detected in this case.



Cases where the last paragraph of Article 2.2 of the Code of Conduct for evaluators applies

According to the Code of Conduct for evaluators, in the following situations the ERCEA, in consultation with the ERC Scientific Council, has to decide whether a conflict of interest exists, taking account of the objective circumstances, available information and related risks. The decision may be that the evaluator takes part or not in the evaluation of the given proposal (“out of the room” rule) or of the entire call (“out of the call” rule) when the evaluator:

- i) was employed by one of the applicant legal entities in the last three years;
- ii) is involved in a contract or grant agreement, grant decision or membership of management structures (e.g. member of management or advisory board etc.) research collaboration with an applicant legal entity or a fellow researcher, or had been so in the last three years;
- iii) is in any other situation that could cast doubt on their ability to participate in the evaluation of the proposal impartially, or that could reasonably appear to do so in the eyes of an external third party.

The CoIME, on behalf of the Scientific Council, discussed 24 cases of this type of conflict of interests, with particular focus on cases of panel members being members of advisory boards and cases of scientific collaboration between panel members and applicants. The “out of the call” rule was applied in six of the cases, while the “out the room” rule was applied for the remaining 18 cases.

4.2 The ERC Executive Agency

The Executive Agency implements the actions under Part I 'Excellent science' which relate to the specific objective 'Strengthening Europe's science base in frontier research' of the European Union's Horizon 2020 framework programme for research and innovation, 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 Specific Programme implementing the framework programme Horizon 2020.

Structure



Pablo Amor
Director ERCEA

The organisational structure of the Agency follows its operational and horizontal objectives. It consists of two operational departments (the Scientific Management Department and the Grant Management Department) and one Resources and Support Department. The accounting officer, the Communication Unit and the Support to the Scientific Council Unit report directly to the Director Pablo Amor (see page 80).

Steering Committee



Robert-Jan Smits
*Director-General
DG RTD*

The Steering Committee of the ERCEA is the body that supervises the operations of the Agency and adopts its annual Work Programme, administrative budget and the Agency's annual activity report.

It is composed of five members, appointed by the European Commission for a (renewable) period of two years. The Steering Committee in office until the end of 2015 was chaired by Robert-Jan Smits, Director-General of the Directorate-General for Research and Innovation (DG RTD) and comprised Jack Metthey, Director for Policy development and coordination in DG RTD (Vice-chair of the Steering Committee); Henk Post, permanent rapporteur to the Consultative Committee on Appointments; Sierd Cloetingh, and Eva Kondorosi, both members of the ERC Scientific Council.

The ERCEA Steering Committee met four times in 2015 and took six decisions on the ERCEA provisional accounts 2014, the ERCEA draft administrative budget 2016, the revised organisation chart, the ERCEA final accounts 2014, the ERCEA Annual Work Programme 2016 and the ERCEA administrative budget 2016.

During 2015, the Steering Committee also took eight decisions through written procedures. The majority of those concerned implementing rules to staff regulations (namely on measures concerning unpaid leave, on the appraisal and reclassifications of temporary and contractual staff, and on the engagement and use of temporary staff) in addition to the adoption of the Agency's Annual Activity Report 2014 and the modification of the administrative budget 2015.

In every meeting of the ERCEA Steering Committee, the ERCEA Director provides an extensive state of play of the activities of the Agency.

Staff and recruitment

The 2015 operating budget provided for the employment of 108 temporary agents, 302 contract agents (including 12 contract agents financed with the contribution of candidates and non-EU countries for their participation in H2020) and 15 seconded national experts, adding up to a total of 425 agents.

At the end of December 2015, the Agency employed a total of 417 agents: 108 temporary agents, 298 contract agents and 11 seconded national experts.

Figure 1: Gender distribution of ERCEA staff

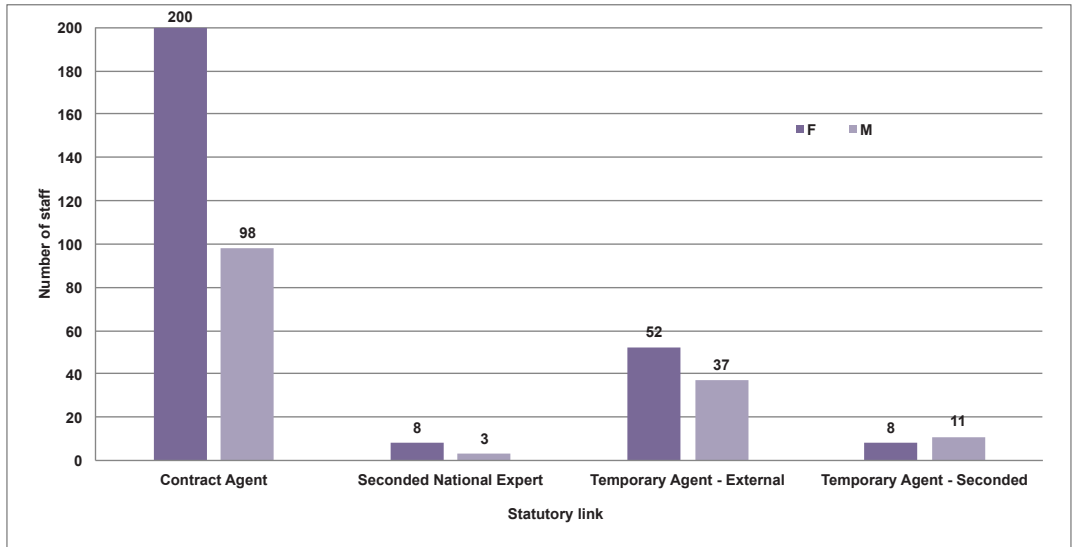
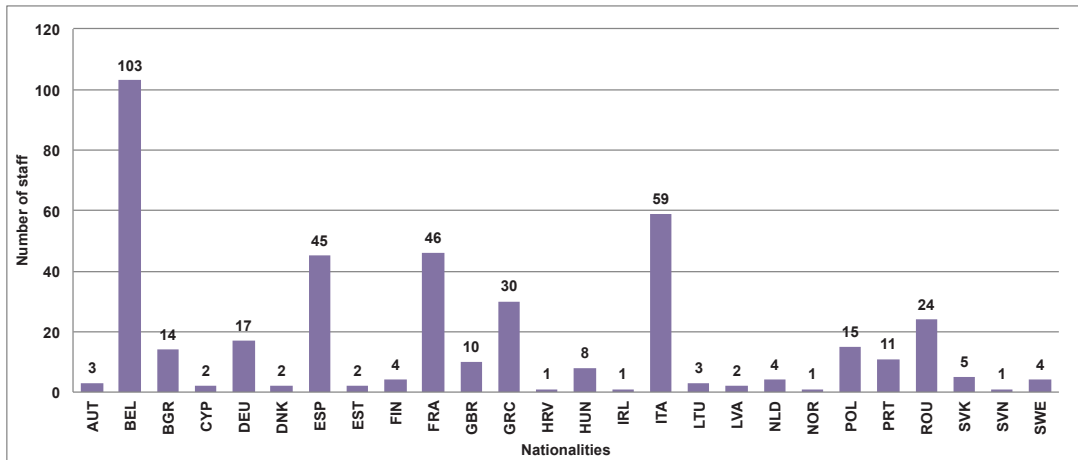


Figure 2: ERCEA staff by nationality



Statistics of December 2015 show that the Agency continues employing 64 % women and 36 % men. With regards to gender balance of highly specialised staff (temporary agents and contract agents function group IV), 56 % of the posts are occupied by women. At the end of 2015, the ERCEA employed nationals from 25 EU Member States and one EFTA Member State.

The staff allocation of 2016 plans that the Agency will grow by 36 new staff out of a total of 140 new posts expected in the years up to 2020.

4.3 Communication

In 2015, the ERC Communication Unit continued its efforts in pursuit of the ERC’s mission to encourage the highest quality research in Europe, as well as to efficiently deliver useful and interesting information to all stakeholders and the general public on the ERC’s activities and achievements. The communication activities focused on three main strategic pillars: consolidating and widening high quality participation in ERC schemes; highlighting projects and researchers funded by the ERC; increasing the visibility of the ERC and explaining its impact and achievements in Europe and across the world.

In order to ensure that excellent researchers from all over Europe are aware of the ERC and its funding schemes, it organised and attended numerous events in Europe.

In 2015, the ERC organised many sessions or talks, and was present either with its own stand or as a part of a common European Commission one at 21 scientific conferences, seminars, or career fairs, such as the International Conference on Robotics and Automation (ICRA) in Seattle (USA), the International Congress of Historical Sciences (ICHS) in Jinan (China), the International Conference in Industrial and Applied Mathematics in Beijing (China) and the American Society for Cell Biology Meeting in San Diego (USA). The ERC also attended the World Conference of Science Journalists in Seoul, South Korea, to promote the ERC and to present the work of two ERC grantees.

In 2015, a total of five thematic brochures focusing on a specific research field were produced. They were compiled on the occasion of events where the ERC was present and covered “History”, “Robotics” and “Universe science” projects, as well as more focused themes related to the Annual meeting of the American Association for the Advancement of Science (AAAS) and the 5 000th ERC grant events.

On top of that, the ERC continued its tradition of taking part in EU research promoting initiatives organised by DG Research and Innovation across the world. ERC representatives presented the ERC calls at all five “Destination Europe” events in 2015 – three in the USA, and one in Canada and Brazil. Moreover, the ERC representatives and grant winners promoted ERC funding opportunities at Euraxess Links events carried out this year in Malaysia, Thailand and India.

The ERC National Contact Points, based across Europe and beyond, and serving as information multipliers to potential applicants, were continuously kept informed about ERC calls and relevant news via email. They also attended a meeting that was organised in Brussels.



Several brochures featuring ERC projects and grantees were produced





During 2015, over 33 press announcements were published. They covered topics such as the ERC 2015 call results, ERC-funded research projects, nominations of new ERC Scientific Council members and important overseas visits. In addition to this, the ERC press office facilitated around 40 media interviews for the ERC President Bourguignon.

The ERC also communicated on the signature of new agreements to encourage scientific exchange between the ERC and key institutions of Argentina, Japan, China, South Africa, and Mexico. Thanks to these press activities, the ERC was mentioned in some 7 263 articles, of which 1 569 were published in print media, with over 72 million readers potentially reached.

The Communication Unit's intensified efforts to improve the ERC's online presence resulted in a significant increase in its reach in social media and of the total number of website visitors. More than 550 000 unique visitors consulted the ERC website in 2015. This represents an increase of 20% compared to 2014. With social media like Twitter and Facebook now becoming main channels



 More than 10 000 likes were reached by the end of 2015. The ERC Facebook page puts the spotlight on ERC grantees and their projects

 A tool to provide timely information on calls, projects' results and events, counting almost 20 000 followers

for the dissemination of information, the ERC is making sure its presence there is strong not only by providing information, but also by doing it in an engaging and interactive manner. Followers of the ERC Twitter account almost doubled in 2015, reaching nearly 20 000. There was also a very substantial increase by 44 % in the number of Facebook followers. In total, the ERC ended the year with 10 332 followers.

During the year, the ERC Communication Unit also introduced a new search engine on the ERC stories page, which allows to filter the comprehensible summaries of projects according to the research area (per panel or domain) or the country of host institution (erc.europa.eu/projects-and-results/erc-stories).

One of the highlights of the year was the signature of the 5 000th ERC grant in June. As indicated in the first chapter of this report the milestone was marked by a 200-guest event in Brussels, an exhibition stand and a debate on the ERC with its President at the European Parliament. The media coverage included 60 articles and TV reports across five EU Member States, and a 30-minute BBC World Service radio debate regarding the ERC. Media attention was particularly extensive in Croatia, the home country of the 5 000th grantee, including on major Croatian TV channels and daily newspapers.

Another big part of the 2015 ERC media coverage was dedicated to the ERC's participation at major international events, such as the World Economic Forum (WEF) meetings in Davos (Switzerland) and in Dalian (China), and the Annual meeting of AAAS, in 2015 in San Jose (USA).

For the third time, the ERC attended the WEF meeting in Davos in January with 11 ERC grantees invited. An ERC press conference took place with as speakers the European Commissioner for Research, Science and Innovation Carlos Moedas, the ERC President Jean-Pierre Bourguignon and the grantee and Nobel Prize laureate Christopher Pissarides, resulting in numerous interviews. This generated significant media coverage, nearly 40 items, in 11 countries and internationally, including on Swiss national TV SRF and the BBC, as well as in Volkskrant (The Netherlands), AFP (France), TV Monde online (France), Expresso (Portugal), the Business Standard (India), Der Standard (Austria) and Xinhua Press Agency (China).



ERC President Jean-Pierre Bourguignon with Chairman of the EP's Committee on Industry, Research and Energy (ITRE) Jerzy Buzek on the occasion of the 5 000th grant celebration



5 000th grantee Iva Tolić shakes hand with Poppy, the first open-source robot resulting from an ERC project



ERC grantee François Pachet at the ERC stand at the European Parliament

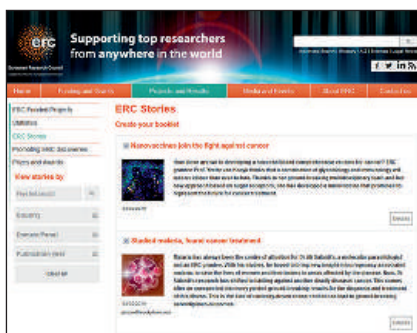


ERC stand at the International Convention of Psychological Science (ICPS) Amsterdam, The Netherlands

The ERC's presence at the annual meeting of the AAAS, the world's largest general scientific society, in February, was also prominent. The event, which took place in San Jose (USA), accommodated three ERC scientific sessions and a career workshop. Subsequently, ERC media activities and a press briefing with the ERC President, ERC Starting Grant winner Ann Heylingen and the American ERC Advanced Grant winner Steven Vertovec led to coverage in nine countries in total – the USA, India and seven EU Member States such as BBC online, Agence France Press, Le Figaro and RTBF.

During the Annual Meeting of New Champions, the so-called “Summer Davos”, in Dalian (China), there were eight ERC sessions and a press briefing. The latter, entitled “Ambitious research, a key ingredient for Europe's growth”, featured Commissioner Carlos Moedas, the ERC President and the ERC Starting grantee Panayiota Poirazi as speakers. Over 40 media items covered the ERC participation, of which the vast majority (over 80%) was in China. Interviews with the ERC President Bourguignon and the Vice-President Núria Sebastián Gallés appeared in articles in major Chinese news portals and daily newspapers.

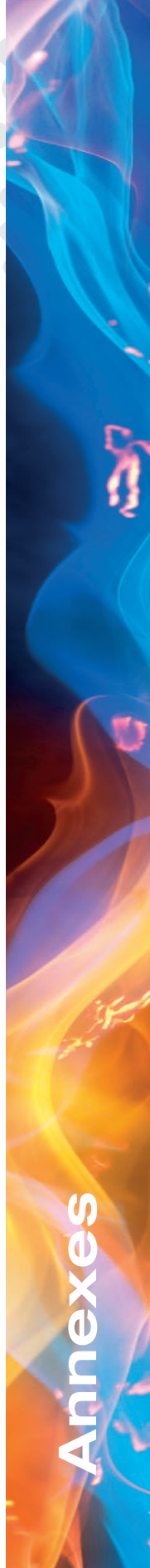
In a targeted action to increase the ERC's visibility in Brussels and among the EU institutions, the ERC attended the 10th anniversary of the European researchers' night at the Autoworld Museum in September. Moreover, the ERC was featured extensively in the November issue of the European Commission magazine Commission en Direct in order to gain more visibility among the European Commission's staff.



A new search engine on the ERC stories page, which allows to filter the stories according to research area (per panel or domain), country of Host Institution and publication year



The ERC was featured in the November issue of the European Commission internal magazine Commission en Direct



Annexes



Members of the Scientific Council in 2015



Prof Jean-Pierre BOURGUIGNON

- President, European Research Council
- Director Emeritus of Research at CNRS
- Director, Institut des Hautes Études Scientifiques (IHÉS), Paris, 1994-2013
- President, Société Mathématique de France, 1990-1992
- President, European Mathematical Society, 1995-1998
- Doctor Honoris Causa: Keio University, Japan and Nankai University, China
- Main research field: Mathematics



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 Margaret BUCKINGHAM

- Emeritus director of research in the CNRS and professor at the Pasteur Institute, Paris
- Member of EMBO Council
- Member of the French Academy of Sciences
- Officer in the Ordre National du Mérite and in the Ordre de la Légion d'Honneur
- Gold medal of the CNRS (2013)
- Foreign/honorary member of the Royal Society of London/Edinburgh
- Main research field: biomedical implications for congenital heart malformations



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

- Vice-President, European Research Council
- Head Tectonics Group, Dept. of Earth Sciences, Faculty of Geosciences, Utrecht Uni.
- President International Lithosphere Programme;
- 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 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



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 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 Thomas JUNGWIRTH

- Head of the Department of Spintronics and Nanoelectronics, Institute of Physics, Academy of Sciences of the Czech Republic (ASCR)
- Professor, School of Physics and Astronomy University of Nottingham, UK
- Main research field: physics and astrophysics condensed matter physics, materials science, electronic properties of nanostructures



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



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 Dr Michael KRAMER

- Director and Scientific member at the Max Planck Institute for Radio Astronomy
- Professor for Astrophysics at the University of Manchester
- Herschel Medal of the Royal Astronomical Society in the UK (2013)
- Main research field: radio astronomy with a focus on the observations of pulsars for experimental tests of gravitational physics



Prof Mart SAARMA

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



Prof Nuria SEBASTIAN GALLES

- Vice-President, European Research Council
- 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 Niels Chr. STENSETH

- Professor and Chair, Centre for Ecological and Evolutionary Synthesis (CEES), University of Oslo
- Chair, Nordic Centre for Research on Marine Ecosystems and Resources under Climate Change (NorMER)
- President, Norwegian Academy of Science and Letters (DNVA)
- Chevalier (Knight) in the French National Order of the Legion of Honour
- Main research fields: Ecology and Evolution



Prof Martin STOKHOF

- Professor, Institute for Logic, Language and Computation (ILLC) and University of Amsterdam
- Member of the Dutch Royal Academy of Sciences
- Main research field: philosophy of language



Prof Janet THORNTON

- Director of the European Molecular Biology Laboratory - European Bioinformatics Institute on the Wellcome Trust Genome Campus
- Dame Commander of the Order of the British Empire for services to bioinformatics
- Elected to the Royal Society in 1999
- Main research field: protein structural bioinformatics and the computational biology of ageing



Prof Isabelle VERNOS

- Research Professor ICREA (Institutió 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



Prof Michel WIEVIORKA

- Professor, Ecole des Hautes Etudes en Sciences Sociales, Paris
- Chair, Fondation Maison des Sciences de l'Homme, Paris
- Doctor Honoris Causa, Pontificia Universidad Católica del Perú
- Main research fields: social movements, racism, terrorism, violence, multiculturalism and cultural differences



Prof Fabio ZWIRNER

- Professor of Theoretical Physics, Department of Physics and Astronomy "G. Galilei", University of Padua
- Chairman of the CERN Scientific Policy Committee (2011-13)
- Prof of High Energy Particle Physics Board of the European Physical Society (2009-11)
- Main research field: physics and astrophysics



Panel Chairs of the ERC Peer Review Panels ERC Starting Grant Panels 2015

Life Sciences

- LS1 Molecular and Structural Biology and Biochemistry: Prof Musacchio Andrea
- LS2 Genetics, Genomics, Bioinformatics and Systems Biology: Prof Vingron Martin
- LS3 Cellular and Developmental Biology: Prof Bray-Brown Sarah
- LS4 Physiology, Pathophysiology and Endocrinology: Prof Rosenthal Nadia
- LS5 Neurosciences and Neural Disorders: Prof Konnerth Arthur
- LS6 Immunity and Infection: Prof Zamoyska Rose
- LS7 Diagnostic Tools, Therapies and Public Health: Prof Peters Annette
- LS8 Evolutionary, Population and Environmental Biology: Prof Jordano Barbudo Pedro
- LS9 Applied Life Sciences and Non-Medical Biotechnology: Prof Nielsen Kåre Magne

Social Sciences and Humanities

- SH1 Markets, Individuals and Institutions: Prof Botticini Maristella
- SH2 The Social World, Diversity, Institutions and Values: Prof Wall Karin
- SH3 Environment, Space and Population: Prof Cherp Aleh
- SH4 The Human Mind and Its Complexity: Prof McNally Seifert Louise
- SH5 Cultures and Cultural Production: Prof Catoni Maria Luisa
- SH6 The Study of the Human Past: Prof Westad Odd Arne

Physical Sciences and Engineering

- PE1 Mathematics: Prof Grabowski Janusz
- PE2 Fundamental Constituents of Matter: Prof Mølmer Klaus
- PE3 Condensed Matter Physics: Prof Triscone Jean-Marc
- PE4 Physical and Analytical Chemical Sciences: Prof Nordén Bengt
- PE5 Synthetic Chemistry and Materials: Prof Madder Annemieke
- PE6 Computer Science and Informatics: Prof Preneel Bart
- PE7 Systems and Communication Engineering: Prof André Elisabeth
- PE8 Products and Process Engineering: Prof Zacchi Guido
- PE9 Universe Sciences: Prof Guzzo Luigi
- PE10 Earth System Science: Prof Conley Daniel

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



Panel Chairs of the ERC Peer Review Panels ERC Consolidator Grant Panels 2015

Life Sciences

- LS1 Molecular and Structural Biology and Biochemistry: Prof Saibil Helen
- LS2 Genetics, Genomics, Bioinformatics and Systems Biology: Prof Mandrup Susanne
- LS3 Cellular and Developmental Biology: Prof Genschik Pascal
- LS4 Physiology, Pathophysiology and Endocrinology: Prof Schneider Michael David
- LS5 Neurosciences and Neural Disorders: Prof Schwab Martin Ernst
- LS6 Immunity and Infection: Prof Haller Dirk
- LS7 Diagnostic Tools, Therapies and Public Health: Prof Ylä-Herttuala Seppo
- LS8 Evolutionary, Population and Environmental Biology: Prof Lopez-Garcia Purificación
- LS9 Applied Life Sciences and Non-Medical Biotechnology: Prof Navarro Lucas Luis

Social Sciences and Humanities

- SH1 Markets, Individuals and Institutions: Prof Bisin Alberto
- SH2 The Social World, Diversity, Institutions and Values: Prof Börzel Tanja
- SH3 Environment, Space and Population: Prof Reggiani Aura
- SH4 The Human Mind and Its Complexity: Prof Pléh Csaba
- SH5 Cultures and Cultural Production: Prof Buchowski Michal
- SH6 The Study of the Human Past: Prof Harvati-Papatheodorou Katerina

Physical Sciences and Engineering

- PE1 Mathematics: Prof Holden Helge
- PE2 Fundamental Constituents of Matter: Prof Wiersma Diederik
- PE3 Condensed Matter Physics: Prof Ciliberto Sergio
- PE4 Physical and Analytical Chemical Sciences: Prof Guldi Dirk
- PE5 Synthetic Chemistry and Materials: Prof Ikkala Olli
- PE6 Computer Science and Informatics: Prof Peleg David
- PE7 Systems and Communication Engineering: Prof Demeester Piet
- PE8 Products and Process Engineering: Prof Saravanos Dimitris A.
- PE9 Universe Sciences: Prof Meylan Georges
- PE10 Earth System Science: Prof Stohl Andreas

The list of all Panel Members is available at:

<http://erc.europa.eu/evaluation-panels>





Panel Chairs of the ERC Peer Review Panels ERC Advanced Grant Panels 2015

Life Sciences

- LS1 Molecular and Structural Biology and Biochemistry: Prof Izaurrealde Elisa
- LS2 Genetics, Genomics, Bioinformatics and Systems Biology: Prof Bork Peer
- LS3 Cellular and Developmental Biology: Prof Baccarini Manuela
- LS4 Physiology, Pathophysiology and Endocrinology: Prof Borst Piet
- LS5 Neurosciences and Neural Disorders: Prof Barker Roger A.
- LS6 Immunity and Infection: Prof Cossart Pascale
- LS7 Diagnostic Tools, Therapies and Public Health: Prof Vukicevic Slobodan
- LS8 Evolutionary, Population and Environmental Biology: Prof Huntingford Felicity A.
- LS9 Applied Life Sciences and Non-Medical Biotechnology: Prof Puigdomenech Pere

Social Sciences and Humanities

- SH1 Markets, Individuals and Institutions: Prof Zilibotti Fabrizio
- SH2 The Social World, Diversity, Institutions and Values: Prof Kalleberg Arne
- SH3 Environment, Space and Population: Prof Jaeger (Jäger) Jill
- SH4 The Human Mind and Its Complexity: Prof Logie Robert
- SH5 Cultures and Cultural Production: Prof Puchner Martin
- SH6 The Study of the Human Past: Prof Ash Mitchell G.

Physical Sciences and Engineering

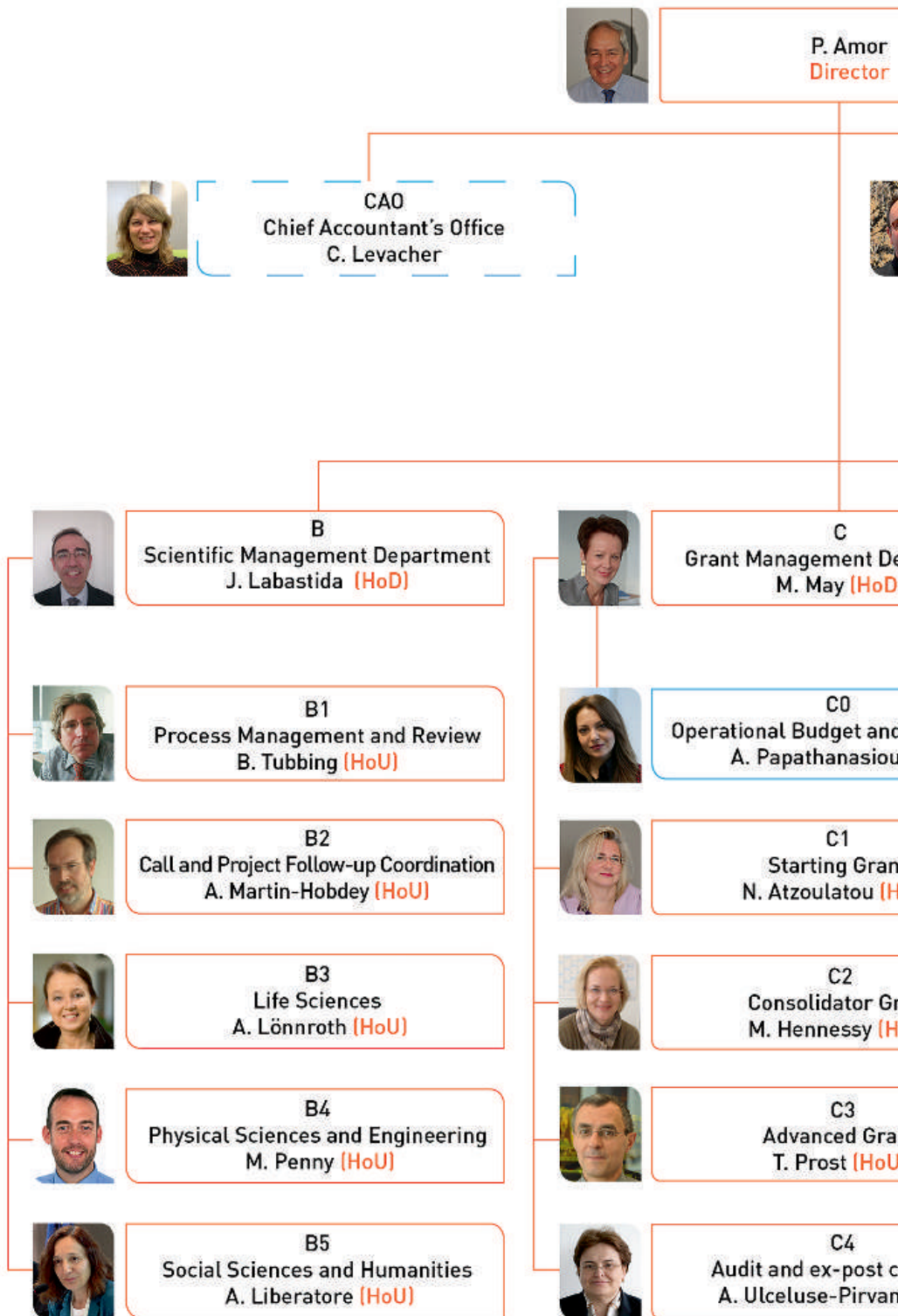
- PE1 Mathematics: Prof Roeckner Michael
- PE2 Fundamental Constituents of Matter: Prof Verlinde Erik Peter
- PE3 Condensed Matter Physics: Prof Frenkel Daan
- PE4 Physical and Analytical Chemical Sciences: Prof Sauer Joachim
- PE5 Synthetic Chemistry and Materials: Prof P. Edwards Peter
- PE6 Computer Science and Informatics: Prof Spirakis Pavlos
- PE7 Systems and Communication Engineering: Prof Polycarpou Marios
- PE8 Products and Process Engineering: Prof Aluru Narayana R
- PE9 Universe Sciences: Prof Van Dishoeck Ewine
- PE10 Earth System Science: Prof Green Alan

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

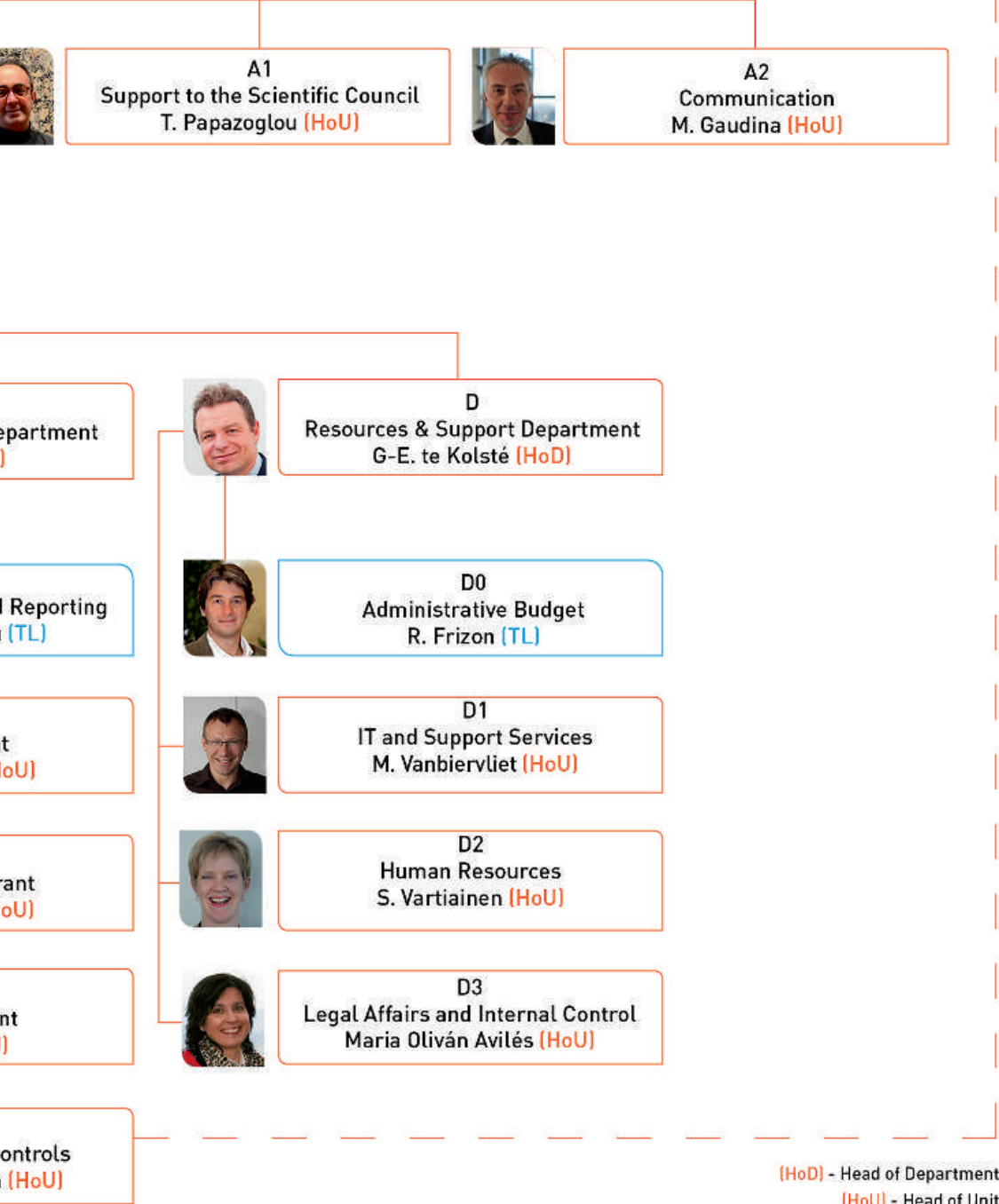
Top organisations hosting ERC Principal Investigators*

The data are of February 2016 - The grants distribution is according to *Participant Identification Code (PIC)* of the Host Institution, as appeared in CORDA, the European Commission's database of ERC-funded projects. Please note that prior to the compilation of the table, the Helmholtz Association had requested the grouping of the PICs that corresponded to its research centres, providing the appropriate information to the ERC. The ERC may accept similar requests while compiling the list of the institutions that host the ERC-supported Principal Investigators and their teams.

Host Institution	Country	FP7 2007-2013			H2020 Calls		
		StG	CoG	AdG	StG	CoG	AdG
National Centre for Scientific Research (CNRS)	FR	129	15	67	36	43	6
University of Oxford	UK	56	10	62	14	18	3
University of Cambridge	UK	60	7	54	14	21	6
Max Planck Society	DE	46	5	50	28	14	8
University College London	UK	52	8	30	8	17	3
Weizmann Institute	IL	42	10	28	11	7	2
Swiss Federal Institute of Technology Lausanne (EPFL)	CH	44	2	38	4	6	4
Swiss Federal Institute of Technology Zurich (ETH Zurich)	CH	30	4	47	8	1	7
Hebrew University of Jerusalem	IL	40	3	30	10	9	1
Helmholtz Association of German Research Centres	DE	33	5	16	9	17	
Imperial College	UK	38	2	23	8	6	1
National Institute of Health and Medical Research (INSERM)	FR	31	9	18	7	8	1
University of Edinburgh	UK	20	2	24	8	11	3
University of Copenhagen	DK	18	4	13	13	13	2
University of Amsterdam	NL	14	4	17	16	8	1
Tel Aviv University	IL	16	1	14	22	3	
French Alternative Energies and Atomic Energy Commission	FR	33	2	9	7	2	2
Spanish National Research Council (CSIC)	ES	21	3	12	3	11	2
University of Leuven	BE	23	5	15	4	3	1
University of Munich (LMU)	DE	12		25	12	2	
Radboud University Nijmegen	NL	23	3	12	6	4	1
University of Bristol	UK	15	2	19	7	4	2
University of Zurich	CH	16	3	17	4	5	3
Delft University of Technology	NL	13	3	9	11	8	3
Leiden University	NL	19	1	13	5	7	1
Technion - Israel Institute of Technology	IL	21	2	8	7	4	
Utrecht University	NL	15	3	11	5	6	1
University of Warwick	UK	12	4	9	8	5	3
King's College London	UK	22		10		6	1
University of Manchester	UK	17	1	13		6	2
National Institute for Research in Computer Science and Automatic Control	FR	19		12	5	3	
Free University and Medical Center Amsterdam (VU-VUmc)	NL	15	2	12	5	4	1
Lund University	SE	13	1	11	6	6	2



Agency structure



(HoD) - Head of Department
 (HoU) - Head of Unit
 (TL) - Team Leader

European Commission

EUR 27543 - Annual report on the ERC activities and achievements in 2015

Luxembourg: Publications Office of the European Union

2016—82 pp. — 17.6 x 25.0 cm

ISBN 978-92-9215-048-8

doi: 10.2828/980974

Photo credits:

© European Union, 2015

© www.shutterstock.com

© www.istockphotos.com



How to obtain EU publications

Free publications:

- one copy:
via EU Bookshop (<http://bookshop.europa.eu>);
- more than one copy or posters/maps:
from the European Union's representations (http://ec.europa.eu/represent_en.htm);
from the delegations in non-EU countries (http://eeas.europa.eu/delegations/index_en.htm);
by contacting the Europe Direct service (http://europa.eu/europedirect/index_en.htm) or
calling 00 800 6 7 8 9 10 11 (freephone number from anywhere in the EU) (*).

(* The information given is free, as are most calls (though some operators, phone boxes or hotels may charge you).

Priced publications:

- via EU Bookshop (<http://bookshop.europa.eu>).
- 

“The European Research Council has, in a short time, achieved world-class status as a funding body for excellent curiosity-driven frontier research. With its special emphasis on allowing top young talent to thrive, the ERC Scientific Council is committed to keeping to this course. The ERC will continue to help make Europe a power house for science and a place where innovation is fuelled by a new generation.”

Jean-Pierre Bourguignon
ERC President and Chair of its Scientific Council



European Research Council

Established by the European Commission



EuropeanResearchCouncil



@ERC_Research



Publications Office