



ideas

Newsletter of the European Research Council



What's on
A bid for increased
ERC budget on the horizon

Going global
Making Europe a prime location
for the best brains

Testimonials from Australian and Mexican grantees



To subscribe please [click here](#)

December 2011 • Issue #4



Editorial



Dear reader,

In today's world of research, the vast majority of our challenges are international - or transnational - in nature. Exchanging ideas across borders and continents, between research cultures and fields, is to the benefit of all. By learning from each other and broadening our horizons, we are far more likely to progress in our ideas and in our research.

The ERC recently marked the signing of its 2000th grantee; of these top scientists funded across Europe, some come from further afield. The ERC Scientific Council is keen to welcome more talent from outside Europe and is therefore currently shifting to a higher gear in this endeavour. In view of this, we have dedicated special attention to this topic in this issue of *ideas*.

For over three months now, I have had the honour of being the ERC's Secretary General. As such, I am building on the first-rate work of my distinguished predecessors Prof. Ernst-Ludwig Winnacker and Prof. Andreu Mas-Colell. Given that the Scientific Council has decided to enhance internationalisation, we will embark on a global awareness campaign for the ERC, which will take me to the hotspots of academic talent around the world. As someone who was drawn to Europe by its possibilities for scientific research, I hope that the target groups will be convinced of the sincerity with which the ERC extends its message: "Come to Europe – Do Research."

Currently, the next EU Framework Programme, 'Horizon 2020', is steering its course towards adoption. The European Commission has recently proposed to almost double the ERC budget for 2014 to 2020. We firmly believe that this is well-justified and critical to the continued success of the ERC, as it approaches its fifth anniversary (in February 2012). Above all, it is appreciation of the fact that there is still much talent to fund and that this chance must not be missed for a Europe that needs a prompt recovery from the economic crisis. We, and I am sure, you as well, eagerly await responses to the proposal from the European Parliament and the Council of the EU, and thus the Member States.

We celebrate the season with this new issue of *ideas* that we hope you will unwrap with curiosity and read with much interest. It is brimming with news, research stories and more. On behalf of the whole Scientific Council, I would like to take the opportunity to wish all our readers from near and far season's greetings!

In this issue

3 > What's on

A bid for greatly increased ERC budget on the horizon

4 > Going Global

Making Europe a prime location for the best brains

6 > Interview with

Mexican grantee Vladimir Canudas-Romo

7 > Research in the spotlight

Australian grantee Kirsty Spalding on track to tackle obesity

8 > Focus on

Germany

10 > Highlights

Did you miss this?





What's on

Commission bid for increased ERC budget on the horizon

As the EU's seventh Framework Programme for Research – of which the ERC is part - draws nearer to an end (2013), a new programme is in the making. Named 'Horizon 2020', it will stretch from 2014 till 2020 and will for the first time bring all EU research and innovation funding together under a single programme. On 30 November the European Commission presented this 'Horizon 2020' package to boost research, innovation and competitiveness in Europe with a proposed total budget of €80 billion. This includes a very significant increase of the European Research Council's budget to over €13.2 billion.

With the current framework programme amounting to over €50 Billion, the Commission's proposed 'Horizon 2020' budget is a substantial increase. The news is also that the Commission has introduced a number of measures for the sake of simplification, which is much welcomed by the research community.

'Horizon 2020' is built around three strategic objectives: 'Excellent science', 'Industrial leadership' and 'Societal challenges'. The €24 billion proposed for the first pillar will strengthen the EU's position as a world leader in science; it includes the ERC, together with Marie Curie, Future and Emerging Technologies (FET) and research infrastructures. The Commission wants to beef up the ERC budget to €13.2 billion, which means a roughly 77% increase, compared to the ERC's budget under the seventh Framework Programme. The ERC's current structure - with a Scientific Council and an implementing Executive Agency - will stay and the ERC will further develop as a pan-European funding body.

This budget rise would allow the ERC to continue to support first-class talent in Europe, some of whom would otherwise leave for other continents. There is indeed still a growing demand for ERC grants and a gap to fill. The rise would also contribute to job creation in the world of research; an estimated 9,500 lead researchers and a further 38,000 early-career researchers at doctoral and postdoctoral level would be funded.

The ERC Scientific Council is very pleased about the significant increase proposed and ERC President Prof. Helga Nowotny sees it as "recognition of the outstanding success of the ERC, as evidenced by the entire scientific community, Member States and all other stakeholders." She also pointed out that

"funding science and innovation in general, and excellence and frontier research in particular, is key for economic recovery and Europe's future."

Commissioner Máire Geoghegan-Quinn, who put forward the proposal, emphasised that "frontier research is not academic indulgence since breakthroughs come from unexpected sources". Describing the ERC as "spectacularly successful", she said that doubling the budget would "secure the best fundamental research that leads to the greatest innovations."

The Commission proposal will be negotiated in the coming months by the European Parliament and the Council of the EU, composed of the 27 EU Member States. The final decision is expected to be adopted before the end of 2013.

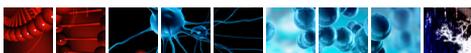
Several organisations, such as the European University Organisation (EUA) and the League of European Research Universities (LERU), have already expressed their strong support for a strengthening of the ERC.



To find out more:

[Commission Press Release](#)

[VIDEO: Announcement by Commissioner Máire Geoghegan-Quinn](#)





Going global

Making Europe a prime location for the best brains



The research community - especially its younger members - is highly mobile and tends to go where the best conditions are offered. With an increasingly transnational world and a society facing more and more challenges with a global reach, this phenomenon is but growing.

The ERC is a flagship component of the seventh EU Framework Programme, which is, as Commissioner Geoghegan-Quinn recently said, the most open research programme worldwide. The international ingredient has been part of the ERC's mission right from the start in 2007. It boils down to fostering 'brain circulation', attracting top scientists from anywhere in the world, but also making it worthwhile for the best minds to stay in Europe. Many of the ERC grant winners have a very international profile; for example two thirds of the grantees in neurosciences have post-doctoral experience in the US and half of the economics grantees completed their PhD in the US. The ERC's international mindset is also reflected in its peer review system, which is one of the most international in the world (12% of all evaluators are based outside Europe).

What's in it for the world's best minds?

First and foremost, the ERC grants appeal as they are substantial both in grant amount and length, and highly flexible. They are open to all fields of research and bottom-up, and the application process is very simple and user-friendly. By now the "prestige" of the ERC label of excellence also makes the grants coveted by scientists.

On top of these features, there is incentive in the form of additional funds for those researchers moving from afar (€500,000 for younger researchers and €1 million

extra for senior ones, to cover start-up costs). Lead researchers have to spend a minimum of 50% of their time in Europe. In certain cases, team members part of an ERC-project, can be located outside Europe. What's more, several ERC grantees who moved to Europe have testified that leaving ones country does not mean leaving networks behind or burning bridges. The pull also lies in the opportunities and specialisations offered at various high standing European universities.

How are we doing so far?

After soon five years of existence, it is time to take stock of how the ERC has done thus far when it comes to attracting top talent. Despite the openness and advantages of the ERC grants, increasing the number of applicants from outside Europe in the ERC competitions remains a challenge (ca 700 applicants to date). The younger ones, applying for Starting Grants, are by far more numerous than the established ones (Advanced Grants), who are less inclined to move.

Of those coming from far afield, the overwhelming majority are returning Europeans, by and large coming from the United States. The trend is that the ERC grants are becoming better known to this key target group (representing 75% of the grantees from outside Europe). Many of them are looking to go back to Europe after rewarding years across the Atlantic and the ERC offers them an excellent opportunity to do so. Not surprisingly, top researchers of other nationalities around the globe are still not as aware of the ERC. Nevertheless, they are also represented among the ERC grantees. One of them, Mexican demographer and Starting grantee Vladimir Canudas-Romo, who moved from the US to the University of Copenhagen, is interviewed on page 6;





another example is American Nobel prize-winner James Heckman (University of Chicago), who set up a research team at University College Dublin with his Advanced Grant on “understanding health across the life course”, to name but two.

On top of these main groups, there are also quite some non-Europeans who were already based in Europe when they won an ERC grant. Of these, many are Americans, but there are also for instance Chinese, Japanese, Russian, Indian and Canadian researchers amongst them. They can play a role in making the ERC better known through their international networks.

The so far fairly modest success in attracting the best from further afield, reflects - at least partially - limited awareness of what a young organisation like the ERC has on offer. However, the ERC has visited a string of countries such as the US, China, India, Brazil, Japan and others over the past years and the awareness is constantly growing. Yet, the impact can only be gauged in the medium term.

Besides awareness, there are other hurdles when it comes to making the move to pursue research in Europe, and the ERC is keen to help scientists overcoming these. Researchers with limited contacts in Europe may find it difficult to know where to start and to find a host institution. The ERC website has recently been revamped with a specific section for international researchers (soon available in foreign languages), which can be of some help in this respect. Some may also be somewhat apprehensive about moving to another continent with a career perspective limited to five years. On the other hand, there are examples of universities offering tenure track positions after the ERC grant, for instance Gent University, Belgium. Another concern for some researchers is the career of their spouse after moving. Here the “Euraxess” services, a network of over 200 centres across Europe, can be very useful (see [Euraxess website](#))

Stepped-up efforts

To further improve the attractiveness of the ERC grants worldwide, the ERC Scientific Council set up a working group in 2009 to look into how to step up efforts on the global arena.

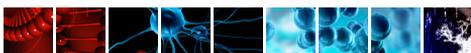
The ERC Secretary General Donald Dingwell has been given a key role in this venture. Originally from Canada and with ample international experience, he will be the ERC’s Ambassador worldwide and will set out on a campaign to further raise awareness and to foster relations with local research communities. The US is undeniably a hotspot for talent and thus for the ERC, but also the BRICS countries (Brazil, Russia, India, China and South Africa) and other top performers in science will be a priority in the years to come. As in the past, the EU delegations and Euraxess offices around the globe will be our main partners. Non-European ERC grantees will also have a continued role to play in the awareness raising campaign, as will the ERC Scientific Officers at

international congresses. Hopes are high that all these efforts will inspire more top talent to make the leap to Europe.

Upcoming events in North America:

- > 20 Jan. 2012: **High-level conference, Boston, launching the EU initiative “Destination Europe”.**
Keynote address by Commissioner Geoghegan-Quinn. ERC Secretary General Prof. Dingwell, ERC Scientific Council member and Nobel laureate Prof. Tim Hunt and four ERC grantees will speak.
- > 21-23 Jan. 2012: **MIT European Career Fair, Boston.**
The ERC will be present.
- > 17-20 Feb. 2012: **AAAS 2012 meeting, Vancouver.**
Topical lecture by Secretary General Dingwell. Career workshop with e.g. Canadian ERC grantee Nicole Boivin, and press activities.

The chair of the Scientific Council’s internationalisation working group, Prof. Alain Peyraube, said: *“We want to put the ERC on the map in the coming years. To do so, we need to make sure that the crème de la crème of the research community worldwide knows what Europe and the ERC can offer.”*





Interview with

Mexican ERC grantee Vladimir Canudas-Romo



Originally from Mexico, demographer Dr. Vladimir Canudas-Romo has a very international background. After several years in the United States, an ERC Starting Grant allowed him to continue his research in Europe at the University of Copenhagen, Denmark, in 2010. He already had

much experience in Europe; he obtained his PhD at the Max Planck Institute for Demographic Research, Germany and the University of Groningen, the Netherlands, and has also taught demography at several European universities. In 2003, Dr. Canudas-Romo moved to the Johns Hopkins University (Bloomberg School of Public Health) in the US, where he still holds a position. Below he explains his project and the importance of researchers' mobility.

What makes the ERC grants attractive for top scientists worldwide?

ERC grants are a great opportunity to expand one's network on a specific topic, in my case "long and healthy living of populations". The ERC grant allowed me to return to Europe and take part in the debate on demography here, while also maintaining my position overseas. I have met many European researchers abroad who would like to return to the EU, but they are afraid of losing the established position they have acquired. On the contrary, ERC grants offer the possibility to maintain your networks while helping you to build new ones in Europe. It is therefore a unique opportunity for any scientist from abroad to approach the EU academia. I was also very impressed by the ERC's procedures, which offered me full control of the application process. More generally, it was also much easier than other funding applications with heavier administrative procedures.

The ERC is currently stepping up effort to attract more talent from overseas. What type of measures could help?

In 2010, I was invited to participate in the Conference of the American Association for the Advancement of Science (AAAS) in San Diego, US. There, I realised that a growing number of young scientists are interested in hearing about the ERC grants. I think it would be very

important to increase the communication channels and activities with all these potential applicants. I have often tried to help applicants by giving talks about my experience and encouraging them to apply.

Does your international profile benefit your work?

It helped me a lot. An international profile is seen as a passport to enter an international network. It is also a tool to be quickly updated on on-going research. I learned about the ERC grants through my international network and now I conduct my ERC-project with collaborators and partners in Scandinavia, France, Germany, and the US. Last, I must say that an "active international profile" is more and more required for being promoted in academia.

Your ERC project explores longevity in developed and developing countries. Please tell us more.

One of my main interests is to analyse the great differences in longevity among developed countries. This implies studying why nations such as Spain, France and Switzerland have very high levels of life expectancy, while others for instance United States, the Netherlands, and Denmark have relatively lower ones. Current studies suggest that the causes lie in individual behaviours, such as smoking and obesity. On the other hand, Japan is known as the best performer in this area, despite its recent natural catastrophes. However, my interest goes beyond developed countries, as I also study longevity in regions and nations which lack good demographic statistics, such as South America, India and China. For the latter group, I aim to develop good estimates of their survival path based on the little information available and models constructed so far.

Given the socio-economic conditions of the developing world, what are your hopes concerning longevity there?

I am rather confident. Some studies show that many developing countries are moving from high levels of mortality to low levels. This transition happens more rapidly than what was observed in some developed countries in the past. One can only welcome such a tendency and hope for equity in life expectancy also in these nations!

.....
See researcher's website [here](#)





Research in the spotlight

Australian ERC grantee on track to tackle obesity



More than 10% of the world's adult population was obese in 2008 (according to the latest World Health Organisation statistics). Obesity and overweight are major risk factors for chronic diseases such as diabetes, musculoskeletal disorders, cardiovascular diseases (mainly heart disease and stroke), and some cancers. Despite this worrying picture, little is known about the mechanisms at the root of obesity. Kirsty Lee Spalding, who was awarded an ERC Starting Grant in 2010, explores this further

to understand how the generation and behaviour of fat cells (called adipocytes), and their presence in the human body can lead to obesity.

Until now, it was impossible to mark the exact birth date of human cells in a way that can be detected over many years. In her ERC project, Dr. Spalding has developed a new method, based on the incorporation of radioactive carbon (^{14}C) into DNA, which allows for the analysis of cell and tissue turnover in humans. Contrary to what is done in fossils dating techniques, she is looking at the number of ^{14}C atoms compared to ^{12}C . Because of the very high number of ^{14}C atoms in the atmosphere since the Cold War's nuclear bomb

tests, she can detect changes in levels of ^{14}C in DNA and retroactively establish the birth date of cells and their lineage.

She also intends to determine the processes of human adipose tissue maintenance and to investigate the existing differences in the regulation of the fat mass in both lean and obese persons. This will enable her to create a map of cell turnover in the human body in both healthy and pathological individuals. With excess fat tissue (which results in obesity) being considered as one of the most serious threats to human health, in particular in developed countries, her results could shed new light on potential treatments for obesity.

Kirsty Lee Spalding, who is Australian, was awarded her PhD degree from the University of Western Australia, Perth, in 2006. She moved to the Karolinska Institute in Sweden as a postdoc and is now an Assistant Professor in the Cell and Molecular Biology Department.

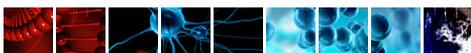
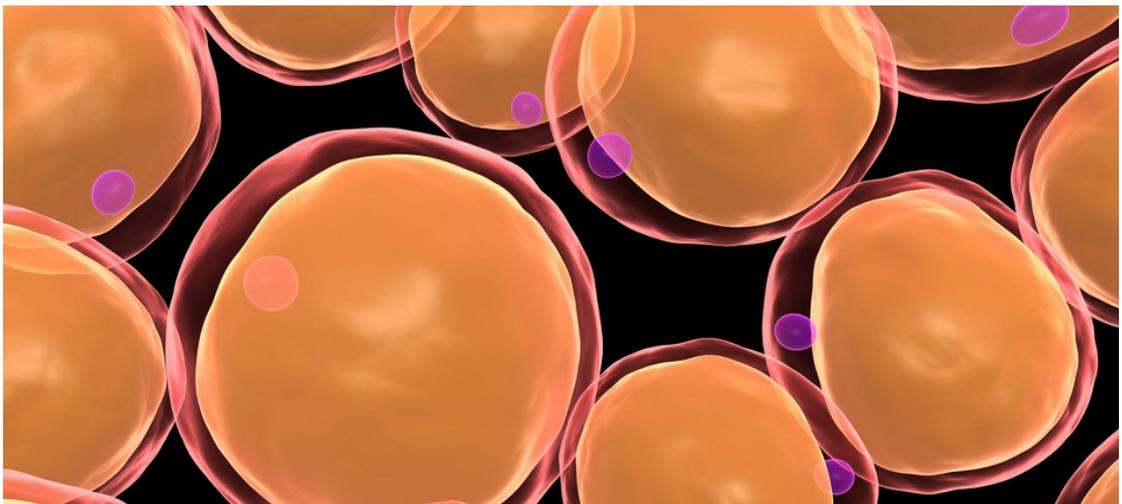
Project acronym: HUFATREG

Project's title: Adipose tissue mass regulation in lean and obese individuals

Host institution: Karolinska Institute, Sweden

ERC funding: € 1.5 million

See researcher's website [here](#)





Focus on

Germany



The ERC in Berlin

Held on 9 November in Berlin, the ERC was invited to the yearly **Falling Walls conference**, aimed at inspiring scientists and other participants to break down the walls of today and to identify trends, opportunities and solutions for global challenges.

Its first edition took place in 2009 on the 20th anniversary of the fall of the Berlin Wall. Supported by the German Federal Ministry of Education and Research and many academic institutions, foundations and corporations, it gathered some 600 people with speakers ranging from world leading scientists from different parts of the world to Germany's Chancellor Angela Merkel and Research Minister Annette Schavan. Twenty pioneering scientists from various fields presented their current breakthroughs and views on the future in a captivating and sometimes interactive way.

The spirit of the event resonates with the type of research the ERC supports and ERC President Prof. Helga Nowotny hosted one of the four sessions, in

which four ERC grant holders took part. Starting grantee Jean-Luc Lehnars spoke in an engaging way about astrophysics and made the audience participate in simulating the big bang by means of a few musical instruments, whilst Rebecca Cassidy made the audience bet on the FTSE index's rise or fall during her lecture to illustrate the ins and outs of gambling. Also, two Advanced Grantees - professor of global governance Mary Kaldor and evolutionary biologist Nick Barton - described their pioneering research.

On the eve of this conference, an informal get-together for ERC grant holders from the Greater Berlin area took place. This networking event, at which some journalists were present, was organised by the ERC on a pilot basis. Kindly hosted by the Commission Representation in Berlin, its head, Mr. Matthias Petschke, welcomed the nearly thirty Starting and Advanced grantees attending. In her address, Prof. Nowotny congratulated them and encouraged them to continue to be leaders in their scientific fields.



From left to right: Prof. Rebecca Cassidy, Prof. Nick Barton, ERC President Prof. Helga Nowotny, Prof. Mary Kaldor, Dr. Jean-Luc Lehnars





German key personalities in the ERC

The ERC Scientific Council has 22 distinguished members, of which two are German: **Prof. Dr. Hans-Joachim Freund**, head of the Department of Chemical Physics, Fritz-Haber-Institut der Max-Planck-Gesellschaft, Berlin; and **Prof. Christiane Nüsslein-Volhard**, a Director at the Max-Planck-Institut für Entwicklungsbiologie Abteilung III and Nobel Prize winner for Medicine/Physiology (1995).

The first ERC Secretary General was **Prof Ernst-Ludwig Winnacker** (former President of German Research Council, DFG).

Nobel laureate in Physics (2005) Prof. Theodor W. Hänsch is an ERC Advanced Grantee (Ludwig-Maximilians-Universität München).

Around 540 German scientists are serving as peer reviewers in the ERC selection processes.

ERC Grants in Germany (after seven completed calls)

- > 303 projects have been selected for funding for researchers based in Germany, representing a total of around € 500 million.
- > 144 grants were also awarded to German researchers based in other countries.
- > 143 selected projects are in the Physical Sciences & Engineering domain, 120 in Life Sciences and 40 in Social Sciences & Humanities.
- > 195 selected projects are Starting Grants and 108 are Advanced Grants.

The complete list of signed projects in Germany is available in [CORDIS](#)

Questions to two German National Contact Points (NCPs): Georg Düchs and Stefanie Schelhowe

How are German researchers and Host Institutions performing in the ERC competitions so far?

We are happy that many German nationals are successful in the ERC competition.

This means that German researchers are well qualified and open for an international career. Furthermore, many different universities and research institutions all over Germany are successful in attracting ERC Grants. The potential of the highly diverse German research landscape is, however, not yet fully exploited. We hope to attract more ERC grantees from outside Germany in the future.

From your point of view, why should German researchers apply for ERC Grants?

Quite obviously, with an ERC Grant you can realise the research project of your dreams! Fortunately, Germany offers a broad range of funding possibilities for German and international researchers. But still:

The ERC, where you compete on a European level, is something special as it gives you international visibility and a lot of reputation.



What are your main activities as ERC NCPs?

First of all, we raise awareness of the ERC funding opportunities in the German research landscape and support potential and successful grantees on the way towards and during an ERC project. Also, we offer information and mentoring in all kinds of formats: starting with leaflets and

brochures, seminars for multipliers at universities and research institutions, but also workshops for German and international scientists or networking-events for grant holders. This comprehensive approach is made possible by an organisational structure consisting of two teams, located at the EU-Bureau (EUB) of the Federal Ministry of Education and Research (BMBF) and the German Research Foundation (DFG).





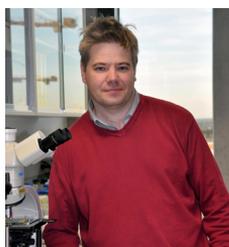
Highlights – Did you miss this?

The ERC funds its 2000th grantee

The European Research Council (ERC) awarded in September its 2000th grant to Dr. Matthew Holt. This British top scientist will join the VIB Department of Molecular and Developmental Genetics at K.U.

Leuven, Belgium, in January 2012, to study the function of glial cells in brain function. When hearing the news, Dr. Holt stated: “Being the 2000th researcher in the ERC schemes is really the ‘icing on the cake’ as far as I am concerned”.

To find out more, [click here](#) (October 2011)



Innovative projects funded to bring good ideas to market

The ERC announced the first results of its new funding initiative, the “Proof of Concept”. In total 30 ERC grant holders have been awarded these ‘top up’ grants, worth up to €150,000 each and designed to help ‘blue sky’ research maximise its value. The projects treat topics ranging from health to telecommunication and food safety. A total of 73 applications were submitted to the second deadline of this call in November.

To find out more, [click here](#) (October 2011)



© European Union

Commissioner met grantees in Dublin and Berlin

European Commissioner for Research, Innovation and Science Máire Geoghegan-Quinn met with five ERC grantees in Dublin, Ireland, and another five in Berlin, Germany during the autumn. In Dublin, she stressed that “ERC grants are highly coveted in the research community, especially amongst younger researchers who often struggle to find funding”. ERC Secretary-General Prof. Donald Dingwell also took part in the Berlin event.

More about the Dublin event, [click here](#) (September 2011)

More about the Berlin event, [click here](#) (October 2011)



ERC at first European Gender Summit

Prof. Teresa Lago, ERC Scientific Council member and Chair of its Gender Balance working group, represented the ERC at the European Gender Summit held in Brussels in November. She participated in a session on ‘Sharing duty and status in institutions’. She presented the main features of the ERC Gender Equality Plan and the objective of gender mainstreaming while keeping the focus on excellence. This was an official event of the Polish EU Presidency, under the patronage of Mr Chichester, Vice-President of the European Parliament, and supported by the seventh Framework Programme.

To find out more, [click here](#) (November 2011)





ERC at the Innovation Convention 2011

Opened by European Commission President José Manuel Barroso, the first edition of the Innovation Convention recently took place in Brussels. It brought together world leading experts in research and innovation who shared views on how to build a global innovation economy. Four ERC grantees demonstrated their innovative research through concrete experiments at the exhibition. ERC President Helga Nowotny also gave a talk in a session on “Promoting public understanding of Science and Technology”.

To find out more, [click here](#) (November 2011)



ERC grantee invited to the European Parliament

Starting Grant holder Dr. Patrik Jones was invited to the European Parliament in Brussels, alongside other researchers from 21 to 24 November 2011. He took part in a ‘Pairing scheme’ to link Members of the European Parliament (MEPs) with top researchers who are presently shaping European science. It aimed to make scientists and the MEPs familiar with each other’s professional environment and enhance their mutual understanding. Dr. Jones followed British MEP Victoria Grace Ford in her work.

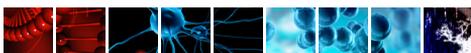
To find out more, [click here](#) (November 2011)



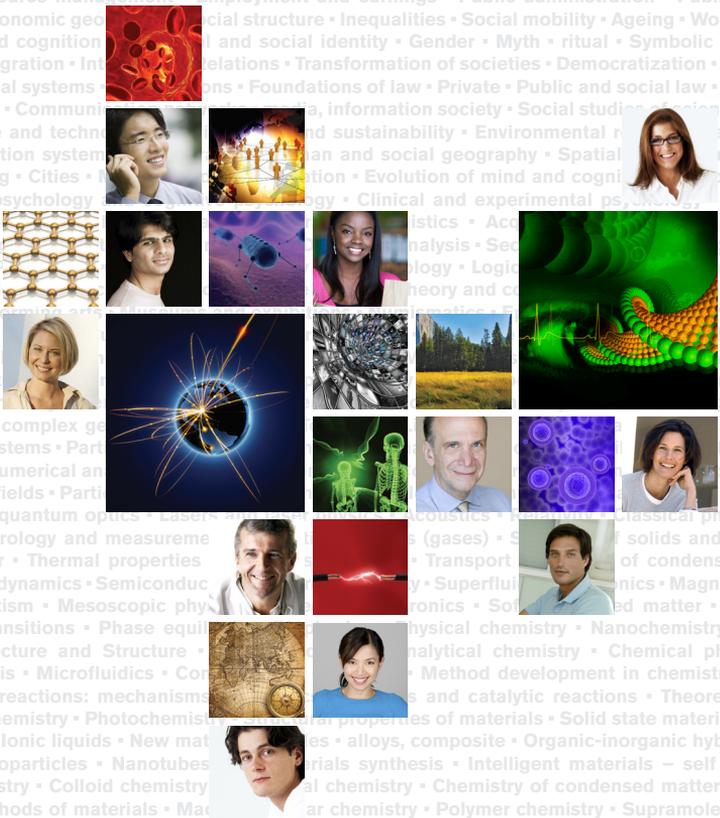
CALENDAR OF ERC CALLS Open to researchers from anywhere in the world

Call for proposals	Publication date	Deadline	Funding
ERC 2012 ADVANCED GRANTS	16 Nov 2011	<ul style="list-style-type: none"> > Physical Sciences and Engineering: 16 Feb 2012 > Life Sciences: 14 Mar 2012 > Social Sciences and Humanities: 11 Apr 2012 	Up to € 3.5 Mio per grant
ERC SYNERGY GRANT	25 Oct 2011	25 January 2012	Up to € 15 Mio per grant
ERC 2013 STARTING GRANTS	Planned: July 2012	Planned for Autumn 2012	Up to € 2.0 Mio per grant

To stay updated and to apply, please visit [ERC Website](#)



markets • Banking and corporate finance • Competitiveness • Innovation • Research and development • Consumer behaviour • Marketing • Organization studies • Strategy • Human resource management • Employment and earnings • Public administration • Public economics • Income distribution • Poverty • International trade • Economic geography • Dimensions of classification and cognition • Ethnography • Globalization • Migration • Inequality • Legitimacy of governance • Legal systems • International law, human rights • Community and society • History of science and technology • Geographical information systems • Urbanization and urban planning • Cities • Life-span development • Neuropsychology • Computational linguistics • Typology • Neurolinguistics • Use of language • Lexicography • Terminology • Palaeography • Principles • Typology • Archaeology • Visual arts • Performance of art and architecture • Cultural history • Prehistory • Protocultural • Entangled histories • Global history • Economic cultural and political history • Number theory • Algebraic and complex analysis • ODE and dynamical systems • Partial aspects of computer science • Numerical analysis • Fundamental interactions and fields • Particle physics • Optics and quantum optics • Lasers • General physics • Metrology and measurement properties of condensed matter • Thermal properties of materials and transport • Lattice dynamics • Semiconductor physics • Nanophotonics • Nanomagnetism • Mesoscopic physics (condensed matter) • Phase transitions • Phase equilibrium techniques • Molecular architecture and structure • Electrochemistry • Electroanalysis • Microfluidics • Complex biological systems • Chemical reactions: mechanisms • Radiation chemistry • Nuclear chemistry • Photochemistry • Corrosion • Porous materials • Ionic liquids • New materials • Nanomaterials • Nanoparticles • Nanotubes • Chemistry • Coordination chemistry • Colloid chemistry • Catalysis • Characterization methods of materials • Macromolecular chemistry • Computer architecture • Database management • Formal methods • Graphics and image processing • Human computer interaction and interface • Informatics and information systems • Theoretical computer science including quantum information • Intelligent systems • Scientific computing • Modelling tools • Multimedia • Parallel computing • Speech recognition • Systems and software • Engineering • Electrical and electronic engineering • Simulation engineering and modelling • Frequency engineering • Sensors • Actuator • Production technology • High-frequency engineering • Technical chemistry • Civil engineering • Maritime/hydraulic engineering • Geotechnics • Waste treatment • Computational engineering • Fluid mechanics • Hydraulic engineering • Energy systems (production, distribution, application) • Micro(system) engineering • Mechanical and manufacturing engineering (shaping, mounting, joining, separation) • Materials engineering • Polymers • Composites • Production technology • process engineering • Product design • Ergonomics • Man-machine • Industrial bioengineering • Industrial biotechnology • Solar and interplanetary physics • Planetary • Formation of stars and planets • Astrobiology • Formation of stars and stellar systems • The Galaxy • Formation and evolution of galaxies • Clusters of galaxies and large scale structures • High energy and particle astronomy – X-rays • Cosmic rays • Gamma rays • Neutrinos • Relativistic astrophysics • Dark matter • Dark energy • Gravitational astronomy • Cosmology • Space Sciences • Very large data bases: archiving • Instrumentation • telescopes • detectors and technical • Solar planetology • Atmospheric chemistry • Atmospheric composition • Meteorology • Atmospheric physics and dynamics • Climatology and climate change • Terrestrial ecology • Land cover change • Geology • tectonics • volcanology • Paleoclimatology • paleoecology • Physics of interior • Seismology • volcanology • Oceanography • Biogeochemistry • Biogeochemical cycles • Environmental chemistry • Mineralogy • Petrology • Igneous petrology • Metamorphic petrology • Geology • Thermodynamics • Chemistry • Sedimentology • Science • Palaeontology • Earth evolution • Physical geography • Molecular biology and interactions • General biochemistry • metabolism • DNA biosynthesis • Modification • Repair and degradation • RNA synthesis • processing • Modification and degradation • Protein synthesis • Modification and turnover • Biophysics • Structural biology (Crystallography, NMR, EM) • Biochemistry of signal transduction • Genomics • Comparative genomics • Functional genomics • Reverse genetic • RNAi • Quantitative genetics • Gene expression and gene regulation • Genetic epidemiology • Bioinformatics • Computational biology • Biostatistics • Systems biology • Biological systems analysis • Modelling and simulation • Morphology and functional imaging of cells • Cell biology and molecular transport mechanisms • Signaling • Cell signalling • Cellular interactions • Signal transduction • Development • Developmental genetics • Pattern formation and embryology in animals • Developmental genetics • Pattern formation and embryology in plants • Cell genetics • Stem cell biology • Organ physiology • Comparative physiology • Endocrinology • Ageing • Metabolism • biological basis of metabolism related disorders • Cancer and its biological basis • Cardiovascular diseases • Non-communicable diseases • Neuroanatomy • and neuropharmacology • Sensory systems (visual system, auditory system) • Mechanisms of pain • Computational neuroscience (learning, memory, emotions, speech) • Behavioral neuroscience (sleep, consciousness, handedness) • Systemic • Computational neuroscience • Neurological disorders (Alzheimer's disease • Huntington's disease • Parkinson's disease • autism • Tourette's syndrome • Complex disorder • Depression • Bipolar disorder • Attention deficit hyperactivity disorder • Innate immunity • Adaptive immunity • Phagocytosis and cellular



Editorial Board:

Massimo Gaudina, Madeleine Drielsma

María Sanchez Aponte, Maud Scudel, Samantha Christie, Camilo Pardo Sanabria

Scientific Council members: Pavel Exner, Danny Dolev, Isabelle Vernos

Thanks to:

Vladimir Canudas-Romo, Kirsty Lee Spalding, Georg Düchs,

Stefanie Schelhowe, Virginia Giovannelli

For comments:

erc-info@ec.europa.eu

European Research Council Executive Agency

16 Place Charles Rogier

BE-1210 Brussels

Belgium

ideas is a quarterly electronic newsletter published by the European Research Council.

The newsletter is available in English. Subscription is free. You can subscribe online by clicking here.

Next issue: March 2012

ERC National Contact Point in your country, [click here](#).

To receive ERC News Alerts, [click here](#).

To unsubscribe from the Newsletter, [click here](#).



BRINGING GREAT IDEAS TO LIFE
<http://erc.europa.eu>



The European Research Council may not be held responsible for the use to which this information may be put, or for any possible errors. Brussels, European Research Council, 2011. © Illustrations: www.shutterstock.com • Reproduction of the text is permitted provided the source is acknowledged. Reproduction of the photographs is prohibited.