



European Research Council  
Established by the European Commission

# ideas

#2  
JUNE 2015

Newsletter of the European Research Council

**Focus on**  
France

**What's on**  
ERC funds 5,000 bright minds

**In the spotlight**  
ERC research results

celebrating  
**5000**  
five thousandth grantee

To subscribe please click [here](#).





**Editorial by Professor Jean-Pierre Bourguignon, ERC President and Chair of its Scientific Council**

With the ERC landmark celebration fresh in mind – the 5,000<sup>th</sup> grantee – let us look at where the ERC stands today. After years of demands from the research community in Europe, the ERC was created in 2007. It was a watershed moment for European researchers when the European Commission, the EU Member States and the European Parliament agreed to make it happen. The ERC embarked on its journey of becoming, after some initial teething problems, a world-class funding organisation - today under the Horizon 2020 programme. Its set-up is unique within the EU family.

Key to its success and its wide recognition is the ERC's independence, embodied by the ERC Scientific Council. The members of this governing body - scientists and scholars knowledgeable about the European research community - are appointed by the Commission on proposal by an external independent Identification Committee. The ERC strategy, set by the Scientific Council, is implemented by the ERC Executive Agency, administratively autonomous from the Commission since 2009.

Another essential ingredient for the success is the Scientific Council's mandate to select the right evaluators who in turn select grantees. Hard work!

I have the pleasure and privilege to interact with many ERC grantees, and their personal stories stay with me. They often point to the ERC funding's impact on their careers and vision, challenging and entrusting them to carry out truly ambitious research. What's more, research institutions have been pushed to provide the right environment for talented researchers.

With such testimonials at hand, it is thought-provoking to dwell on how all this talent funded in Europe would have fared without the ERC. Would some grantees have left Europe for better opportunities? Would others never have come to Europe to carry out research here? And would yet others never have enjoyed funding or freedom to pursue their best ideas?

To measure the impact of ERC-funded research more accurately, the ERC has launched a study to analyse what has come out of the ERC projects, now that a sizable number of them are finished.

Looking to the future, the ERC also faces challenges when it comes to the share of grantees in the newer EU countries and of female grantees. The ERC has taken these issues very seriously since years and needs to continue doing so. The ERC's core principles will remain unchanged – to independently fund frontier research ideas selected on scientific quality alone. Let me thank the past ERC leaders and founders who strove to make the ERC a success. I am proud to build on their legacy.

Jean-Pierre Bourguignon



<b>Editorial</b> <b>President Jean-Pierre Bourguignon</b>	<b>2</b>
What's on ERC funds 5,000 bright minds	<b>4</b>
<b>Interview with</b> <b>the 5,000<sup>th</sup> grantee</b>	<b>6</b>
<b>In the spotlight</b> <b>ERC presents research results</b>	<b>7</b>
<b>Focus on</b> <b>France</b>	<b>8</b>
<b>Did you miss this?</b>	<b>10</b>
<b>Calendar of ERC calls</b>	<b>11</b>

**Editorial Board:**

Massimo Gaudina, Madeleine Drielsma, Magdalena Kufrej  
Noémie Auvergne, Samantha Christey, Marcin Mońko

Scientific Council members: Prof. Dame Athene Donald, Prof. Martin Stokhof

**Thanks to:**

ERC grantees Dr Cédric Blanpain, Prof. Heino Falcke,  
Prof. Denise Pumain, Dr Iva Tolić

Alexis Chiblis, Helena Gonzalez-Sancho Bodero, Neno Nenov,  
Edward Smith

For comments: [erc-info@ec.europa.eu](mailto: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.



# ERC celebrates funding 5,000 bright minds

*The ERC has just reached a new important landmark - its 5,000<sup>th</sup> top researcher has been funded. This lucky number fell on Dr Iva Tolić, whose ERC project holds promises in the field of cancer research. On 16 June, the ERC marked this milestone with a debate in the European Parliament (EP) and with a symbolic awarding of the grant. First-class scientists were at the heart of the event.*

## ERC speaks in the Parliament

The celebration started with an exchange of views in the EP's Committee on Industry, Research and Energy (ITRE), to which ERC President Prof. Jean-Pierre Bourguignon was invited to speak, alongside two leading researchers, the 5,000<sup>th</sup> grantee, Dr Iva Tolić, and a Starting grantee, Prof. Nicola Pugno.

First, Prof. Bourguignon thanked the members of Parliament (MEPs) for their continuous support and took stock of the ERC achievements so far. The figures speak volumes: within eight years since its launch, the ERC has evaluated over 50,000 applications and funded 5,000 excellent scientists of 66 nationalities in 626 institutions in 32 countries across Europe. By supporting them with €9 billion in total, the ERC has given them the freedom and trust to pursue their most creative ideas. Moreover, ERC grant holders employ 40,000 team members, including 9,000 PhD and 14,000 post-doc researchers.

Next, Dr Tolić gave her testimony, sharing glimpses of her impressive career path, which brought her from Croatia to top institutions in the US, Denmark, Italy and Germany, and now back to her homeland with the ERC grant. She then explained her ERC project, which will explore how cells divide (see p. 6). She concluded: *"Basic research in biology is the key to open new ways for applied research in medicine to treat and diagnose a variety of diseases."*

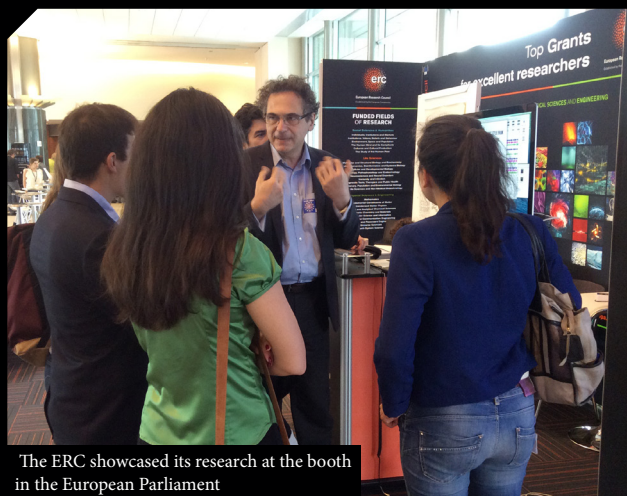
The next speaker to take the floor was Prof. Nicola Pugno. His ERC research looks at characteristics of various natural materials as the potential basis for fibres more resistant than steel. Back in 2012, the project's first results turned out to be a scientific revelation and were published on the cover of *Nature*. *"We wouldn't be able to do it without support of the ERC, and less directly – of the ITRE committee"*, he summed up.

## 5,000 reasons to celebrate

The signing ceremony took place in the *Bibliothèque Solvay*, a historic library founded by famous Belgian chemist and industrialist Ernest Solvay. For many years, the building served as a headquarters of the Institute for Sociology of the University of Brussels. In this spirit of scientific endeavour, the evening festivities unfolded to the *rythm of music* created by ERC Advanced grantee Dr François Pachet, and in the presence of invited guests, including ERC-funded researchers.



From left: President J-P Bourguignon, MEP C. Moody, Minister M. Seile, Dr I. Tolić, Commissioner C. Moedas and Director P. Amor.



The ERC showcased its research at the booth in the European Parliament



ITRE Chair J. Buzek congratulates President J-P. Bourguignon

As master of ceremonies of the evening, ERC Executive Agency Director Pablo Amor highlighted what the ERC has accomplished over the past eight years. *"The ERC is a unique story based on something very simple: funding the most excellent ideas. It is a project with scientists, for scientists and by scientists"*, he said.

Pablo Amor then invited three policy makers on stage. MEP Claire Moody was impressed by the spectrum of research that the ERC funds and underlined its importance in the long term. Research Commissioner Carlos Moedas focused on the role of frontier research in making unexpected discoveries, and its value in boosting economic growth. *"You can make the impossible possible"*, he concluded. Mārīte Seile, the Latvian Minister of Education and Science, from the current EU Presidency, reminded that the ERC also plays a role in educating the young generations, as it opens their eyes to the prospect of a scientific career.

### Research in the limelight

The centrepiece of the event was a presentation by Dr Iva Tolić. *"The ERC is one of the most prestigious grants in Europe"*, she said before signing the symbolic grant agreement.

Amongst the shining stars of the evening were also other ERC grant holders, presented by ERC President Bourguignon, who passed the message that the ERC will continue its efforts to support early-career scientists.

Starting grantee Dr Veerle Huvenne described how she explores the ocean's canyons in a quest to better understand these biodiversity hotspots. *"The deep sea is the last frontier of science. It's only thanks to the ERC that we can discover this exciting habitat"*, she said.

A video message by Prof. May-Britt Moser, Nobel Prize winner in Medicine and ERC Advanced grantee, came next. She explained how the support, which she and her husband received from the ERC, has helped them solve the puzzle of an "inner GPS" in the human brain.

Lastly, Prof. Nicola Pugno gave examples of natural materials which are central to his research, such as spider silk, graphene, gecko foot or lotus leaf. By studying their characteristics, Prof. Pugno is hoping to develop a new generation of extra-strong fibres with unprecedented possibilities for commercial use. *"This is no more science fiction, this is nanoscience"*, he said while presenting to the audience a photo of the Spider-Man.

On that note, the official part of the celebration came to a close. It left the guests musing about what the future might bring, while the ERC went back to its core business – selecting and funding passionate researchers, with a drive to follow their curiosity. Stay tuned for the next 5,000 reasons to celebrate!

Read more [here](#)

\*\*\*

On the occasion of the 5,000<sup>th</sup> grantee milestone, the **BBC World Service** aired a [debate](#) on the ERC with Commissioner Carlos Moedas, ERC President Jean-Pierre Bourguignon and ERC grantees Iva Tolić and Veerle Huvenne.



Dr Iva Tolić shake hands with an ERC-funded robot, Poppy.



Dr V. Huvenne



Prof. N. Pugno



# The 5,000<sup>th</sup> ERC grantee Dr Iva Tolić

## Can you tell us about your professional career so far?

I started my career in Croatia at the Ruđer Bošković Institute (RBI) in Zagreb, where I have obtained my PhD. At this point, I went to the US to do the experimental part of my PhD research. After this, I did consecutive post-docs in Denmark and Italy to master laser techniques for cutting inside cells. Then, I became a group leader at the Max Planck Institute of Molecular Cell Biology and Genetics in Dresden, Germany. After 10 years there, the time has come for me to find a new position. I received several offers from research institutions in France, the UK and Italy. However, I decided to move back to Croatia simply because I wanted to live in my home city Zagreb and work in the institute where it has all begun.

## How would you explain your ERC research project to a non-scientist?

We will focus on the forces acting on the chromosomes during cell division. The microtubules – imagine them as little rods – pull the chromosomes and split them apart while the cell divides. The main question is: how do microtubules do this? Currently, we know that there are so called k-fibers which get attached to chromosomes from the opposite sides. These k-fibers are believed to be the only structures that exert force on the chromosomes. However, our hypothesis is that a class of microtubules connects these k-fibers like bridges and exercise significant force on the chromosomes.

## What are the implications of your research for biology and medicine?

Cell division is one of the most fundamental processes in life. It leads to two new cells that inherit an identical set of chromosomes. In this way, our body is producing new cells to replace old or damaged ones, at the rate of millions per second. Actually, it is the process that makes life possible at all! That is why understanding the mechanical principles of cell division is extremely important. If we discover new clues about cell division, this knowledge could be applied to curing diseases such as cancer, in which cell division is distorted.

## Why did you apply for an ERC grant?

ERC grants are the best and the biggest research grants for basic science in Europe. Every scientist doing basic research, especially in the Life Sciences domain, aims at getting an ERC grant. The ERC support will allow me to carry out my research in Croatia, where science funding is very limited, and thus my research depends on external grants. Furthermore, it gives me the opportunity to hire other scientists in my team and buy state-of-the-art equipment for our lab.

## What tips can you give to ERC applicants?

The most important thing is to start preparing the application well in advance. First, you should think if your CV meets all the requirements for the respective grant and try to compare it to CVs of successful ERC applicants, to know where you are standing approximately. Second, it is crucial to write a really good project proposal. This takes a lot of time and you should start thinking about it even a few years in advance. Needless to say, the research proposal must be of very high quality and should consist of new, breakthrough ideas. The most important thing, however, is that you propose a topic you are genuinely interested in.

## How did you react to the news that you have been funded as the 5,000<sup>th</sup> ERC grantee?

I was surprised. I remember that I smiled to myself and that I felt very happy. Being the 5,000<sup>th</sup> grantee is a great honour.



## What cosmic rays tell us about thunderstorms



Back in 2008, when [Prof. Heino Falcke](#) obtained an ERC grant to study and identify the sources of ultra-high energy cosmic rays, he could not have guessed that his research would provide an important clue to understanding the nature of lightning and thunderclouds.

Cosmic rays are high-energy charged particles that originate in outer space and strike the Earth from all directions. Prof. Falcke's team has revealed that cosmic rays can provide a nearly immediate 'picture' of the electric fields in clouds, as they plunge into the thunderclouds, moving almost at the speed of light.

The unexpected finding was the result of a fruitful collaboration between astronomers, particle physicists and geophysicists. The

measurements were performed with the LOFAR radio telescope, located in the Netherlands and partly funded through the ERC grant.

This new method to measure electric fields in thunderclouds, recently published in [Physical Review Letters](#), could help predict lightning more precisely.

Prof. Heino Falcke is based at Radboud University (the Netherlands). His LOFAR-AUGER was supported by an Advanced Grant worth EUR 3.4 million. He is also one of the researchers involved in the ERC Synergy Grant project BLACKHOLECAM (EUR 13.97 million).

## Can we predict how cities will evolve?



The world's urban population has grown from 746 million in 1950 to 3.9 billion people in 2014. But what are the wider implications of this skyrocketing urbanisation on the role and diversity of cities? ERC grantee [Prof. Denise Pumain](#) has created a model for forecasting how large cities will develop.

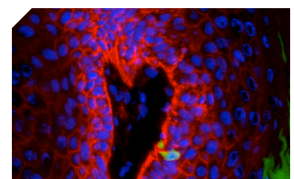
Taking into account the geographical diversity of cities, Prof. Pumain has examined how collective territorial intelligence had contributed to the emergence of networks of interconnected cities. For this purpose, her team have built large standardised databases of around 30,000 metropolises from all over the [world](#).

The open source simulation platform, which has been developed as a [result](#), can help predict, for example, how various city networks would respond to policies aiming to combat climate change. It can also be used to make reliable population projections and to create models of future urban systems.

Prof. Pumain was awarded the French '[Femmes en Or](#)' prize for her scientific contribution to society.

She carries out her GeoDiverCity project at the Centre National de la Recherche Scientifique (France), with an Advanced Grant worth EUR 1.8 million.

## Skin cancer: in search of the first malign cell



Although over 12 million people are diagnosed with cancer every year, the cell at the origin of the disease remains unknown. For many years, adult stem cells, which self-renew for long periods of time, were among the main "suspects". Also, it has been suggested that cancer contain stem cells that are essential for tumour growth. However, these theories had not been proven in primary tumours within their native microenvironment.

In 2007, [Dr Cédric Blanpain](#) received an ERC Starting Grant to investigate whether the first cancerous cells in skin cancer can arise from stem cells of our epidermis. With his team, he uncovered that different stem cells were at the origin of the two most frequent skin cancers. Using novel methods of lineage tracing and lineage ablation

of tumour cells, his group showed for the first time the existence of cancer stem cell in situ and their essential role in tumour maintenance.

These crucial findings, published in *Nature* and *Nature Cell Biology*, point to new avenues for anti-cancer therapies: either eradicating cancer stem cells, or coaxing them to differentiate into non-dividing cells.

Dr Blanpain is based at the Université Libre de Bruxelles (Belgium). He has received two consecutive ERC grants: an ERC Starting Grant for his project CANCERSTEM, worth EUR 1.6 million, and an ERC Consolidator Grant for his project EXPAND, worth EUR 2.4 million.



# France



At the beginning of June, the ERC Scientific Council held its first plenary meeting in Strasbourg, France. It was an opportunity for the ERC to meet researchers from the region. ERC President Prof. Jean-Pierre Bourguignon, a French scientist himself, pointed out that “*applicants having a host institution in France have consistently one of the highest success rates in the ERC calls*”. So, what lies behind France’s success?

France’s domestic expenditure on research and development (GERD) has been increasing steadily since 2006 and it is now second highest in the EU. In 2012, the country’s GERD stood at EUR 46 billion or 2.26% of its GDP, representing 17.2% of total expenditure of all EU Member States. However, France also faces some problems. While the number of bachelor and master students in the country keeps increasing, France’s PhD numbers have fallen for the sixth year in a row in 2014.

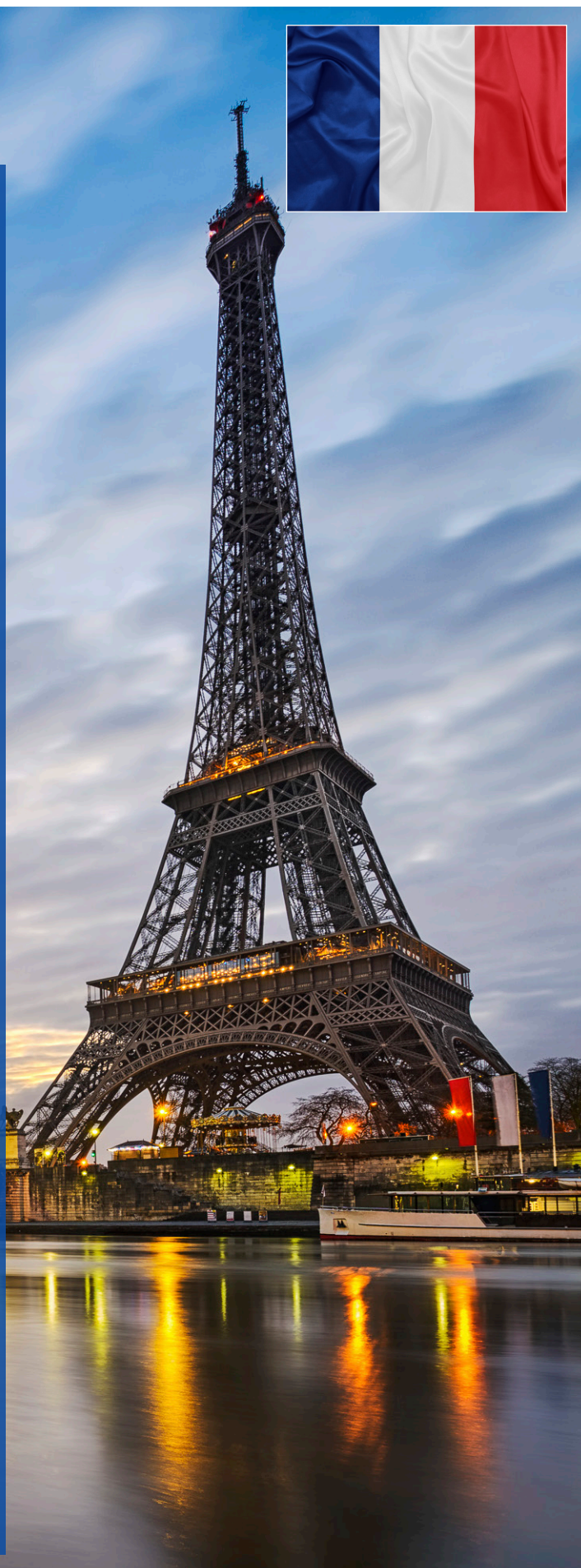
## France and the ERC

France boasts the highest success rate (16%) in ERC calls of all EU Member States. 84% of all French grantees, most of them holders of ERC Starting Grants, work in their home institutions. Two French research organisations are in top three institutions in terms of number of ERC grantees hosted there: National Centre for Scientific Research (CNRS) and National Institute of Health and Medical Research (INSERM).

France has 67 Nobel laureates. Two of them received the prize while carrying out their ERC Advanced Grant projects. In 2012, Prof. Serge Haroche shared the Nobel Prize in Physics for his contribution towards measuring individual quantum systems. Two years later, Prof. Jean Tirole won the Nobel Prize in Economics for his lifework in examining competition and monopoly behaviour.

## ERC grants in France

- 674 ERC grantees are based in French host institutions, representing a total funding of around EUR 1.3 billion.
- 366 researchers hold Starting Grants, 95 hold Consolidator Grants, 213 hold Advanced Grants.
- 345 projects are in Physical Sciences & Engineering, 237 in Life Sciences and 92 in Social Sciences & Humanities.





A few questions to

# Laura Sedaine and Philippe Roussignol

the French National Contact Points (NCPs)

© Laura Sedaine



© Philippe Roussignol



## What are your main activities as ERC NCPs in France?

In addition to answering applicants' specific questions, we organise information days every year in about 15 cities around France to present the ERC Work Programme and to provide useful tips to applicants. Of course, our message has to be adapted to specific research communities in certain geographical areas. ERC grantees are always involved in these "info days"; it is a good opportunity for potential applicants to meet them and learn from their experience. We also analyse the results of each call - per domain and by host institutions - in order to identify any trends at the regional level and to fill gaps in our communication strategy, if any. Finally, our website - on which we publish all the materials relevant to ERC calls, as well as presentations and interviews with grantees - serves as a communication platform with applicants .

## What is your biggest challenge as NCP's?

As far as the number of grants is concerned, France is doing well. We are usually in the top three, compared to other countries, in terms of number of grants obtained in each call. France can also boast high success rates, for example from 2007 to 2013, more than 15% of ERC applicants based in the country received funding. However, the difficulty lies in a relatively low participation rate. Only around 9% of the total submissions are made from France, probably due to fear of tough competition. We believe that some worthy researchers still feel that ERC grants are unreachable for them. Our biggest challenge as NCPs is to encourage these top scientists to apply for funding at the European level, and specifically for the ERC.

## How important are ERC grants for researchers based in France?

The ERC really became a label for excellence now acknowledged by all communities and age categories. ERC grant schemes are a great opportunity especially for young researchers to develop their own activities, as the amount of funding offered by the ERC is hardly achievable at the national level. As a matter of fact, the [National Agency for Research](#) encourages the winners of its calls for young researchers to apply for ERC funding in the last two years of their projects.

## France is well-known for its excellent research. What is the country doing to attract best brains?

Some French institutions have implemented Chairs of Excellence programmes providing substantial means to undertake ambitious research projects. Another important point is probably the fact that France still offers permanent positions in academia, even though the wages are not very high. At the EU level and in collaboration with the European Commission, France also takes part in promotional initiatives such as [Destination Europe](#) or tours in specific countries, like China and Brazil, aiming at showcasing Europe's excellence in research and innovation, and presenting opportunities offered to scientists from anywhere in the world. Nevertheless, in our opinion, our greatest asset to attract best brains to France lies in our irresistible wine and cheese production!



## ERC budget safeguarded

On 29 May news broke that the European Commission, the European Parliament and the Council of the European Union agreed on the [European Fund for Strategic Investments \(EFSI\)](#) so that it will not affect the ERC's budget. ERC President Prof. Jean-Pierre Bourguignon commented: *"This compromise (...) gives a clear sign that frontier research has an important role to play in Europe."* He also thanked all parties involved in the negotiations. *"I see 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."* Read the full [statement](#).



## ERC at Science Journalism Conference in Seoul

Nobel laureate Sir Tim Hunt represented the ERC at the World Conference of Science Journalists in Seoul and delivered a highly appreciated lecture on creative science. He also encouraged women to pursue scientific careers. *"Science needs women and you should do science despite all the obstacles"* said Sir Tim Hunt. Two ERC grantees presented their research at the event. Dr Jennifer Gabrys spoke about the relationship between technologies and practices of environmental sensing and citizen engagement. Dr Debra Laefer's showed how her project tackled fundamental conflict between the new engineering undertakings, such as tunnelling, and building conservation. Learn more about the [event](#).



## Japanese and Chinese top researchers to join ERC teams

Two new agreements were concluded to encourage young top scientists from Japan and China to join ERC research teams in Europe. On 29 May, the initiative with the Japan Society for the Promotion of Science was signed in the context of EU-Japan Summit in Tokyo. Today (29 June) the agreement with National Natural Science Foundation of China was concluded in Brussels around the EU-China Summit. This follows similar agreements already signed with the US, South Korea and Argentina to attract top talent to Europe and stimulate scientific exchange. See initiatives with [Japan](#) and [China](#).



© European Commission 2015

## Nobel Laureates meet Commission President and Commissioners

World-leading scientists – Nobel and Wolf Prize winners - met European Commission President Jean-Claude Juncker, Vice-President Jyrki Katainen and Research, Science and Innovation Commissioner Carlos Moedas to discuss the role of science in Europe's competitiveness. Four out of the six eminent researchers who were present at the meeting were ERC grantees. On this occasion, Commissioner Moedas announced the plan for a new mechanism for scientific advice for the European Commission. See the [ERC press release](#).





## Calendar of ERC calls

Grants open to researchers from anywhere in the world

Call for proposals*	Publication date	Deadline	Budget	Funding
ERC 2015 Proof of Concept Grant – third round** (call open to ERC grantees only)	7 November 2014	1 October 2015	EUR 20 million	Up to EUR 150 000 per grant

\*Researchers who wish to apply to one of the ERC's calls can do so through the [Participant Portal](#).

Candidates should apply with a host institution in an EU Member State or Horizon 2020 Associated country. (See further information on the [Participant Portal](#).)

Important:

For more information regarding ERC Proof of Concept grants, please see the [ERC Work Programme 2015](#) (pp. 34 – 40).

The ERC Work Programme 2016 is expected to be adopted in July 2015.

Stay tuned on the [ERC website](#).

### Information on the ongoing selection:

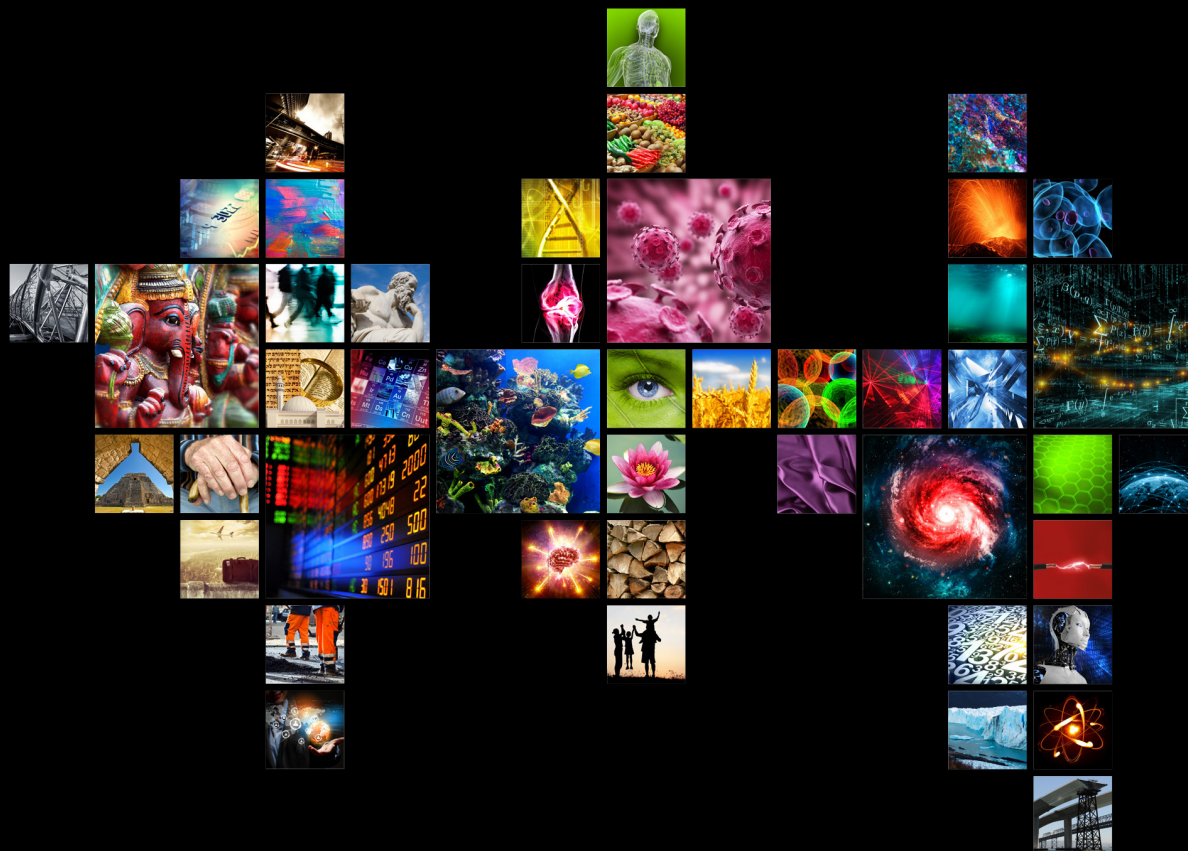
- In the 2015 ERC **Starting Grant** call **2920** applications were submitted.
- In the 2015 ERC **Consolidator Grant** call **2051** applications were submitted.
- In the 2015 ERC **Advanced Grant** call **1951** applications were submitted.
- In the 2015 **Proof of Concept** call:
  - > **97** applications were submitted in the first round
  - > **107** application were submitted in the second round





European Research Council  
Established by the European Commission

## Supporting **creative minds** from everywhere in the world



**The newsletter is available in English. Subscription is free.  
You can subscribe online by clicking [here](#).**

Next issue: September 2015

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

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

**<http://erc.europa.eu>**

Follow us on:

