European Research Council
Established by the European Commission

ideas

#1
SPRING 2017

Newsletter of the European Research Council

Celebrating a decade of success

ERC turns 10

Over 140 events worldwide

Beyond the first 10 years

"The ERC has set gold standard in quality frontier research"

European Commission President Jean-Claude Juncker

Subscribe

European Commission
Horizon 2020
European Union funding for Research & Innovation

The European Union has always been built on the vision, courage and pioneering ambition of its people. That was true 60 years ago when the EU's founding fathers signed the Treaties of Rome. And thanks to the European Research Council (ERC) it is still just as true today. Ten years of opening up new frontiers, pushing new boundaries and making society-changing breakthroughs, has ensured that Europe's best brains and ideas keep pushing our Union forward.

Given how much it has achieved, it is remarkable that the ERC is only celebrating its tenth birthday. It does not seem so long ago that many were dubious about funding frontier research at EU level. Some did not see the immediate return on investment while others dismissed the concept as merely a pipedream for the academic community.

Ten years, 7000 EU-funded researchers, a 70% major breakthrough success rate, 100,000 peer-reviewed articles, 800 patent applications, six Nobel prizes and 4 Fields Medals later, there is not a shred of doubt remaining: Europe is the place to be for the world's best brains.

The ERC has set a gold standard in quality frontier research. It has put Europe at the forefront of discovery science globally. It has empowered the next generation of researchers and enabled them to follow their scientific curiosity.

Their work is helping solve the great societal challenges of the 21st Century – from energy saving technologies to digitisation to cures for diseases previously not understood. It has helped find defences against kidney disease in diabetes patients and create batteries lasting 5,000 times longer. There are countless other examples.

As we celebrate these successes over the last decade, it is now time to look forward. More than ever, Europe needs its best brains working together to face the challenges of the day: fighting climate change, reducing inequalities, boosting the economy and creating jobs.

This is why I have insisted since the day I took office that research and innovation underpin the Commission's main priorities. We have already invested 30 billion euro through the Juncker Plan and have reaffirmed our unequivocal commitment to Horizon 2020, the world's largest research and innovation programme of its kind.

But funding is only half the story. Europe is at its best when we pool our knowledge, ideas and resources. Our researchers already point the way with close cooperation and best-practice exchanges across disciplines, institutions and countries. That must continue to be a driver of the ERC's success and of Europe's wider progress.

The week of events across Europe celebrating the ERC's 10th birthday came at the perfect time, just one week before we celebrated our Union's 60th anniversary. By showcasing the talent and breakthroughs of the ERC's decade of work, we see Europe at its very best. We see the potential of the bright minds of our young people. And it is a timely reminder that vision, courage and innovation must continue to drive Europe forward as it shapes its own future.

Jean-Claude Juncker
President of the European Commission

Editorial 2
Jean-Claude Juncker,
European Commission President

Beyond imagination 4
A look back and beyond
From idea to success story

Beyond expectations 8
Key achievements after 10 years

Beyond Brussels 12
ERC Week: Over 140 festive events

Beyond the first 10 years 16
Celebrating a decade of success in Brussels

Beyond our solar system 20
First images from ERC-funded telescope

Beyond frontiers of knowledge 21
Research in the spotlight
Three questions to early ERC grantees

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.

Glancing back and looking beyond - Jean-Pierre Bourguignon, ERC President

How do you look back at the early days of the ERC?
My personal story with the ERC started before it existed, at a time when many European scientists were dreaming of a simple programme giving researchers the freedom to choose their research topics. They had one crucial request: top scientists should have the programme's decision-making power. After long discussions, the European Commission and the EU Member States gave, for the first time, such a responsibility to an external body. It not only showed what scientists can achieve when they put their minds to it, but also what the EU can bring about when it commits itself to deal with and believe in a community.

In 2007, I was appointed chair of the ERC's first mathematics evaluation panel. Being part of the early history of the ERC was a tremendous experience. The pioneering spirit was tangible back then. The first challenge was to manage the avalanche of proposals in the first competition for young researchers. By sheer willpower and hard work, the first call was concluded and the first grantees could start pursuing curiosity-driven research. The ERC respected a bottom-up approach from day one.

Since 2014, it has been an immense privilege for me to lead this organisation. It is inspiring to see so many ambitious projects proposed by world-class researchers, entrusted with EU funding. Countless have led to real breakthroughs advancing the frontiers of knowledge in many domains, thereby opening the way for solutions to problems citizens are confronted with.

We owe a lot to the first ERC Scientific Council members, its 'founding mothers and fathers', and all those who worked so hard for it, including early visionaries, politicians and Commission officials. The wonderful commitment both of the staff of the Executive Agency in charge of the ERC and of all scientists doing the evaluation has been instrumental in making it deliver. After just ten years, the ERC has become a reference for quality, something that usually takes several decades to achieve.

What are your hopes for the future of the ERC?
The ERC is here to stay for the simple reason that it is widely acknowledged as a resounding success. It helps pushing Europe to the top of the scientific ladder. It is a prime example of European added value; something to highlight and be proud of now more than ever.

We need to continue to make the case that 'blue sky research' is an unavoidable path to strengthen the EU's scientific and economic success. We should do this without ever becoming complacent, building on the legacy of the first pioneers.

Presently, a string of excellent candidates with exceptional ideas cannot be funded - purely for budgetary reasons. This shows that there is much more talent out there to support, talent that may well leave Europe for more fertile ground if not supported at the right level. Global competition is stiff. That is why the ERC budget needs to grow. Many factors are at play, but, in the next framework programme, the aim should be around €4 billion for the ERC annual budget. Several reasons make this growth indispensable: firstly the needs for a higher success rate and for more agility by the Scientific Council to take on new approaches, as well as closer contact with the public at large, beyond today's efforts, and, secondly, the need to further address interdisciplinarity. The re-launch of the Synergy Grant call in 2018 will be the first step.

Another vital element for the ERC's continued success: the Scientific Council must remain in the driver's seat. "For scientists and by scientists" is the motto at the heart of the ERC, in touch with the scientific community. All efforts should be made to ensure that the ERC Scientific Council and its implementing structure have all the necessary degrees of freedom.

Long life to the ERC!

Words of praise, from the past and present

Angela Merkel

Chancellor of Germany – ERC launch event in Berlin:

"The ERC could become a Champion's League for research and we have to accept that research needs autonomy and freedom"

Carlos Moedas

Commissioner for Research, Science and Innovation

"The ERC is our jewel in the crown, one of the best things to happen in Europe in the last 10 years"

Jerzy Buzek

Chair of the European Parliament's Committee on Industry, Research and Energy (ITRE)

"Over the past decade, the ERC became recognised by the academic community. It found its proper place. It is our success story!"

Robert-Jan Smits

Director-General, DG Research & Innovation

"Setting up the ERC is one of the best things the European Commission has done for science"

Helga Nowotny

Former ERC President

"Without the commitment and spirit of the pioneers we would not be able to achieve what we have achieved"

Philippe Busquin

Former European Commissioner for Research

"The ERC-projects' quality and the independence of the selection process, based only on scientific excellence, made the ERC an indispensable European organisation."

Janez Potočnik

Former European Commissioner for Science and Research

"It is nice to see the ERC growing and so healthy after 10 years"

From idea to success story

To appreciate the present and look to the future, one has to understand the past. That is why we would like to go back in time with the first pan-European funding organisation – how the ERC went from an idea to a success story within a decade of its launch.

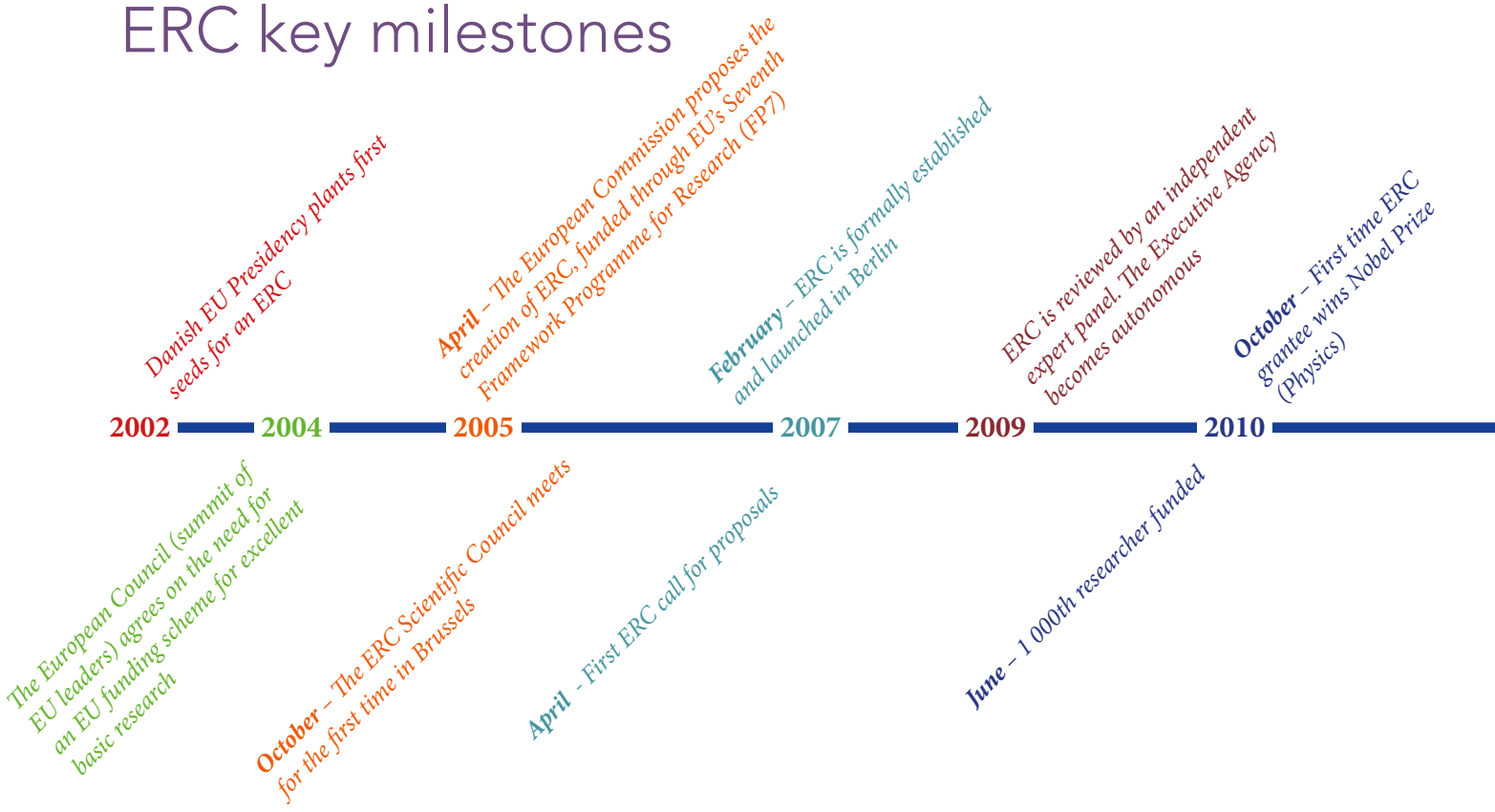
Its story can be traced back even two decades before the ERC's launch. The scientific community in Europe had made their voice heard since long, demanding the creation of a council. However, it was not until the early 2000s when a European Research Area sparked discussions between the worlds of science and politics that things really started moving. Within those debates, the need for an EU-backed European Research Council started to appear.

After independent Swedish research personalities, such as Dan Brändström, set the ball rolling, the turning point came in 2002 during the Danish Presidency of the Council of the EU. The seeds were sown of what was to become the ERC. Gathering political support was challenging, but these Scandinavian efforts convinced the European Commission. By March 2004, the EU Heads of State and Government agreed on the need for a dedicated European funding scheme for excellent basic research.

European Commissioner for Research (1999-2004) Philippe Busquin played a key role and supported the committed scientists who were in the lead. His policy focused on diversifying the European research instruments through the European Research Area, already consolidated in the Lisbon Treaty in 2000, and to recognise the excellence of individual researchers. His successors have been building on his work ever since.

Between 2004 and 2006 the groundwork was laid to turn the ERC into a practical reality. A High-Level Expert Group provided much of the rationale for the foundation of the ERC, including frontier research as its main target. Key figures such as visionary Commission official Dr William Cannell, as well as Lord Patten of Barnes (Chair of the first Identification Committee), Dr Achilleas Mitsos (then Director-General of DG Research), Robert-Jan Smits (current Director-General of DG Research & Innovation), Jack Metthey (the first ERC Executive Agency Director), and many others who cannot possibly all be named, took part in the ERC's pivotal early beginnings. The ERC became the flagship of the Commission's proposal for the Seventh Framework Programme.

ERC key milestones



The ERC's governing body, the independent Scientific Council, met for the first time in late 2005, and the ERC was officially inaugurated in 2007 under the German EU Presidency, with Chancellor Merkel as speaker. With an initial modest annual budget of €300 million, the ERC launched the very first call for proposals for the Starting Grant competition that same year. The demand was overwhelming: over 9,000 applications received. Prof. Fotis Kafatos, the first President of the ERC skilfully steered the ERC through its challenging first phase. Prof. Ernst-Ludwig Winnacker took office as the first Secretary General, serving as crucial link between the Scientific Council and the Commission, a role which Prof. Andreu Mas-Colell later took over, followed by Prof. Donald Dingwell.

The ERC's implementing arm had been part of the Commission from the start, but, in 2009, it was transformed into the ERC Executive Agency. In the same year, it was time to take stock of how the ERC had fared so far. An independent expert panel, chaired by former Latvian President Vaira Vīķe-Freiberga, reviewed the ERC and the following years saw the ERC grow in its scale of organisation and funding.

In 2010, Prof. Helga Nowotny started her presidency, successfully taking the ERC into its next phase. This year was also marked by two milestones: the 1,000th researcher was funded, and Prof Konstantin Novoselov, already ERC-funded since 2007, became the first grantee to receive the Nobel Prize. The next year, a dedicated task-force reflected on the ERC's future. Its positive review confirmed the well-functioning of the ERC, and offered recommendations to be taken up in the next Framework Programme.

The fifth anniversary celebrations in 2012 provided a festive glance towards the future, and the next five years saw the ERC's activities boom; from pioneering international agreements with global counterparts, to participation in prestigious scientific and business conferences across the globe, including the Davos summit, celebrating more ERC-funded Nobel Prize winners, funding many ground-breaking scientific discoveries, and supporting over 7,000 researchers in Europe. May the next ten years add more highlights to this European success story.

Former ERC Executive Agency Director Jack Metthey and former European Commissioner Máire Geoghegan-Quinn

July – ERC and US National Science Foundation (NSF) conclude pioneer agreement, to help early-career NSF researchers join ERC grantees' teams in Europe. Similar agreements with other countries concluded in following years.

ERC participates for the first time in the World Economic Forum in Davos, Switzerland

ERC celebrates its 5000th grantee

October – Sixth ERC grantee wins a Nobel Prize (Chemistry)

2011 2012 2013 2014 2015 2016 2017

2011 – Dedicated task force reflects on ERC's future

ERC celebrates 5 years. Another ERC grantee wins Nobel Prize (Physics)

Three grantees win Nobel Prizes in Physiology/Medicine and in Economics

July – The ERC announces record annual budget. New report reveals impressive impact of ERC-funded research.

ERC turns ten. 140 festive events organised in Europe and beyond

Key achievements after 10 years

A decade of work has clearly left an impact, both big and small. From giving a young scientist the trust to follow a scientific dream and offering a PhD student a first job as part of an ERC team, to sparking major scientific breakthroughs and advancing society at large. In the first ten years the ERC has been influential at many levels. Let's examine what one of the most recognised names in research has accomplished since its launch in 2007.

Pushing the frontiers of knowledge

For the first time, there is competition at a European level which has raised the level of excellence of research in Europe overall. The curiosity-driven research that the ERC supports gives researchers the freedom to explore their most daring ideas which often lead to major discoveries.

Recent independent studies have shown that over 70% of ERC-funded projects have already made breakthroughs or major advances; an impressive figure showing the relevance of investing in high-risk/high-gain research. This progress occurs in a broad range of areas, such as climate change, transport, energy, new materials, neurosciences, economics, law and many more. In the medium or long term, some ¾ of research outputs are expected to have an impact on the economy or society.

Prestigious prizes, e.g.

6 Nobel Prizes

5 Wolf Prizes

4 Fields Medals

Boosting careers & shaping national level

The ERC's impact goes beyond merely pioneering research ideas and breakthroughs; it also aids the careers of researchers. ERC-funding gives them independence to set up their own research teams, and trains the next generation of research leaders in Europe. Over 50,000 researchers and other experts have been employed in ERC teams so far. Moreover, the grants are filling a huge gap for the young: 2/3 of ERC grants go to early/mid-career researchers with even the majority of grantees being younger than 40.

Breakthroughs

73%

of completed projects led to breakthroughs/major advances

€12 billion to

7,000

grantees: majority <40 years

50,000

research staff in ERC teams

These ground-breaking research outputs have been highly visible in various scientific journals. In the last ten years, ERC grantees have published 100,000 articles, including over 5,500 articles in the 1% most cited scientific journals. In 2014, Europe surpassed the US for the first time in this respect, and ERC grantees contributed to it. Moreover, six Nobel Prizes, four Fields Medals and dozens of important prizes have been awarded to grantees, which helps putting Europe on the map.

Some universities and research institutions have set up special programmes to fast-track professorships. For example, in 2014, Ca' Foscari University of Venice offered an associate professor position to Dr Marco Sgarbi, 31 at the time, because of him winning a Starting Grant. This allowed him to acquire a permanent professorship around ten years earlier than it would usually happen in the Italian research system.

The success of the ERC's competitive funding research model has also made a strong impact at a national level with it figuring as a benchmark. Around Europe, eight EU

Member States have set up national research councils since the creation of the ERC, and seventeen countries have adapted their funding to follow or to complement ERC competitions. For example, Poland set up the National Science Centre (NCN) in 2010, which is a government executive agency funding basic research with the ERC as an explicit model.

ERC as model

15

EU countries set up ERC-like structures/funding schemes

Some European countries have launched initiatives to support applicants who passed the ERC competitions, yet budgetary constraints left them unfunded. For example, the Spanish government established the '*Europa Excelencia programme*' in 2013.

Initiatives were also launched at regional level. The Research Foundation Flanders (FWO) in Belgium supports the best ranked Starting Grant applicants who remained unfunded.

Welcoming talent from all over the world

But the ERC has not been focused on Europe alone, making top talent stay in Europe. It strives to attract the brightest talent from anywhere in the world. Since 2007, the ERC has visited all continents to meet counterparts abroad and promote that it is 'Open to the World'. In 2012, the ERC launched its first initiative, together with the National Science Foundation in the US, to encourage young scientists supported by non-European funding agencies, to come on research visits to Europe to work with and learn from top ERC-funded scientists in their field. So far, nine agreements have been signed, such as with South Africa, China, and Brazil, and more are foreseen for the future.

Open to the World

9

international initiatives for non-EU talent to join ERC teams

Generally, ERC grants are becoming more and more internationally recognised as awards for scientific excellence. Over 180 researchers moved to Europe with the grant, of which most are returning Europeans. One of those grantees is top economist Hélène Rey: "*I was based in the US at Princeton University and was considering moving back to Europe. While having other offers in the US, the existence of the ERC was a tipping point that made me take Europe seriously and return*". For many other researchers winning an ERC grant gave the opportunity to stay in Europe.

Innovating industry

ERC projects have led to over 75 new ventures and more than 800 patent applications boosting the economy, creating new jobs and benefitting society at large.

Innovation

>75

new ventures

>800

patent applications

The Proof of Concept scheme, introduced in 2011, has helped almost 600 grantees to bring their frontier research to market. For example, Prof. Eiliv Lund who is commercialising a simple, cheap blood test that can be used to diagnose breast cancer, or Prof. Markus Aspelmeyer who has co-founded a start-up that manufactures high-performance mirrors for optical precision measurement to be used in navigation systems.

Leaving a mark on European science

Since day one, the ERC has been making Europe a more attractive place for bright minds, by creating open and direct competition in the most promising new fields, supporting the next generation of research talent, nurturing science-based industry. Its legacy will continue to develop further in the next ten years and beyond.

10 years supporting the best talent

Albert Quintana

Autonomous University of Barcelona, Spain

#EUStories: Albert and Elisenda: from brain drain to brain gain

"After 7 years of postdoctoral experience in the US it seemed that both my scientific career, and life plans, were bound to be based outside Europe: I had already established my own independent research lab, my wife Elisenda had secured a competitive senior scientist position and we were expecting our first son, Noel. Obtaining an ERC Starting Grant, together with a MSCA fellowship for Elisenda, provided the unique opportunity to do excellent science in Europe and to maintain core personnel in the lab. Furthermore, the visibility and recognition associated to ERC grants has helped us attract extremely talented researchers to our group. Overall, ERC funding has allowed us to return to Europe and perform research at the highest level."

© Kevin Homewood

Kevin Homewood

University of Surrey, UK

The long-term support from the ERC allowed me to spend more of my time on the project. And because the ERC and the Royal Society are high prestige contracts, it endorses the outcome technology when you try to go out and get investors to bring it closer to market."

Read more on his research on silicon and laser detectors

© Jan Grabek

Natalia Letki

University of Warsaw, Poland

"This was the adventure of my life. I was the first researcher in Poland to win an ERC Starting Grant in social sciences and the University offered considerable support during its implementation. For scientists in the early stages of their career – this is a truly unique opportunity."

© UiO

Anders Martin Fjell

University of Olso, Norway

"The grant has allowed me to plan a long-term research programme [to find out how memories are encoded and reconstructed in the brain], including higher risk experiments and unconventional methods that would be difficult to fund otherwise. We could also attract talented young researchers to our group, which expanded: in 2016, it became an official 'Research centre' in our department, with own budget and premises."

Efterpe Fokas

Hellenic Foundation For European And Foreign Policy, Greece

"The ERC has given me a fantastic opportunity which allows for really in-depth research. Many funding agencies provide grants for two to three years, which is not always enough for large-scale projects on important issues. The five year ERC grants provide the time and resources necessary to consolidate a research team, fine tune your methodology and be thorough with your research questions"

Maria Rescigno

University of Milan, Italy

"[ERC grants are so crucial because they provide you with a stable financial situation for long-term projects.] ERC grants also increase your chances of receiving other grants from national and international agencies, and I am now professor at the University of Milan, on the back of being an ERC awardee."

Jana Roithova

Charles University in Prague, Czech Republic

"I have been able to establish my research group from scratch, with suitable laboratory space, and to fill it not only with instruments but also with scientific life. The ERC grant made a major difference for my career and my international reputation."

© Utrecht University, NL

Krijn de Jong

Utrecht University, The Netherlands

"Our research is high-risk, fundamental research with no guarantee of success. ERC support has therefore been essential in achieving a breakthrough in catalysis, and it has had a multiplier effect through university co-funding and will lead to collaborations with industry and other researchers in the future".

Read more on how his research on catalysts could lead to ultra-clean fuels.

Christine Joblin

Université de Toulouse and CNRS, France

"Our Synergy Grant provides a unique dynamic space for creativity and innovation in research. Nanocosmos is an ambitious project that enabled us to bring together top-notch researchers from the chemical cosmos and the nanoworld. It is thanks to the ERC that we can today open these new avenues in interdisciplinary fields."

Iva Tolić

Ruđer Bošković Institute, Zagreb, Croatia

"I applied for an ERC grant because it is the best and the biggest research grant for basic science in Europe. Thanks to this funding, I was able to buy state-of-the-art equipment for my lab and to set my own new research team in Croatia."

The ERC Week: Over 140 events to celebrate 10 years of ERC

ERC event at the Tate Modern in London

The tenth anniversary of the ERC is a reason to celebrate, not in Brussels alone but also around Europe and the World. Festivities sparked over 140 events, organised by universities and research centres, national authorities and research councils, cultural institutions and EU delegations worldwide. All have been joined together under the "ERC Week and beyond" umbrella. With this article, the ERC pays tribute to those behind these wonderful efforts.

A bottom-up initiative

The core of the anniversary, the ERC Week, took place from 13 to 19 March, but the celebrations include events throughout 2017. In November last year, the ERC launched the idea for anyone interested to organise events and communication activities around the ten year theme.

The response was overwhelming and heartening: more than 140 events during this year, across 38 countries and several continents. Activities have been located in Europe, as well as in the USA, Brazil, India, Japan, China, Taiwan, Indonesia, and as far as Australia and Cameroon. The variety of these initiatives has been impressive. They included for example workshops marking an institution's success in ERC calls to national celebrations discussing the future of European research with heads of states and ministers. This engagement was massively echoed on social media with an unprecedented avalanche of posts.

Across Europe

Celebrations took place in various European countries, including 15 national events, with more still to come. For instance, the Centro Nazionale della Ricerca (CNR) organised a major celebration, combined with the 60 years of the Treaty of Rome. It featured European Parliament President Antonio Tajani, Italian Prime Minister Gentiloni as well as the Minister for Research and several other key personalities. President Bourguignon gave a keynote speech – "Looking beyond 60 Years of the Rome Treaty - a Scientist View" with a heartfelt plea for scientists to speak up.

At the Spanish National Museum for Science and Technology in Madrid, several ERC grantees presented their research in thematic sessions focusing on topics from the human brain to the health of our hearts. Both ERC Executive Agency Director Pablo Amor, as well as former ERC Vice President Prof. Nùria Sebastian Galles participated.

President Bourguignon visits Cambridge University McDonald Institute

Commissioner Moedas at the Citizen' Dialogue in Strasbourg

The Tate Modern, in London, exhibited the work of ERC grantees who focus on the active role of citizens in science. The general public could take part in science experiments and data collection.

In The Hague, the Netherlands Organisation for Scientific Research organised a conference focused on the impact of ERC-funded research and the follow-up of the Horizon 2020 programme, at which President Bourguignon and Director-General of DG R&I Robert-Jan Smits took part in, as did ERC Vice-President Prof. Martin Stokhof and ERC Scientific Council member Prof. Eveline Crone.

President Bourguignon travelled intensively through Europe for the festivities. He also spoke in Bonn, where he met German grantees and potential applicants; Paris and Strasbourg, where he discussed European research with illustrious figures of the French academic panorama. In the latter event he took part alongside Commissioner Carlos Moedas and Nobel laureate Jean-Marie Lehn. In Cambridge, Prof. Bourguignon saw some grantees in action, and, with Commissioner Carlos Moedas, he attended the Portuguese national celebration in Lisbon.

During the week, Commissioner Moedas participated, together with Nobel Laureate Lehn, in a Citizen' Dialogue in Strasbourg, to understand, from a bottom-up perspective, what citizens expect from investments in research and innovation, and to engage with the younger generation.

Many Scientific Council members participated as well in various celebrations, and have been instrumental in

Anniversary conference in the Netherlands

© Melvin Tas

Celebrations at the EU Delegation in Tokyo

the initiative's success. For example, Prof. Nektarios Tavernarakis spoke at the University of Athens and Heraklion University; Prof. Margaret Buckingham and ERC Vice-President Prof. Eva Kondorosi were present with Prof. Bourguignon at the CNRS central celebration in Paris; Prof. Isabelle Vernos attended both the Spanish national celebration in Madrid and another event in Barcelona; Prof. Reinhilde Veugelers represented the ERC with Prof. Bourguignon at the Belgian national celebration, and Prof. Fabio Zwirner was at the SISSA celebration in Trieste.

Event at the EU Delegation in New Delhi, in conjunction with EURAXESS India

Beyond Europe

Many events have taken place or will take place outside the borders of Europe. The USA opened the celebrations in February in Washington DC, partly organised by Euraxess Links North America. American events also included a tour of several campuses and institutions, from California to Maryland. The EU Delegation in China organised a national celebration introduced by the EU Ambassador. Several grantees shared their experiences and presented the visiting fellowship established through the implementing arrangement between the EU and China.

The Delegations to Taiwan, Indonesia, Japan, India and Brunei organised events showcasing scientific talent and what Europe has to offer. In the near future, the Delegations to Brazil and Israel, in collaboration with the Israel-Europe R&D Directorate (ISERD), will organise similar events.

With more on the horizon

This is only a small sample of the wealth of festivities that were organised. And there are more to come. The ERC thanks all organisers and participants for throwing a great party! May it continue.

Some #ERC10yrs celebrations on social media

Celebrating a decade of success in Brussels

Opening remarks by Prof. Jean-Pierre Bourguignon, ERC President

After the tremendous success of the ERC Week, a full-day celebration wrapped up the anniversary milestone in Brussels. At festively decorated Tour & Taxis, first-class science was mixed with passionate political speeches and even some entertainment, amassing into an inspirational day that looked back at, but also beyond, ERC's first ten years.

Guest were warmly welcomed by powerful opening remarks. ERC President Prof. Jean-Pierre Bourguignon recalled the ERC's early days, how far it has come in the last decade, and remarked: "*the passion of ERC grantees is what makes the ERC so special. Its success lies in people*". From the European Parliament, Jerzy Buzek, Chair of its Committee on Industry, Research and Energy (ITRE), came wearing two hats; "*I am also an engineer, a scientist, and this was my first and longest profession!*" He announced his commitment to increase the European research budget, which received cheers from the audience. Pascal Lamy, Chair of the High Level Expert Group on maximising impact of EU Research and Innovation Programmes, highlighted the ERC's success within Horizon 2020.

Commissioner for Research, Science and Innovation Carlos Moedas concluded by saying: "*Europe is probably the only place where we still believe in scientists' intuition.*" And stressed how ERC grantees are great ambassadors of science: "*You should not only be the storytellers of Science, but the storytellers of Europe. You are what makes the ERC so special.*"

Research in the spotlight

A scientific conference followed this opening. Thirteen ERC grantees from various scientific disciplines inspired with their stories and took questions from the audience. The first session, moderated by Scientific Council member Prof. Dame Athene Donald, brought on stage Professors Daniel Cremers, Yael Hanein, Michael Häusser and Dr Aleksandra Walczak, who introduced a wide range of topics; from research into 3D world reconstructions and artificial vision to neuron computation and immune repertoires. The grantees also underlined that the ERC serves as a good motivation to stay in Europe.

Scientific Council member Prof. Sir Christopher Clark took over the moderator role in the second session, in which Professors Cédric Blanpain, Günther Knoblich, Stefania Milan and Maria-Carla Saleh provided fascinating insights into stems cells, cultural learning, data politics and viral disease transmission. Sir Cristopher asked the panel of

© Fred Guerdin

Sir Christopher Clark, ERC Scientific Council member, and grantees Cédric Blanpain, Günther Knoblich, Stefania Milan, Maria-Carla Saleh

scientists whether interdisciplinarity is only positive to which Professor Blanpain replied: "*it definitely helps see things from different perspectives.*"

In a nod to Bob Dylan's "*Forever Young*", Scientific Council member Prof. Nils Christian Stenseth introduced the ERC as "ladder to the stars". In this session, Professors Emily Cross (explore her research on p. 21), Toby Kiers, Ilona Anniina Riipinen and Ekaterina Zhuravskaya discussed research on social robots, microbial conflict, atmospheric gas-particle interactions and the economics of prejudice. "*Europe has fantastic initiatives, they brought me here from the United States*" stated Prof. Cross, who went from being a Marie Skłodowska-Curie Actions fellow to ERC grantee.

Closing remarks by Director-General Robert-Jan Smits

ERC Vice-President Prof. Eva Kondorosi gave an introduction to grantee Peter Seeberger and Tom Monroe, CEO of Vaxxilon, who shared their story on when frontier research meets innovation. Prof. Seeberger's research on vaccines battling deadly bacteria led to a start-up company that now develops innovative synthetic carbohydrate vaccines that are less sensitive to temperature changes. CEO Monroe shared the many challenges faced when making the interface between discovery and transition to commercial setting, and concluded: "*innovation is the way to go!*". Throughout the day, grantees stressed the need, in this day and age, to advocate and explain science to people.

Robert-Jan Smits, Director-General of the Commission's DG R&I, who was part of the ERC's journey from the start, gave the closing speech of the scientific conference. Amongst other things, he paid tribute to ERC grantees and Scientific Council members, and welcomed ITRE Chair Jerzy Buzek's commitment to increase the research budget. He ended by stating: "*Today we can say we have delivered. The ERC is the benchmark for frontier research and is an amazing instrument which will continue to thrive*"

A room full of stars

Celebrations did not come to an end just yet, as after a day filled with awe-inspiring science communication, it was time for the festive event, moderated by Katrina Sichel. Commission President Jean-Claude Juncker opened the celebration by means of a video message in which he praised the ERC: "*a legacy that will last for generations*". ERC Executive Agency Director Pablo Amor then shone a light on ten years of ERC milestones. He started with a video recording from the ERC launch event in Berlin in 2007 with Chancellor Angela Merkel, former Commissioner Janez Potočnik and the first ERC President, Prof. Fotis Kafatos. This trip down memory lane concluded with key personalities in the audience sharing their views, such as former Research Commissioner Philippe Busquin, Director General Robert-Jan Smits, founding ERC Scientific Council member Prof. Teresa Lago, and former ERC President Prof. Helga Nowotny, who specifically thanked all panel members: "*who made it possible to reach the gold standard of excellence in Europe*". Afterwards,

ERC Exectutive Agency Director Pablo Amor and presenter Katrina Sichel

Prof. Virpi Lumma presenting her research

Prof. Christian Müller (discover his research on p. 22) built upon the warm feeling in the room with his work on producing electricity from your own heat.

President Bourguignon then took the floor to highlight the ERC's global mission: "*looking beyond Europe has been decisive for the ERC*", he stated, before introducing video messages from counterparts across the world. For example Brian Schmidt, Nobel Laureate and Vice Chancellor of Australian National University, exclaimed that the ERC is "*a beacon of scientific achievement*", and Prof. Vikay Raghavan of the Indian Ministry of Science and Technology said "*[The ERC's] excellence is the key to success*". Grantee Damian Evans wrapped up the trip around the globe with his discovery of a lost civilisation in Cambodia that previously made headlines worldwide.

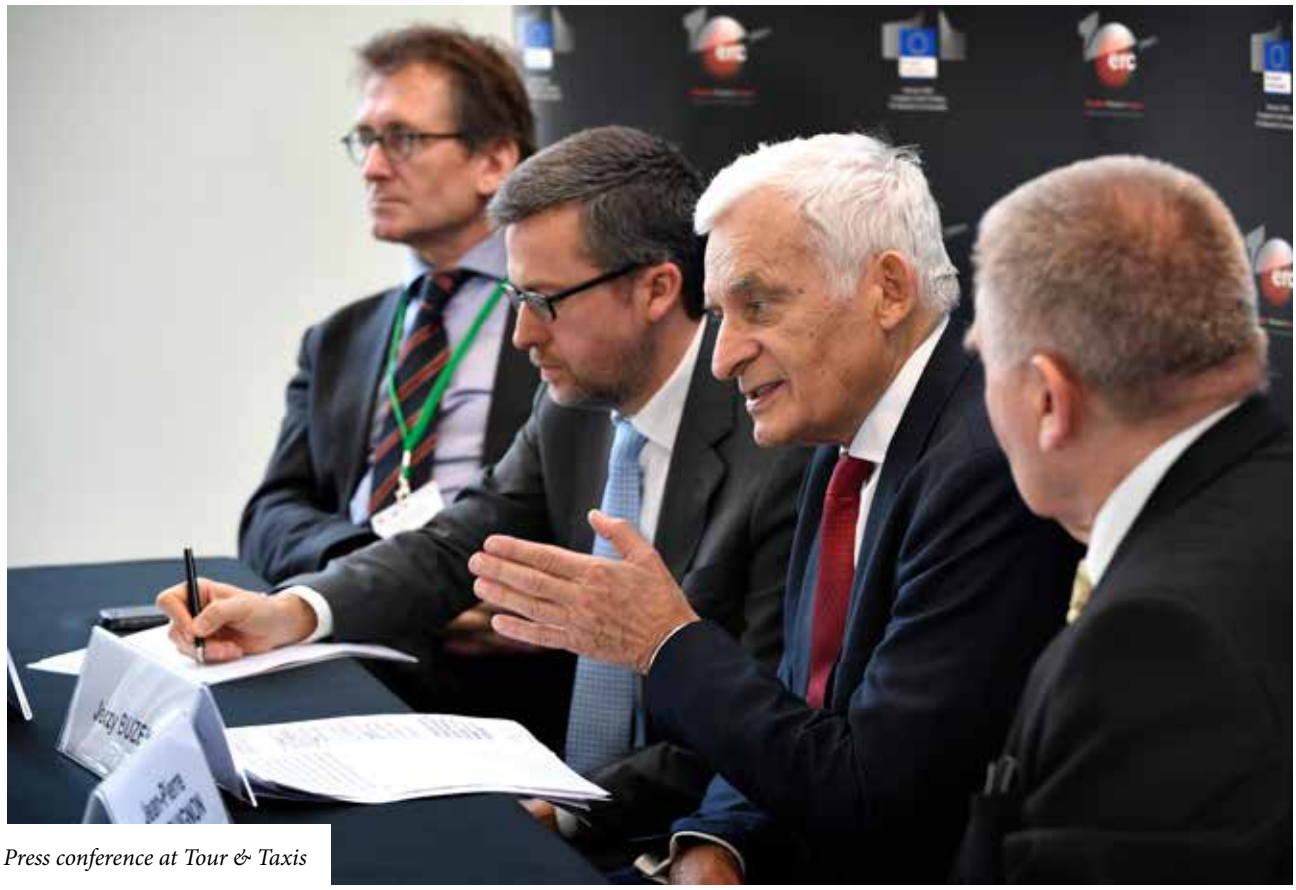
A talk-show with Nobel Laureate and ERC grantee Ben Feringa, Commissioner Moedas, former National Science Foundation Director Subra Suresh (by video conference), and Prof. Stefania Milan came next. Moderator Ann Mettler, Head of the Commission's European Political Strategy Centre, asked about their views on science in current times. Carlos Moedas called for ERC grantees to "*shout about your discoveries*", while Ben Feringa stressed: "*the best way to predict the future is to invent it*". He also emphasised that the ERC dared to invest in his risky research, which allowed him to bring the best European brains to his team. Subra Suresh and Stefania Milan emphasised the importance of science to society. Prof. Milan also asked to "*let the ERC be a safe haven for research*", and Prof. Suresh concluded: "*good science anywhere is good for science everywhere!*"

Prof. Virpi Lumma's fascinating research on the mysteries of ageing concluded the grantees' presentations of the evening. After a spectacular laser show, President Bourguignon thanked the European Parliament, European Commission, Member States, the scientific community and all who made "*this great European success story*" happen, and also reminded the audience of the 140 spontaneously organised ERC anniversary events across Europe and indeed the World. He concluded that: "*The beautiful ERC story proves that Europe can be successful and become the reference when it dares to innovate*".

The lights dimmed and a sparkling birthday cake was rolled onto the stage. However, the President still had a surprise up his sleeve: stellar astronomer Michaël Gillon, who recently discovered seven earth-like exoplanets, appeared live via video connection, all the way from Chile, to present the new EU-funded telescope "Europa". As Dr Gillon spoke to Commissioner Moedas and President Bourguignon, the very first images of planets and galaxies seen via "Europa" graced the venue. The evening drew to a close, literally leaving the audience with stars in their eyes.

Read more about the "Europa" telescope's first images on page 20. Watch highlights from the event in this short video.

© Fred Guerdin



Press conference at Tour & Taxis

© Fred Guerdin

Speaking to media about a decade of frontier research

In the morning of the anniversary, a press gathering was held with Nobel laureate Ben Feringa, as well as the European Parliament's Jerzy Buzek, Commissioner Moedas and President Bourguignon.

To highlight the anniversary further to the media, Carlos Moedas and prominent ERC grantees Valeria Nicolosi and Peter Seeberger gave a press conference at the Commission. For the very first time, scientists were brought onto this stage to share their stories and work.

The Commissioner once again conveyed how much he believes in the ERC, in its potential and why the ERC is important. "*We created a system that is very different from other parts of the world; we have the scientists telling the politicians, telling the institutions what they want to do. And that changed the game*", he said.

Prof. Valeria Nicolosi, researching nano-materials, defined herself as a "*true European*", as the "*EU has supported my career all the way*". In winning multiple ERC grants over the years, she expanded her team from five to over 35 people. Prof. Seeberger, studying new vaccines, stressed how he and his team did not stop at the basic science level, but realised the potential commercial opportunities that arose. He wrapped up: "*That is what we need in Europe. Fundamental science will lead to applications, but it is impossible to predict how long it will take.*"

Over 350 media outlets covered the anniversary, such as Der Standard (AT), Le Monde (FR), Die Zeit (DE), La Vanguardia (ES), The Irish Times (IE), La Repubblica (IT), Gazeta Wyborcza (PL), Público (PT) to name but a few.

© European Union , 2017 © Jennifer Jacquemart

First images taken by ERC-funded "Europa" telescope

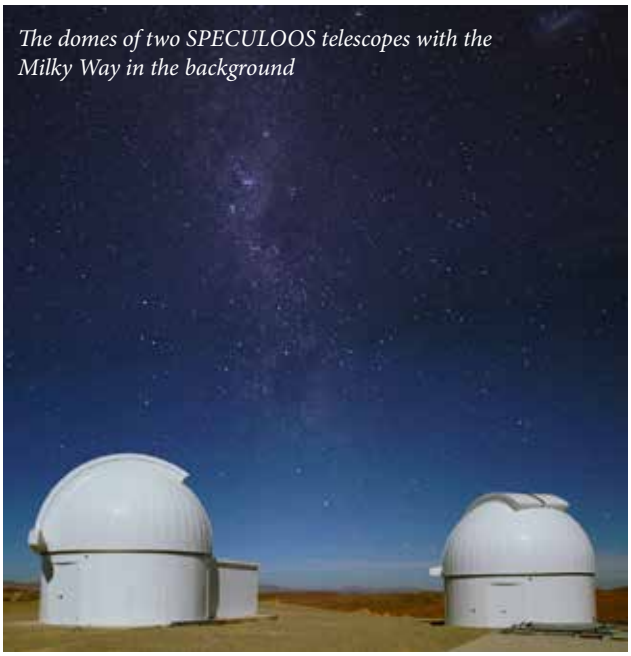
Astronomer Michaël Gillon, ERC grantee from the University of Liège, stunned the world with his recent discovery of seven potentially inhabitable planets orbiting the Trappist-1 star, some forty light years from Earth.

Recently at the European Southern Observatory of Paranal (ESO) in Chile, Dr Gillon launched the first telescope funded with the ERC grant. The telescope, named 'Europa', is the first of four instruments that will help in search of exoplanets in the framework of the SPECULOOS project. Premiered at the 21 March celebrations in Brussels, these are the first images of planets and galaxies as seen by "Europa."

Learn more about this stellar project via a short video made at one of the best astronomical observing sites in the world.

© ULG

Michaël Gillon : "Without the EU funding it would not have been possible to arrive at this discovery. I'm very grateful that the European Research Council invested in our idea and believed in our intuition back in 2013."



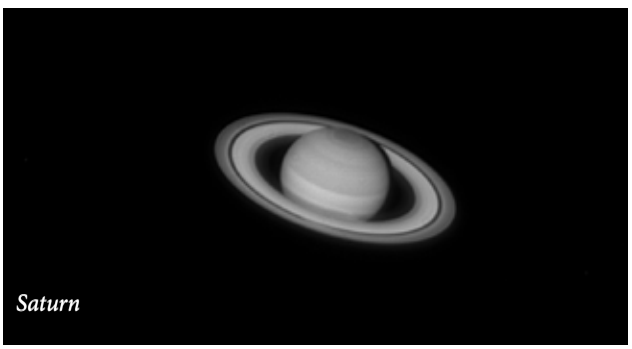
The domes of two SPECULOOS telescopes with the Milky Way in the background

Galaxy M83

© SPECULOOS commissioning team @ Paranal

Galaxy NGC 2997

© Peter Aniol @ Paranal



Saturn

© Peter Aniol @ Paranal

Socialising with Artificial Agents

A number of factors have played an important role in the evolutionary success of the human species. One of the undeniably fundamental factors has been our inherent ability to communicate. This capacity to perceive, respond to and coordinate behaviour with others has not only allowed us to survive, but also to thrive. The ERC-funded project SOCIAL ROBOTS headed by Prof. Emily Cross is aiming to gain a deeper understanding of the intricacies of how we comprehend and coordinate our actions with other people and with robots to achieve mutual goals.

The project will be combining approaches from disciplines such as Social Cognition, Social Neuroscience and Social Robotics to study populations that vary across age and cultural background. In this way, it aims to provide the most comprehensive picture to date of how a biological system that evolved to support social interactions with other people can adapt to interact with artificial agents. It will thus generate a new understanding of the underlying mechanisms and consequences of human social interactions.

Over the last decade, smart devices have become a significant part of our lives and the companies that make them are developing new and innovative ways for us to interact with them, such as digital assistants. In addition, the development of home companion robots and assistance robots for schools and hospitals is rapidly gaining momentum and is thought to become the norm in just a few years from now.

These artificial agents try to deliver behaviours that can be considered 'social' and how we perceive and interact with them remains largely unexplored. They provide social cognition researchers with a brand new opportunity to study how humans respond to different situations during social interaction.

By innovatively combining psychology, neuroscience and robotics, the SOCIAL ROBOTS project aims to develop tools that will help us prepare for that future, while at the same time tackling one of the core challenges of social cognition research.

It will do this by establishing a new approach for understanding how the human brain processes and responds to interactive robots, while also outlining the factors that influence how representations of robots and humans are shared at brain and behavioural levels.

The results of the project will have a wide array of implications for our understanding of the neuroscience supporting social cognition, as well as for individuals and institutions interested in social robot development. By exploring the workings of core social brain processes, the project will use its findings to build upon the development of social robots with the ultimate aim of maximising human engagement.

Researcher: Emily Cross, Bangor University (United Kingdom)
Project: Mechanisms and Consequences of Attributing Socialness to Artificial Agents (SOCIAL ROBOTS)
ERC funding: Starting Grant 2015; EUR 1.8 million for five years

Follow Emily Cross on Twitter @brain_on_dance

High Energy Fashion

© Jason Ryan & Anja

Conducting silk fibres on a washing line

"The internet of things" is said to be the next big frontier for technology firms. A variety of small devices are always on and always connected. These devices permeate our lives at an ever increasing rate, bringing with them a demand for new and innovative mobile energy sources. One of the most promising candidates is thermoelectric power; a technology that would allow us to harvest one of the most ubiquitous energy sources available to us, our body heat.

When a thermoelectric device is placed in such a way that it is exposed to a temperature difference, an electric potential is generated that can drive an electric current. This technology has had various applications in the past. From powering expensive wristwatches to NASA's Curiosity Rover that was send to Mars. It has proven itself to be robust and able to operate for an extended period of time without maintenance but it has been difficult to bring to the wider public. This has been due to the high-cost of the manufacturing process, and the toxicity of the substances used.

The goal of the ERC-funded ThermoTex project headed by Prof. Christian Müller of Chalmers University of Technology, Sweden, is to create textile-based thermoelectric generators that can be woven into fabrics and worn. The team aims to create fabrics that are cheap, flexible and pose no health risk to the wearer.

The project will test the capabilities of plastic semiconductors which are based on abundant elements such as carbon, oxygen, nitrogen and sulphur. A far more cost effective option compared to the typically used metal alloys. When processed in the right way, plastics are also flexible and light.

Initially the research has centred on the preparation of these plastics, the thermoelectric properties which only recently receive renewed attention. At a later stage the Thermotex team will explore how these polymers could be processed into light-weight and flexible articles such as fibres, yarns and ultimately fabrics by looking at traditional weaving methods as well as emerging 3D-printing techniques.

Prof. Müller and his team focus on making plastic semiconductors that are cost-effective, can be used in a practical setting and are able to survive the harsh conditions inside a washing machine. They are currently working in collaboration with the Swedish School of Textiles in Borås, Sweden exploring how they can integrate these conducting fibres with weaving looms that would ultimately allow them to automate the manufacturing process and one day make them available in a retail store near you.

© Jan-Olof Yxell

Researcher: Christian Müller, Chalmers University of Technology (Sweden)
Project: Woven and 3D-Printed Thermoelectric Textiles (ThermoTex)
ERC funding: Starting Grant 2014; EUR 1.5 million for five years

Watch his presentation (minute 20')

Three questions to early ERC grantees

Two ERC grantees share how their relationship with the ERC started, where it led them and what they think is in store for the future.

Prof. Thorsten Quandt from the University of Muenster received a Starting Grant in 2009 to shed light on the social foundations of online gaming.

© Hangst

Prof. Romagnani from the University of Florence received two ERC grants to work on treating kidney disorders.

Why did you apply for ERC funding?

Back in 2008, my university approached me and told me about the ERC. At the time I was a junior professor in Berlin and they said my CV fit the description. I found it highly fascinating that you could apply with a bottom-up basic research project, with freedom of thought. It gives you the opportunity to do your dream project. I don't know any other funding opportunities that were at that time large enough to support my idea.

To gain independence! I applied to the ERC's first call in 2007 as I had read in the news that there was this new funding possibility. Finding funding in Italy is extremely difficult, particularly for a young researcher. I applied by proposing the kind of science that I had in mind to do and won a Starting Grant. Six years later, I could bring the results obtained further by applying for and winning a Consolidator Grant. A young researcher with plenty of ideas should have independence and I think this is the most important characteristic of the ERC calls: the possibility to give independence to young researchers with plenty of ideas.

How has the ERC grant impacted your research or career?

I guess a large part of my career was influenced by the ERC grant. It acted like a catalyst, an amplifier for what I was doing and it enabled me to do things quicker and on a larger scale. It also made some ideas become reality that would have been impossible otherwise. In concrete terms, I came from the field of online journalism and had just started doing research on digital games and entertainment. The ERC allowed me to broaden my perspective, and subsequently changed my career path. I currently hold the chair of online communication at the University of Münster.

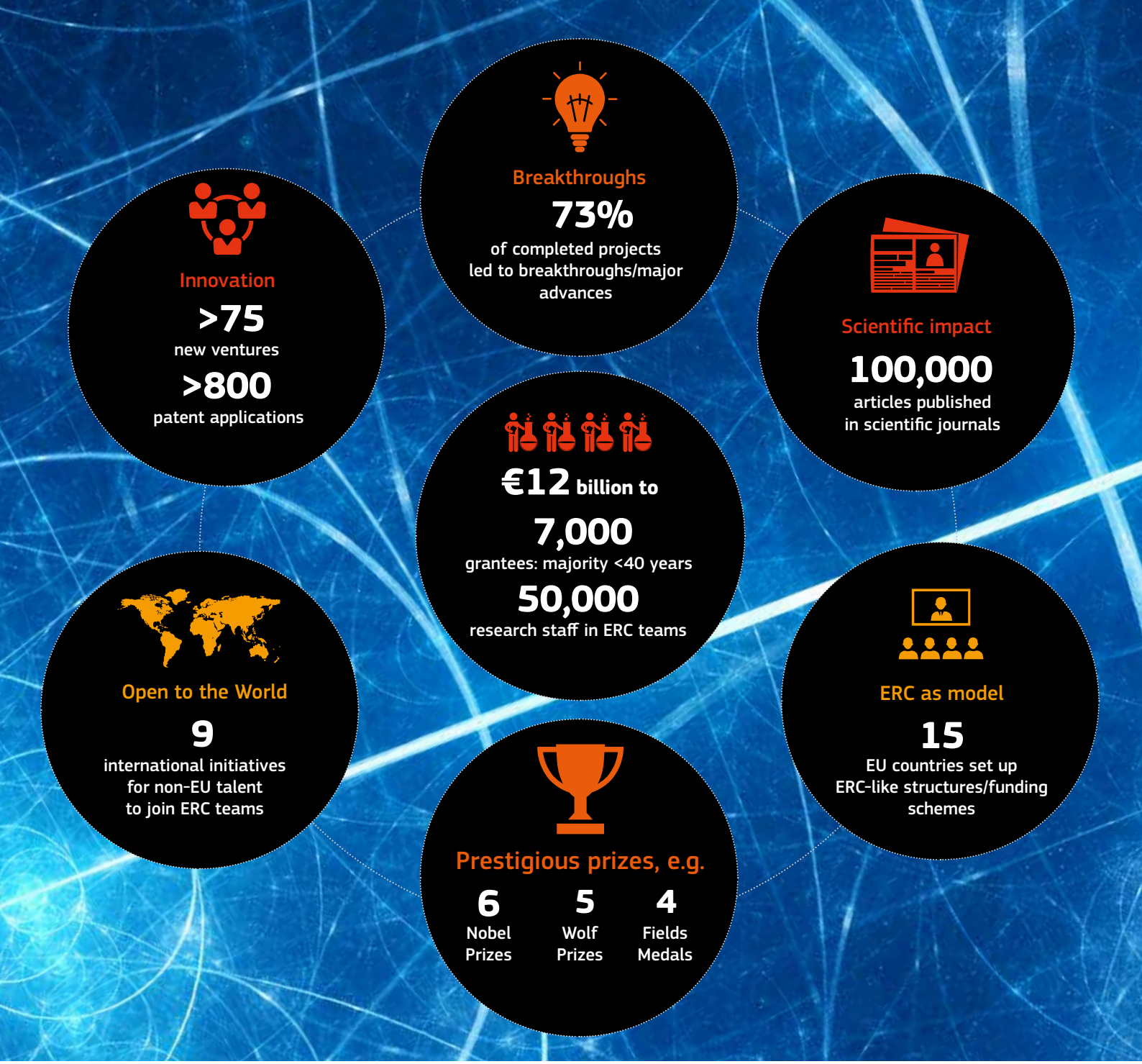
It gave me freedom, and freedom in frontier science is the most important thing. It also provided me with the opportunity to complete my research in Italy, yet at the same time, allowed me to make international contacts that helped me grow, and significantly impacted my career. For this reason, my career path has been different from the more common ones in Italy. Often young scientists do not have many possibilities to move abroad, and if they do, they usually do not return.

How do you view the ERC in the next ten years?

It developed very well. A lot of people now know about the ERC, more people apply for it and this improves the whole process. I think that the ERC is one of the best things that came out of EU funding when it comes to science. It is a fantastic programme and my hope for the next ten years is that it still grows and develops on the strong foundations that it already has. It truly enables researchers to fulfil their dreams.

I think this has been the best instrument in international research over the last years. It is not something that I say based solely on my own experience; I have also heard it from my colleagues. The ERC always funds the best researchers, and what is important is that this is absolutely independent from their nationality, from their education background, from everything. It is the best way to bring the best scientists to Europe. It gives opportunity to researchers to pursue their careers in any part of Europe bringing new ideas to life.

Get to know more about Prof. Quandt and his work in the 10 years, 10 portraits video series.



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

Next issue: Summer 2017

Find ERC National Contact Point in your country

Subscribe for ERC Updates

http://erc.europa.eu

Follow us on:

European Commission

Horizon 2020
European Union funding
for Research & Innovation