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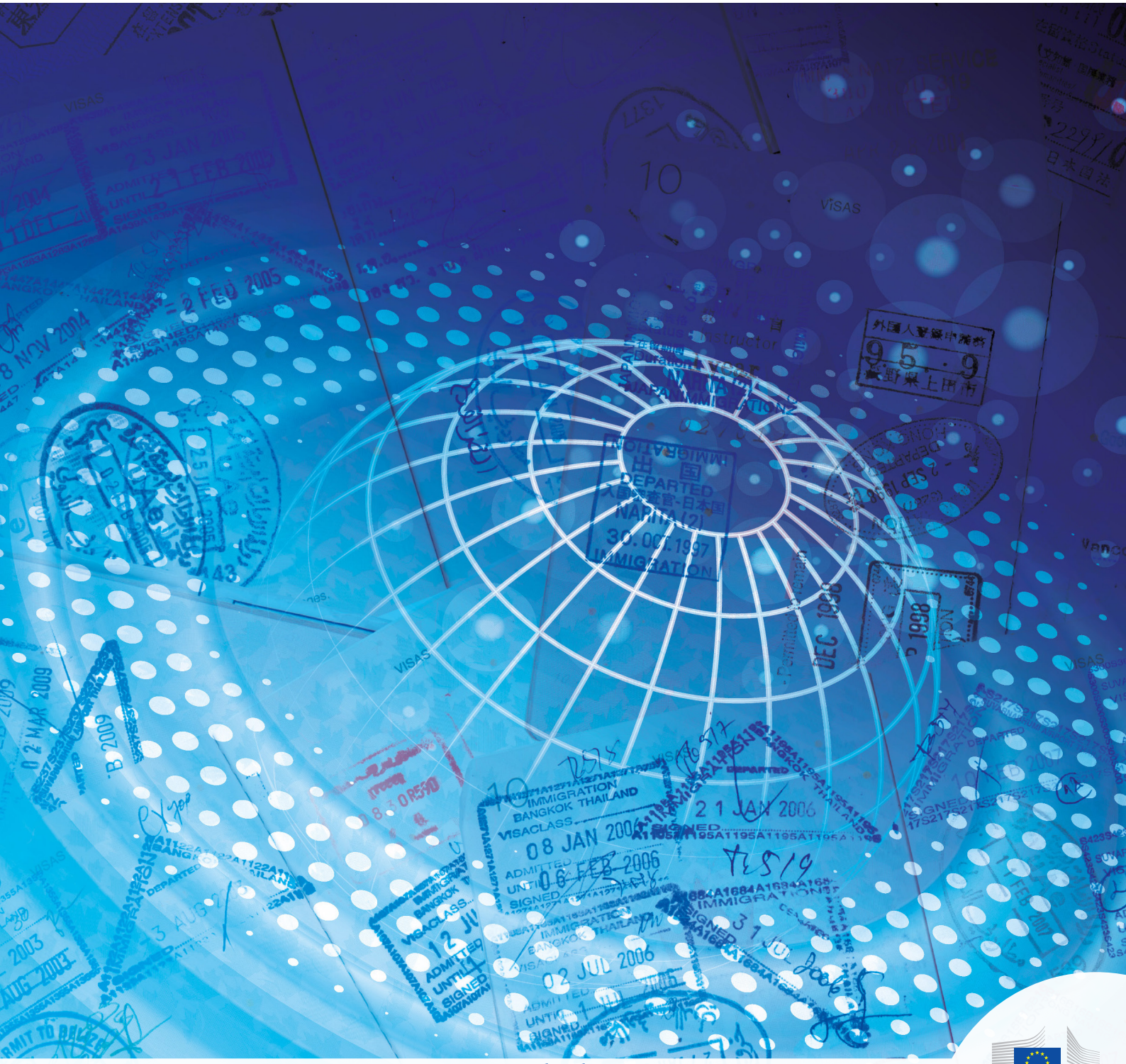
#4
DECEMBER 2015

Newsletter of the European Research Council

Tales of serendipity
Studied malaria, found cancer treatment

Going global
ERC - open to the world

Innovators
Grantees meet "business angels"



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It is well known of course that, at its launch in Berlin, Chancellor Merkel said the ERC "*could become a Champions League for research*". Just eight years later, the ERC is one of the European Union's biggest success stories and a household name in science.

It is my belief that, in the coming years – as people look to the world's scientific communities to provide strategies and solutions to complex global problems like the effects of climate change or public health among ageing populations – the work of ERC grantees will become increasingly important.

The European Commission will therefore continue to prioritise and support fundamental research, both as a way of enabling our best minds to fulfil their potential and as an investment in finding the answers to the questions we don't even know we have yet.

It is therefore with great pride, that I look back on the year gone by and consider how this new Commission has worked with speed and conviction in its first efforts to support European research and innovation that benefits Europe and the rest of the world.

In just one year, we have shown that the European Union is capable of finding new ways to mobilise investment in high-risk, high-reward research and innovation projects, with 1 billion euro through the new European Fund for Strategic Investments. In just six months, we were able to establish a new Scientific Advice Mechanism, so that a diverse group of leading European experts can be called upon to inform EU policymaking with independent scientific advice. And, in a few short months, we demonstrated that the Commission is capable of reacting swiftly in a crisis, intensifying the vital research needed to tackle a global health challenge like Ebola.

At the launch of the ERC in 2007, Chancellor Merkel also said, "we [politicians] have to accept that research needs autonomy and freedom". It is therefore my task to ensure that Europe leads the way when it comes to giving researchers more independence.

As 21st century science becomes more open and collaborative, I think we are doing well. The ERC, in particular, has brought about a string of agreements with reputable counterparts overseas to help top talent join research teams in Europe. Agreements like the ERC-Mexico deal I signed with the Director General of the Mexican National Council of Science and Technology, Dr Cabero Mendoza, in November, are encouraging the most promising young researchers to temporarily participate in projects led by European Research Council grant holders.

This important work is very much in line with my view that European research, science and innovation must be Open to the World, because there are few forces in this world more engaging and unifying than scientific endeavour.

This year the EU was granted observer status for SESAME, home to the first particle accelerator, and to science diplomacy, in the Middle East and took the historic step of Horizon 2020 Association Agreements with Ukraine and Tunisia.

As 2015 draws to a close and we get ready to enter a new year, the Commission will keep up the momentum, supporting European frontier research for global impact.

Carlos Moedas
European Commissioner for Research, Science and Innovation

Thanks to:
ERC grantees Dr Astrid Dannenberg, Dr Fernando T. Maestre
Dr Ali Salanti, Prof. Maria Santofimia and ERC team member
Prof. Kip Findley

Rosaria Carbone, Giulia Gabrielli, Dr Ylva Huber, Johanna Kainz,
Neno Nenov, Edward Smith

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.

ERC - open to the world

Top research is an intrinsically international endeavour - bright minds exchange ideas across borders and continents. It is crucial for them to collaborate freely to progress and even to reach ground-breaking discoveries. The ERC encourages such "brain circulation" and aims to make Europe a prime location for top talent of any nationality and from anywhere in the world.

Nurturing excellent researchers by letting them develop their ideas freely is at the heart of the ERC's mission. The ERC funding is open to scientists whether they are based in the European Research Area (ERA) or overseas when applying for funding. To date, there are over 5,500 ERC grantees of 66 different nationalities. This includes over 400 non-European nationals, of which the biggest groups are from the US (185), Canada (46), Russia (36), Australia (31), India (28) and Japan (19). The lion's share was already working in European universities before their ERC grants. What's more, ERC-funded teams, led by grantees, are highly international; 17% are nationals of countries outside ERA.

The ERC in particular strives to attract top talent based abroad, which is slightly easier when it comes to Europeans abroad some of which are looking for ways to return to Europe. More challenging is to entice non-European talent to move to ERA. To spread the word about its funding opportunities, the ERC has travelled to some 15 countries around the globe, from Argentina to China, from South Africa to India and the US. It also has a dedicated Working Group to monitor the international aspects closely, and this global mind-set also translates into its peer review system, which is one of most international on this scale in the world.

Brain circulation

Whilst the main goal is to inspire bright minds worldwide to come to and stay in Europe through flexible and attractive grants, the ERC goes further. It also wants to encourage its grantees to engage even more with fellow scientist in the global research community and motivate international young talent to take part in ERC-funded projects. In 2012, the ERC launched an initiative with the US National Science Foundation (NSF) to make it easier for early-career NSF scientists to join ERC-funded teams for a period of six to twelve months. By now, agencies in seven countries on four continents have signed such agreements (see below). And there are more countries lined up. The ERC has recently asked its grantees if they would like to host such temporary team members. The number of positive responses was heartening; 535 grant holders said they wished to take part in the initiative.

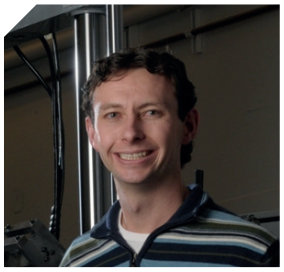
ERC President Prof. Jean-Pierre Bourguignon praised these deals: "*I am sure that such collaborations give rise to lasting ties and to win-win situations. Contributing to brain circulation is a clear ambition of the ERC*". To push the frontiers of knowledge, scientists need to collaborate across borders. Global scientific exchange helps broaden horizons and can lead to synergies that can further our understanding.

- **United States, 2012:** National Science Foundation (agreement)
- **South Korea, 2013:** Ministry of Science, ICT and Future Planning (agreement)
- **Argentina, 2015:** Ministry of Science, Technology and Productive Innovation (agreement)
- **Japan, 2015:** Society for the Promotion of Science (agreement)
- **China, 2015:** National Natural Science Foundation (agreement)
- **South Africa, 2015:** National Research Foundation (agreement)
- **Mexico, 2015:** National Council of Science and Technology (agreement)

Talent from across the Atlantic

Since this summer, Prof. Kip Findley is part of the research team of ERC grantee Prof. Maria Santofimia at TU Delft (Netherlands), thanks to the joint initiative of the US National Science Foundation (NSF) and the ERC. They share their experience of this research visit to Europe that will soon come to an end.

Prof. Kip Findley, NSF awardee and Associate Professor in Metallurgical and Materials Engineering at the Colorado School of Mines (US), joined Prof. Maria Santofimia's team last August for a four-month visit.



Maria Santofimia, Associate Professor at the TU Delft, aims to create novel nanostructured steel materials with her ERC Starting Grant project.

What encouraged you to join Prof. Santofimia's ERC funded research team?
I have to say that it was a series of fortunate circumstances! I received an email from the NSF informing me of the possibility of visiting a research team based in Europe for a short period. Almost at the same time I was contacted by Prof. Santofimia as my research topic, mechanical metallurgy, is complementary to her field of investigation. We started discussing the possibility of collaborating and, since my university granted me a sabbatical period of half a year, I agreed to join her team under the ERC-NSF implementing arrangement. For me, this is a really good opportunity to work with other scientists who have expertise that fits well with mine.

Please tell us about your experience.
I like working here; the Delft University of Technology (TU Delft) has a good reputation and is well-equipped. With Prof. Santofimia and her post-doc researcher, Dr Javier Hidalgo Garcia, we are focussing on the microstructure and properties of an advanced high strength steel. This topic has huge potential and has attracted the interest of the metallurgic industry worldwide. I think that we will continue to collaborate, also after the end of my stay here. We have already identified some questions that we intend to pursue in the future. Here in Europe, I also had the opportunity to establish contacts with other research groups and to visit companies interested in investing in the technologies we are developing.

What is your take on international scientific collaboration?
Such opportunities are critical for developing long distance collaborations, which are often good opportunities for scientists working in similar areas. We would not have had the same level of success in this project if we were to collaborate from a distance. Face-to-face contact is essential and, in my case, without this joint initiative, I could not have afforded to come to Europe. ■

Why did you decide to take part in this initiative?
The Colorado School of Mines is well known for steel research, which is also my scientific field. When I heard about the agreement with the NSF, I enquired whether someone working there was interested in joining my team. A colleague put me in contact with Prof. Findley. He and I share a common research base, since I investigate thermodynamics, while he focuses on the mechanical properties of a very particular form of high-strength steel.

What came out of your cooperation to date?
Thus far, it is going very well. Prof. Findley is currently carrying out experimental research with one of the post-doc researchers in my team. We have already started two papers and this is a great result considering that we have been working together only for three months. Since he is on sabbatical leave and he does not have other academic responsibilities, such as teaching, he can focus more on our research. This opportunity has enabled us to cooperate more efficiently and quickly as well as to learn from each other. Furthermore, it has led to out-of-the-box ideas opening the door to future collaborations!

Originally from Spain, working in the Netherlands; what are your views on international scientific collaboration?
I really believe international mobility is essential. Working in different countries and institutes broadens your views and provides you with new challenges. It also makes you more open-minded and shows you that research can be done in many different ways. But I have to say that moving around is easier at the beginning of your career. Afterwards, professional and family commitments make things more complicated. ■

Spreading science across the world

Meet two passionate ERC grantees, whose ideas are contributing to global scientific exchange.

Climate change: what triggers human cooperation?

With all eyes turned towards the COP21 conference in Paris and its outcomes, climate change has been high on the world's agenda for the end of 2015. The conference was one of the largest diplomatic efforts of the last 25 years to tackle this global challenge, and has achieved a historic agreement. Prof. Astrid Dannenberg investigates the nature of large-scale human cooperation to develop effective strategies for the preservation of the global environment. When she received an ERC grant in 2014, she moved back to Europe from the US, maintaining collaborations with her colleagues at the universities of Princeton and Columbia. This has been crucial for her work.

It is not far-fetched to say that progress of civilisation has been possible because of human cooperation. The importance of collective action to address common challenges can be traced back to the pre-historic times when the survival of an individual depended on the tribe's collective ability to hunt big mammals. Today, cooperation is crucial in order to handle global issues such as climate change.

There is no world government that can enforce the protection of the global commons, so one has to rely on voluntary cooperation by sovereign actors to define and agree on measures to be taken.

ERC Starting grantee Prof. Astrid Dannenberg and her team at the University of Kassel in Germany analyse the motivation triggering large-scale human cooperation. The results might bring insights into how to successfully encourage the global community to protect the environment.

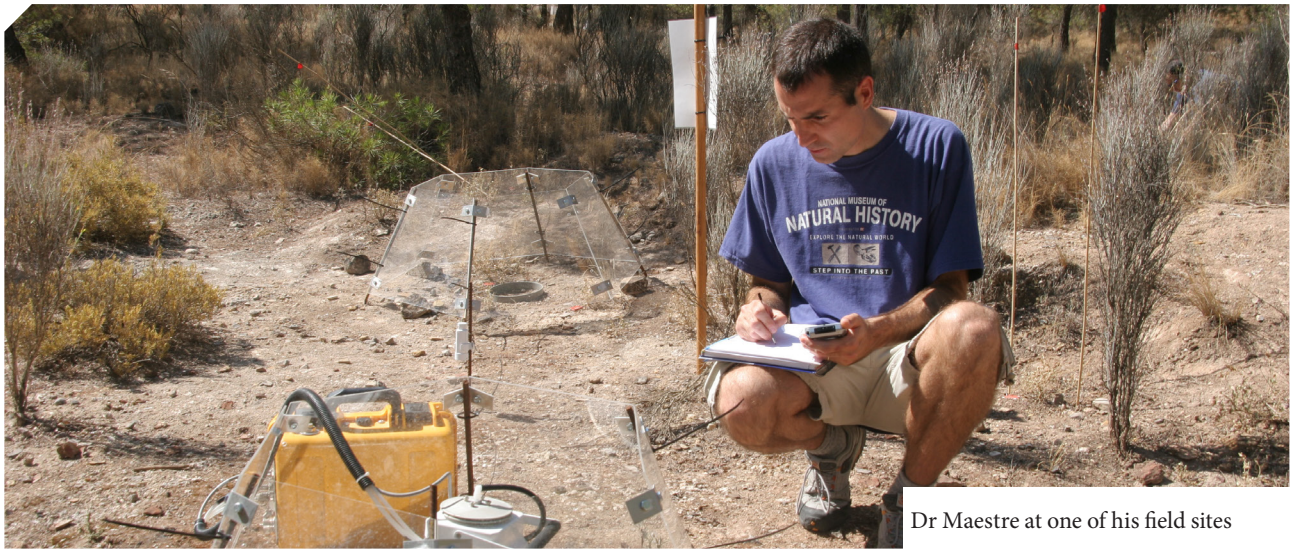
The available scientific literature about human collaboration has primarily focused on its local and regional forms, which cannot always be applied at the global level. Prof. Dannenberg aims to show differences between the various levels of collaboration, not only in terms of group size, but also in the way institutions and norms are formed, and in the strategies they adopt, taking into account the psychology of the group members.

Her research will also draw upon studies conducted by her colleagues in Sweden and the US, where she worked in the past. "*We are supported by three well-established experts in the field: Prof. Scott Barrett from Columbia University, Prof. Simon Levin from Princeton University, and Dr Maja Schlüter from the Stockholm Resilience Centre, who is also an ERC grantee. They have all been working on cooperation problems for years, and importantly, they use different methodological approaches.*", says Prof. Dannenberg.

This interdisciplinary research combines theoretical, experimental, evolutionary and empirical methods, which complement each other in order to grasp the complex nature of human behaviour and decision-making. The project also includes case studies of international cooperation or lack thereof, the analysis of incentives behind examples of successful projects and the assessment of how this knowledge can be related to combatting climate change.

"In the project, we are planning to work with experts across disciplines to advance," Prof. Dannenberg explains. "Their research involving multiple methodological approaches enriches our own studies." Understanding the cause of the problem and which solutions have a better chance to work in practice will be an invaluable piece of information that policy makers and the civil society may need to design actions that can successfully protect our environment.

Destination World: travelling the continents to understand dryland ecosystems



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Dr Maestre at one of his field sites

When we talk about climate change, often the mind wonders towards forests such as the Amazon, the "green lung" of our planet. However, other ecosystems also have a major part to play. Drylands, parts of the world characterised by a lack of water, are a good example. These are the object of study of ERC grantee Dr Fernando T. Maestre, from the Universidad Rey Juan Carlos in Móstoles (Spain). Dr Maestre has travelled across all continents to paint a picture of global drylands and climate change.

Drylands cover about 40% of the Earth's land surface and support 38% of the human population, making them one of the largest and least understood opportunities for climate change mitigation. Dr Maestre has conducted field work in all continents but Antarctica to investigate how biodiversity and ecosystem functions differ in these varied landscapes, and how these ecosystems features impact the provisioning of services that affect the planet's ability to react to ongoing global environmental change.

Maestre reports that drylands conduct several functions simultaneously, such as carbon storage, water infiltration and nitrogen cycling. These determine the ability of the ecosystem to provide fundamental services such as food production, water purification, climate regulation and soil development. These functions can help, for instance, to control soil erosion or to regulate CO_2 exchanges between the soil and the atmosphere, all important features for ecosystem resilience to climate change and other human disturbances.

However, this multifunctionality greatly depends on abiotic factors, such as climate, and biotic factors, such as biodiversity. Maestre has undergone several studies, all around the world, to assess how different factors associated with climate change and biodiversity could impact the attributes and multifunctionality of drylands. With his team, he has studied 224 dryland ecosystems from 17 countries across continents, in stark contrast with previous similar research, mostly conducted under controlled greenhouse conditions or small-scale field experiments.

Results have highlighted how a change in aridity caused by climate change could impact the way nutrients travel through the system, greatly decreasing dryland biodiversity and multifunctionality. The global survey conducted reveals that drylands, which host many endemic plants and animal species, and include about 20% of the major centres of global plant diversity and over 30% of the endemic bird areas worldwide, will be very susceptible to climate change.

The research also indicates that in drylands worldwide, multifunctionality is enhanced by an increased number of plant species and is reduced by a rise in the average annual temperature, both factors impacted by global climate change. In addition Dr Maestre has highlighted that growing aridity reduces abundance and diversity of microbial communities which carry out key ecosystem services such as nutrient cycling, climate regulation and the build-up of soil fertility. Since predictions indicate a growth in dryland ecosystems of 11-23% by the year 2100, there is considerable need to understand how drying landscapes impact losses in biodiversity and ecosystem services which we now consider vital.

Fernando T. Maestre concludes that "*Although it is difficult to agree on how and when to limit the emission of greenhouse gases responsible for global warming, we can contribute to minimize its negative consequences for terrestrial ecosystems if we take clear actions to both preserve and restore their biodiversity. This can only be done with an open, global view of the problem.*"

Promoting ERC-funded discoveries

Eight years after its creation, the ERC has already reached high visibility in the scientific community. Now, the objective is to consolidate this high profile and present the achievements of the research supported by the ERC to a wider audience.

For this purpose, the ERC Scientific Council decided to support a multiannual communication campaign to highlight ERC projects and their results. Following a call for proposals, the ERC selected two projects that will develop communication activities combining traditional and innovative tools, in different European countries and languages.

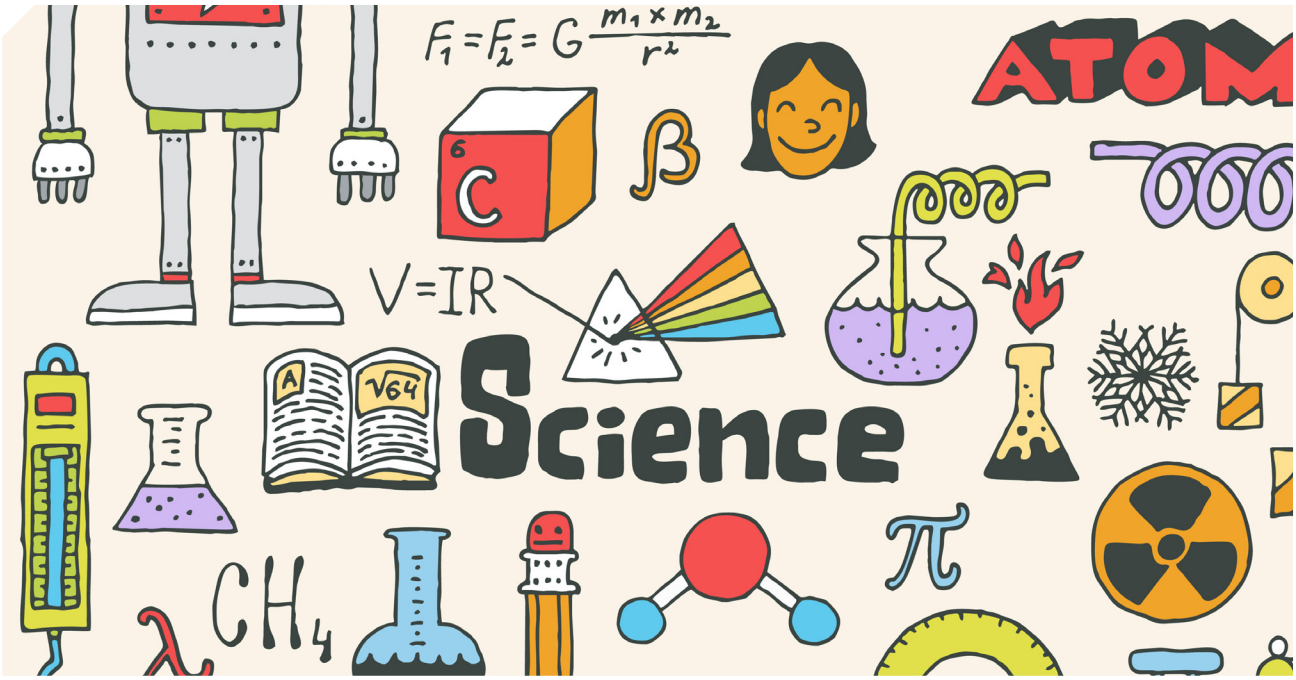
Both projects have started their preparatory work this autumn - discover them here:

Cutting-edge research to capture imagination

The ERC=Science² project is led by ScienceIBusiness, a media and communications company, which coordinates a consortium of eight partners across Europe, gathering universities, science museums, small and medium enterprises and business associations. It will highlight science funded by the ERC that has the potential to capture the imagination, change the world and stimulate curiosity beyond the scientific community. During three and a half years, the project will organise a series of activities around popular scientific themes that will change every six months. Short videos, articles, augmented reality animations and pop-up displays will be produced to illustrate each theme. ERC grantees will have the opportunity to present their research in events in nine science museums and 31 universities all over Europe. A science stand with live experiments and demonstrations will reach people on the route to their daily activities: in public places such as city squares, parks, festivals. The campaign will also target industry. Pitch sessions will be convened, during which ERC grantees will present commercial potential of innovations that emerged from their research. Finally, ERC=Science² will invite various stakeholders for roundtables with policy makers. The project started in October 2015.

The power of visual storytelling

The team behind ERCcOMICS, coordinated by the Pierre and Marie Curie University-Paris 6 in a partnership with La Bande Destinée, a communication agency also based in France, proposed a creative and artistic approach. Their aim is to bring together and exploit synergies between traditional science communication channels, such as articles and interviews, and the world of comics. Talented comic artists will work with ERC grantees to produce science-based on-line comic stripes illustrating scientific achievements. The stories, published online, will be paired with interviews with the ERC grantees, video documentaries on ERC projects, images, data and interactive content. Exhibitions of the original drawings are also planned at comic festivals. Finally, the team will organise public talks, including TEDx type events, in several countries. ERC grantees will be joined on stage by comic artists who will illustrate their talks in real time and present it to the audience. The ERCcOMICS project started in November and will run for four years.



The data behind ERC projects

In two reports – ERC funding activities 2007-2013: Key facts, patterns and trends and Science behind the projects - the ERC presented on the one hand detailed statistics of all its calls during the EU 7th Framework Programme (2007-2013) and, on the other, a first analysis of the scientific content of ERC projects funded during the same period.

The first publication covers overall statistics. For example you can read that the highest number of applications was submitted by researchers in Italy (15%), Germany (12%) and the UK (10.6%). A majority of candidates, over 70%, were early-career scientists applying for Starting and Consolidator Grants. The most successful countries in terms of number of grants hosted were the UK, Germany, France, the Netherlands and Switzerland, which in total hosted over 22% of ERC grantees. On average, the grant size was €1.48 million for Starting grants, €1.92 million for Consolidator Grants and €2.4 million for Advanced Grants. The publication provides information at various levels of geographic resolution (country, region, city, institution).

The second publication focuses on the 4,352 projects selected in thirteen Starting, Consolidator and Advanced Grant competitions launched between 2007 and 2013, a period during which the ERC spent €7.5 billion as part of the 7th Framework Programme. Almost 42,000 proposals were assessed in this period, of which around 10.4% were successful and received the funding. The analysis presents an overview of the research landscape of the projects funded by the ERC in FP7 in the domains of life sciences, physical sciences and engineering, and social sciences and humanities. It also provides evidence on how bottom-up research funded by the ERC contributes to particular European thematic policy priorities — the examples given are nanotechnology, energy, health and migration.

Life Sciences

Around 14,000 proposals were submitted in the field of Life Sciences (LS). Amongst nine panels in the domain, the ones that received the largest number of submissions were the "Neuroscience and Neural Disorders" and the "Diagnostic Tools, Therapies and Public Health" panels. Each of them attracted around 15% of the LS applicants overall. In total, 1,573 projects, that is 11.2% of all submitted proposals, were funded with a total budget of €2.9 billion. Around 21% of researchers selected for the grant were women.

Social Sciences and Humanities

In this domain, over 8,600 proposals were submitted and 814 were funded with €1.2 billion (success rate 9.4%). This means that around 9 candidates out of 100 received ERC backing. The panels that received the most proposals were "Institutions, Values, Beliefs and Behaviour" and "The Human Mind and Its Complexity", each receiving around 22% of applications. Out of the funded projects, 31% were led by female grantees.

Physical Sciences and Engineering

Almost 19,000 proposals were competing for funding in Physical Sciences and Engineering, of which 1,965 were successful (10.5% success rate). The selected projects, funded with a total of €3.3 billion, were assessed by independent experts in ten panels. The panels "Condensed Material Physics" and "Computer Science and Informatics" received the highest number of applications, each of them evaluating roughly 12% of projects. Around 15% of grant winners were women, which is aligned with the share of female applicants in the domain.

For more statistics, such as demography of ERC applicants, their host institutions, host countries and ERC panel structures, read the ERC funding activities 2007-2013 report (which also includes statistics of Proof of Concept and Synergy Grant schemes).

For those interested in the scope of research funded by the ERC panels, the Science behind the projects report will shed more light on which proposals were successful.

Short descriptions of all ERC-funded projects are also available for browsing on a dedicated ERC page, where visitors can search for either specific call, funding scheme, domain, country of host institution, or can simply look up using key words. Additionally, an ERC page about statistics shows number of candidates, grantees and success rates in individual calls and schemes.

The ERC will also soon introduce a new search engine on the ERC stories page, with comprehensible summaries of a variety of ERC-funded projects, of which many have obtained ground-breaking research results.

Enjoy the browsing!

Austria

Austria, a country at the heart of Europe, has a history of scientific excellence and hosting international talent. Its research model ranks amongst the most prosperous and innovative in the EU. It invests 2.8% of its GDP in research, well above the EU average. Austria's performance is confirmed also by its competitiveness in ERC calls: some 140 ERC grants have been awarded there so far.

In 2013, Austria spent €3.6 billion in public funds on research and development. At the same time, the country's private sector contributed with more than €3.9 billion. As the industry covers the lion's share of research costs, it has developed an efficient system to stimulate innovation through research. Customised innovation funding programmes, highly qualified specialised staff and more than 50 industry clusters ensure optimal networking between business and science.

Austria's main ambition is now to switch from being an "innovation follower", i.e. developing the ideas of others, to becoming an "innovation leader", i.e. introducing own cutting-edge solutions. For this purpose, in recent years the country has shifted its investment from structural R&D towards larger, thematic research programmes. But to lead innovation, the country also puts effort into attracting foreign talent.

Its geographic location makes Austria a first port of call for researchers from the neighbouring countries, but it also hosts scientists from outside Europe. For example, two thirds of all ERC grantees based in the country are of non-Austrian nationality. Amongst them, there are researchers from six neighbouring countries, including the Czech Republic, Germany, Hungary, Italy, Slovakia and Switzerland. From overseas, researchers from Argentina, Australia, China, India, Japan and US are based in Austria. In total, 24 nationalities are represented amongst the Austria-based ERC grantees.

Austria has also other links with the ERC: Prof. Helga Nowotny, one of the most renowned Austrian sociologists, is a founding member of the ERC Scientific Council and served as ERC President from 2010 to 2013. She is currently Chair of the ERA Council Forum Austria amongst other things.

©Yvla Huber

Three questions to:

Dr Ylva Huber

Austrian National Contact Point (NCP)

How would you describe the research landscape in Austria?

With "distinctive peaks" in a number of research areas, including quantum physics, molecular biology or materials science, Austria has a diverse research landscape. The academic sector, comprising 22 public and 12 private universities, and 21 universities of applied sciences, as well as research organisations, including the Austrian Academy of Sciences, the Austrian Institute of Technology and the Institute of Science and Technology Austria, together create a strong base for fundamental research. Austria has also a long-standing tradition in applied research thanks to a versatile and innovative private sector, which includes approximately 3,300 companies performing research, the majority of which are small or medium-sized enterprises. This provides a favourable setting for fostering cooperation between the academic and the private sector, as exemplified by the "COMET Competence Centres for Excellent Technologies" or the "Christian Doppler Laboratories". In the past 10 to 15 years, several structural changes in the Austrian research system have taken place, including a simplification of the research funding landscape and the new university law, giving Austrian universities more autonomy. The Austrian RTI Strategy was adopted in 2011 to help establish Austria as one of the leaders in innovation. The strategy aims to strengthen the national research structures with a focus on excellence, foster innovation in companies, set thematic priorities, increase governance efficiency, and link research, technology and innovation to the education system.

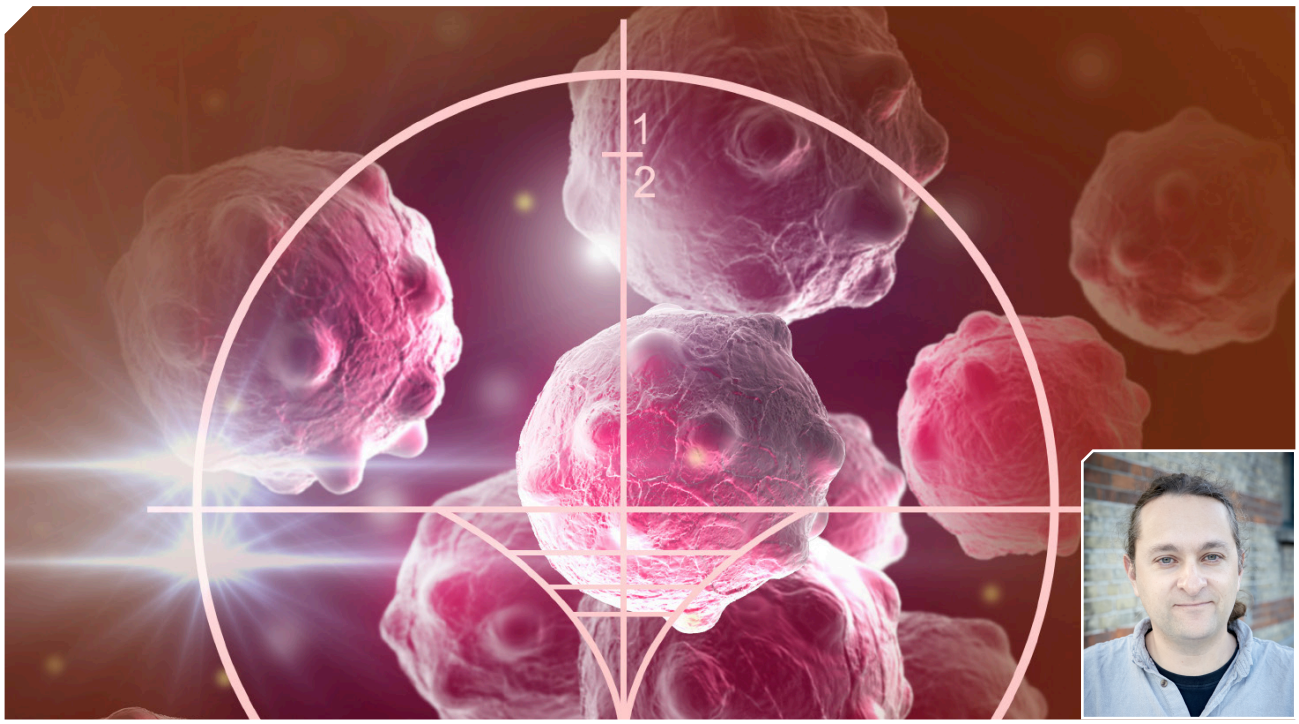
Almost 70% of ERC grantees based in Austria come from outside the country. What are the benefits of hosting these foreign researchers in the country?

Apart from coming up with new perspectives and approaches stimulating the research community, scientists from abroad enrich their environment with their personal networks that can help initiate new research cooperation. While most of the international ERC grantees based in Austria come from one country, Germany, there are currently more than 20 nationalities represented in this group. We also find it very helpful to discuss with these grantees their experiences in other research environments to improve our own support to applicants. We transfer this information to Austrian universities and research organisations ("ERA-dialogues") to further develop services offered to ERC applicants and grantees in Austria.

As the NCP, how do you encourage researchers who are already based in Austria to apply for ERC grants?

In the Austrian research community there is generally high awareness and strong interest in the ERC. But researchers consider carefully the best possible "timing" for submitting their proposals as they also know the restrictions around ERC applications. The analysis of CVs and track record, as well as advice based on "lessons learnt" from ERC evaluation comments are thus an important element in our coaching services. In addition, I think that the interaction with ERC grantees, ideally from a similar research area, is particularly important for potential applicants. For this reason we include discussion and networking possibilities with ERC grantees in our training for applicants and interviewees, and we continue to explore other "networking formats".

Studied malaria, found cancer treatment



© Ali Salanti

Malaria has always been the centre of attention for Dr Ali Salanti's, a molecular parasitologist and an ERC grantee. With his studies, he hoped to bring new insight into pregnancy-associated malaria, to save the lives of women and their babies in areas affected by the disease. Now, Dr Salanti's research has shifted to battling against another deadly disease: cancer. This comes after an unexpected discovery yielded ground-breaking results for the diagnosis and treatment of this illness. This is the kind of curiosity-driven research that can lead to ground-breaking serendipitous outcomes.

The host-parasite relationship has always fascinated parasitologists and evolutionary biologists. Thanks to simple mechanisms developed over millions of years, the two are intimately competing in an arms race for the most effective measures and counter-measures. This relationship is sophisticated and precise, but it can also prove deadly. Malaria parasites make no exception, having adapted to find ways to enter the human body despite its immune system.

Dr Ali Salanti, from the University of Copenhagen, was originally studying one of these adaptation mechanisms: a protein, VAR2CSA, which allows the parasite to adhere to the placenta. This is a mechanism that has evolved to avoid circulation within the blood stream, which eventually would result in the destruction of the parasite by the immune system. VAR2CSA expressed by the malaria parasite allows it to bind specific carbohydrate receptors that are only found in the placenta and nowhere else in the human body.

It came as a surprise to Dr Salanti to find that the carbohydrate receptor in the placenta that binds the malaria protein is also present in cancer cells, where it is involved in establishing tumours in healthy tissues. The biological role of this molecule, exclusively present in these types of tissue, is apparently to mediate rapid cell growth and cellular migration, key features for both the development of a new life and the success of the tumour.

Now, taking advantage of his discovery, Dr Salanti is using his ERC grant to develop a new treatment for cancer. He has engineered a drug containing the protein, which targets malignant cells, and a toxin that is able to destroy them. This prototype medicine has already showed very positive results in preliminary tests on mice and culture cells. The drug appears to affect around 90% of tumours, including common types such as brain cancer, metastatic bone cancer, breast cancer, non-Hodgkin's lymphoma and prostate cancer.

However, questions remain about the treatment with regard to humans and its applications, which may include diagnostic tools. Will it work on different types of cancer, other than those used in tests so far? The project's next step will be the clinical trials on humans, and Dr Salanti and his team are hard at work to prepare for this important milestone. The biggest issue they will face is the dosage of the new drug: will it prove too invasive for human patients? Nevertheless, because the drug does not affect healthy tissues, and is identical in humans and animals, the team remains optimistic about what the future holds.

Grantees meet "business angels"

ERC spin-off company receives recognition from HRH Prince Joachim of Denmark

A stone's through away from the Copenhagen waterfront, the 14th European Business Angels Network (EBAN) Winter University took place from 16 to 18 November, gathering hundreds of entrepreneurs, researches and business angels from Europe and further afield. The ERC and nine of its Proof of Concept (PoC) projects participated in this major global summit on venture finance and innovation in science, space, technology and the creative industries, with HRH Prince Joachim of Denmark in attendance.

With their "elevator pitches", some 30 European start-ups, including those ERC-funded, had a few minutes each to convince the investors of the commercial potential of their ideas. The ERC researchers and partners were recognised for the quality of their science-based companies and pitches.

Two EBAN prizes went to ERC-funded projects. Biotechnology start-up "StemCell2MAX", operating in the field of regenerative medicine, won the "most investable company" award. This start-up has sprung from an ERC PoC project led by Prof. Jose Henrique Veiga Fernandes at the University of Lisbon. ERC grantee Prof. Daniel Cremers presented "FabliTec", a TU Munich spin-off focused on state-of-the-art technology for 3D scanning, which received the prize for "technology to watch". The company has developed customised solutions for the consumer market and for the medical domain (orthopaedics and plastic surgery). What's more, the ERC was honoured with the EBAN prize for "innovation in science venture finance", as recognition of its efforts to bring frontier research closer to the market.

In his keynote speech, ERC Vice President Prof. Sierd Cloetingh described the ERC grantees as "*the stars of European blue-sky research*" to underline the excellence of their work. He also drew attention to the work of the PoC grantees who he sees as the "*rising stars in innovation*". The PoC funding helps them overcome the infamous "valley of death" by bridging the funding gap between research and innovation. As much as around 40% of Proof of Concept grants already led to spin-outs (or spin-outs in the making), which can be considered a very satisfying result, according to Prof. Cloetingh.

Scientific Council member Prof. Klaus Bock was a speaker in a session on "Redefining public-private partnerships in funding innovation in science", in which he stressed the need to support young minds with an innovative spirit. Prof. Jens Rostrup-Nielsen, former ERC Scientific Council member and "father of the ERC PoC scheme", also attended the event. He spoke in a session on "high stakes for business angels: science based high risk/high gain projects", alongside Prof. Deniz Kirik. This PoC grantee created a start-up company joining forces with Skåne Regional Council in southern Sweden to build a specialised hospital and a state-of-the-art gene therapy centre.

This event is likely to lead to fruitful collaborations between ERC grantees and investors from the private sector, and therefore bring even more blue-sky research to the market.

291 Starting Grants awarded

The ERC has funded 291 promising early-career researchers with €429 million. The grants will help them build their own research teams to carry out pioneering scientific projects. They will, for example, look for new ways to combat tropical diseases, study loess samples to learn about climate change and analyse the impact of social media on quiet diplomacy. Around 10% of candidates were successful in obtaining funding in this call. The number of grantees based in countries covered by the ERC initiative to widen participation, mainly in Central and Eastern Europe, increased compared with the past few years.

Read the press release.

Changing of the guard

In December, the ERC Scientific Council elected Prof. Klaus Bock as new ERC Vice President, alongside the current two Vice Presidents, Professors Mart Saarma and Núria Sebastián Gallés. Klaus Bock will take over on 1 January 2016, when the term of office of current Vice-President Professor Sierd Cloetingh ends. Prof. Bock will be in charge of the domain Physical Sciences and Engineering. He is currently a member of the Scientific Council, ERC's governing body.

Read the press release.

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ERC at key events in Berlin

On 6 November, ERC President Jean-Pierre Bourguignon, together with the Chair of the ERC Scientific Council Working Group on Gender Balance, Isabelle Vernos, as well as ERC grantees spoke at the Gender Summit in Berlin. This was an opportunity to present the ERC's strategy to improve the balance between male and female candidates in ERC calls, and to discuss possible further action to narrow the overall gender gap in science. From 8 to 10 November, the ERC President took part in another scientific event in the German capital, the Falling Walls conference, which brings together the most renowned scientists to discuss the future of research.

Tunisia joins the family

As of 1 December, Tunisia is officially associated to the EU Horizon 2020 programme and can fully participate in its funding schemes. For example, scientists can now apply for ERC funding to conduct their research at Tunisian universities and research institutes. The agreement was signed in Brussels by Commissioner Carlos Moedas and Tunisian Minister for High Education and Scientific Research, Chiheb Bouden.

Calendar of ERC calls

Grants open to researchers from anywhere in the world

Call for proposals*	Publication date	Deadline	Budget	Funding
ERC 2016 Consolidator Grant	15 October 2015	2 February 2016	EUR 605 million	Up to EUR 2 million per grant
ERC 2016 Advanced Grant	24 May 2016	1 September 2016	EUR 540 million	Up to EUR 2.5 million per grant
ERC 2016 Proof of Concept Grant**	22 October 2015	16 February 2016 26 May 2016 4 October 2016	EUR 20 million	Up to EUR 150,000 per grant

**Researchers who wish to apply to one of the ERC calls can do so through the Participant Portal.
**Call open to ERC grantees only.

Read the new rules for re-submission of proposals in the ERC Work Programme 2016 (pp. 18 – 20).

For more information regarding ERC Proof of Concept grants, please see the ERC Work Programme 2016 (pp. 35 – 41).

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

Stay informed on the ERC website and the Participant Portal.

Information on the ongoing selection:

- 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
  - > **136** application were submitted in the second round

- In the 2016 ERC Starting Grant call, **2935** applications were submitted.

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