



# ERC - a success story for Europe

The European Research Council (ERC) was set up by the EU in 2007 to fund excellent scientists and their most creative ideas. It supports cutting-edge research in all fields, and helps Europe keep and attract the best researchers of any nationality. Today, the ERC is a key component of Horizon 2020, the EU's programme for Research and Innovation.

## Facts and figures

Location: Brussels, Belgium

Budget: over **€13 billion** (2014-2020), entirely funded by Horizon 2020, the EU programme for Research and Innovation

Budget 2017: around **€ 1.8 billion**

## Governance

- **ERC President:** Prof. Jean-Pierre Bourguignon
- **ERC Vice Presidents:** Professors Klaus Bock, Eva Kondorosi, Martin Stokhof
- **ERC governing body:** independent **Scientific Council** with 22 renowned scientists and scholars
- **ERC Executive Agency:** accountable to the European Commission. Director: Pablo Amor
- The ERC is part of the first pillar of the **Horizon 2020 programme** under the responsibility of Carlos Moedas, Commissioner for Research, Science and Innovation

## General features

- Funding schemes set up "**for scientists, by scientists**"
- Open to top researchers of **any nationality, age and gender, from anywhere in the world**, to perform research in Europe
- Long-term, individual grants for **ground-breaking, high-risk/high-gain research:** Starting Grants (€1.5 million), Consolidator Grants (€2 million) and Advanced Grants (€2.5 million)
- **No thematic priorities;** any field of research (life sciences, physical sciences & engineering, social sciences & humanities)
- **Bottom-up**, curiosity-driven approach
- Sole selection criterion: **scientific excellence**
- Selection based on international **high-quality peer review**

## Press contacts

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## Key achievements after 10 years

- Researchers: some **7,000 “research champions”** and over **50,000 team members**, mostly PhD students and post-docs, **funded with €12 billion**
- The majority of these 7,000 ERC winners are **less than 40 years** old
- **Over 70%** of completed projects led to **discoveries** or major advances
- **6 Nobel Prizes, 4 Fields Medals** and dozens of important prizes awarded to ERC grantees
- **100,000 articles** published in scientific journals, 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 this.
- Global recognition: ERC highly praised by the scientific community also beyond Europe. **9 countries signed international agreements** with the Commission to allow short-term visits for their non-European researchers to ERC projects
- Over **180 researchers moved to Europe** with the ERC grant, of which most are returning Europeans. The ERC is invited to the most prestigious science congresses in the world, and also to other events, such as the annual Davos Summit of the World Economic Forum
- National research funding: **8 countries** have set up national research councils inspired by the ERC model; **17 countries** have adapted their funding to follow or to complement ERC competitions
- Innovation: ERC projects have led to **over 800 patent applications** and **over 75 new ventures**

## ERC benefits

- The ERC **makes Europe a more attractive place for bright minds**, whether they are staying, moving there from afar, or returning to Europe. The ERC thereby contributes to reversing the brain-drain.
- By creating **open and direct competition** for funding between the very best researchers in Europe, the ERC enhances aspirations and achievements. It enables the best ideas and talent to be recognised from a larger pool that exists at national level.
- The ERC's competitive funding is channelled into the **most promising new fields**, with a degree of agility not always possible in national funding schemes.
- The ERC stimulates research organisations to invest more in the support of promising new talent - the **next generation of research leaders** in Europe.
- The ERC helps to **nurture science-based industry** and to create a greater impetus for research-based spin-offs.
- From a societal perspective, the ERC provides **a mechanism for investing rapidly in research targeted at new and emerging issues confronting society**.

## The secrets of the success

- The **Scientific Council**: 22 renowned scientists and scholars as decision-makers
- The **evaluators**: high-level scientists from all over the world
- **Strict bottom-up approach**: no thematic priorities, all disciplines eligible
- Scientific and financial **independence of the grantees**
- The **size of the grants**: €1.5 million for Starting Grants, €2 million for Consolidator Grants, €2.5 million Advanced Grants
- The **simplicity** of the scheme and the procedures

# Scientific impact

The ERC's supports the highest quality research in Europe through competitive funding across all fields, on the basis of scientific excellence.

With its 'bottom-up' approach, the ERC invests in risky research allowing bright minds to follow their scientific curiosity and identify new opportunities. The funds are thereby channelled into new and promising areas at the frontiers of knowledge, including interdisciplinary studies and social sciences. Without any demand in advance regarding impact, major discoveries are brought about, and serendipity is often at play.

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Since 2007, the ERC has **funded some 7,000 bright minds and their 'blue sky' research**. Breakthroughs in a broad range of fields, such as in cancer research, solar cells technology and material science, help improve health, environment, technology, and people's daily lives.

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**> 70% of ERC-funded projects already made breakthroughs or major advances**, according to an estimate of a [recent study](#).

Economic/societal benefits: ca. 50% of projects already had some impact on the economy & society. Nearly 10% had a major impact to date.

**> 3/4 of research outputs are expected to have an impact on the economy or society in the medium/long term**, according to the study.

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Nearly **100,000 publications in top scientific journals** reported by ERC projects to date. 1/3 of all ERC grantees already published at least one article in the top 1% most highly cited publications worldwide.

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Numerous grantees won prestigious prizes:

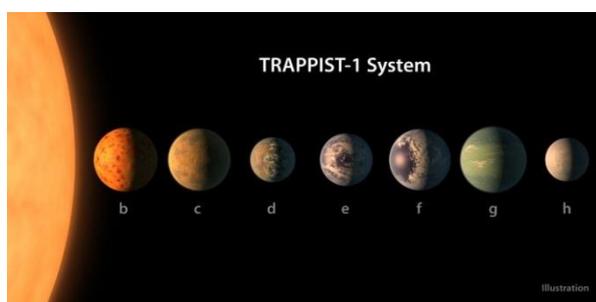
**6 Nobel Prizes, 4 Fields Medals, 5 Wolf Prizes** and countless others

## Examples of breakthroughs in ERC projects

### ERC-funding behind exoplanets discovery

This discovery of the Trappist-1 system, recently announced by NASA, was made in the context of 'SPECULOOS' (Search for habitable Planets EClipping Ultra-coOL Stars), an ambitious project led by ERC grantee Michaël Gillon (University of Liège, Belgium). Dr Gillon led an international team that already in 2016 discovered three potentially inhabitable exoplanets transiting a nearby ultra-cool dwarf star thanks to the ERC grant. According to Dr 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"*.

After the first discoveries, SPECULOOS aims to detect more systems of this type, thanks to four telescopes currently being installed on the European Southern Observatory of Paranal (ESO) in Chile that will be able to observe more targets than this prototype.



Credit: NASA/R. Hurt/T. Pyle

### Mapping the ocean beds to understand climate change

ERC grantee Dr Veerle Huvenne (National Oceanic Center, Southampton, UK) has developed an automated method for classifying hundreds of kilometres of the deep sea floor in a way that is more cost-efficient, quicker and more objective than previously possible. The new method could help collect more information to understand the impact of climate change on the sea flora and fauna.

### Nanovaccines join the fight against cancer

How close are we to developing a successful and comprehensive vaccine for cancer? ERC grantee Prof. Yvette van Kooyk (Stichting VUmc, Amsterdam, NL) believes that a combination of glycobiology and immunology will lead us closer than ever before. Thanks to her multidisciplinary team and her new approach based on sugar receptors, she has developed a nanovaccine that promises to represent the future for cancer treatment.

### The strongest material

ERC grantee Prof. Nicola Pugno (University of Trento, IT) has discovered that the strongest biological material is made of the teeth of tiny limpets. It could be used to produce, for example, a new generation of cars, airplanes and boats.

See more projects: <https://erc.europa.eu/projects-and-results/erc-funded-projects>

## Impact on researchers' career

After its first ten years of existence, it is clear that the ERC impact goes beyond funding the most pioneering research ideas. It has a proven record of strong positive effect on the careers of researchers. They are given trust and freedom to pursue their most creative ideas, and the independence to set up their own research teams. The ERC plays a key role in training and developing a new generation of top scientists in Europe.

The ERC funding is filling a huge gap for the young: **2/3 of ERC grants go to early-/mid-career** researchers (with 2 - 12 years of post-PhD experience). **The majority of grantees are less than 40 years old.**

ERC grants have a very positive effect on the **careers of grantees** and they also strongly contribute to the consolidation of research teams, according to an independent [study](#).

The ERC also helps **speed up young researchers' transition to independence**, as confirmed by another [report](#): 70% of Starting Grant holders (who took part in the study) obtained a professorship only 3 years after they received the grant, compared to 46% of non-ERC grantees.

The ERC ultimately contributes to the creation of jobs and opportunities in Europe at a wider scale: some **50,000 researchers and other experts have been employed in ERC teams** so far. This includes some 30,000 PhD students and post-doc researchers, who have the possibility to work with and learn from top scientists in their field.

*"I am very proud to see that PhD and post-doctoral students who worked in my ERC project team could find jobs in the field of R&D, within pharmaceutical companies or laboratories."*

**Prof. Patrick Couvreur, ERC Advanced Grant**

*"The ERC grant meant a big change in my funding. I have been able to triple my research group from 4-5 people to 15, which allowed me to gather a critical mass of research talent working on my project."*

**Prof. Anne L'Huillier, ERC Advanced Grant**

*"The ERC grant made a big difference to my work as it allowed me to consolidate my funding into a single source. Now I can put a critical mass of researchers over a longer period of time in a single research team which makes it possible for us to make more significant scientific progress."*

**Prof. František Štěpánek, ERC Starting Grant**

*"Not only did the ERC grant help me establish myself as an independent researcher in Poland at an early stage of my career, but it was also crucial in setting up my 6-member research team. I can say that without the ERC grant I would not have been able to work on such a scale in the field of Social Sciences!"*

**Dr Natalia Letki, ERC Starting Grant**

*"The ERC grant is the reason why I unexpectedly came back from the US to Europe and a unique opportunity to carry out risky research."*

**Prof. Luca Guidotti, ERC Advanced Grant**

Some examples:

**Ghent University** offers tenure-track appointment to successful ERC candidates;

**Ludwig-Maximilians University Munich** systematically appoints ERC grantees as assistant professors with prospects of receiving permanent professorship;

**Any Italian university** can hire Starting Grant holders as associate professors and Advanced Grant holders as full professors;

*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 an ERC Starting Grant. This allowed him to acquire a permanent professorship around ten years earlier than it would usually happen in the Italian research system.

**University of Cyprus** introduced a fast-track hiring procedure for ERC grantees in 2015.

# Impact on national research funding

The ERC has been widely acknowledged as a highly successful competitive research funding model. Its existence has had a strong impact at a national level, also as a benchmark.

8 EU Member States have set up national research councils since the creation of the ERC in 2007. This increased by 50% the total number of EU countries having such scientific institutions (currently there are 24).

11 EU Member States have launched funding schemes inspired by the ERC structure – including Denmark, Estonia, Greece, Hungary, Italy, Ireland, Poland, Portugal, Romania, Spain and Sweden.

17 European countries have launched initiatives to fund those candidates who passed the ERC competitions' strict quality threshold, but were left unfunded purely due to budgetary constraints – including Belgium, Cyprus, Czech Republic, Finland, France, Greece, Hungary, Ireland, Italy, Luxembourg, Norway, Poland, Romania, Slovenia, Spain, Sweden and Switzerland.



**Spain:** The government established in 2013 *Europa Excelencia* – a programme for those ERC Starting and Consolidator candidates with excellent proposals who ended up without funding.

**Poland:** *National Science Centre* (NCN) is a government executive agency set up in 2010 to fund basic research with the ERC as an explicit model.



**Hungary:** *Momentum* is a programme of the Hungarian Academy of Sciences (MTA) running since 2009 which aims to attract outstanding young researchers back to Hungary. Just as ERC grants, Momentum funding is based on excellence as sole criterion.

## Impact at regional level

Some examples:

The **Research Foundation Flanders** (FWO) in Belgium supports the best ranked ERC Starting Grant applicants who remained unfunded.

In **Galicia** (Spain), the regional authorities have introduced a new research policy with a goal to prevent brain drain and attract ERC Grant holders to universities and research institutions in the region. They are offered permanent positions provided they move to Galicia.

*"There are many ways to measure research excellence and we use one that is fully recognised internationally – to get an ERC grant – as a condition for hiring."*

**Manuel Varela**, former Director of the Galician Agency for Innovation (GAIN)

# Open to the world

The ERC's core mission is to stimulate scientific excellence and make Europe more attractive to the brightest talent. With its slogan "ERC - Open to the World", the ERC's substantial grants are open to top scientists from anywhere in world.

To raise awareness and to forge closer ties with counterparts abroad, the ERC has visited all continents since 2007. The ERC also attends major science congresses and other global events, such as the World Economic Forum (WEF) in Davos (Switzerland) and the American Association for the Advancement of Science (AAAS) conference in the US.

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In line with its quest to **increase international 'brain circulation' and to attract more talent to Europe**, the ERC launched initiatives to encourage young scientists, supported by non-European funding agencies, to come on research visits to Europe joining the teams of ERC grantees. To date, 9 agreements have been signed:

- **United States** in 2012 (National Science Foundation, NSF)
- **South Korea** in 2013 (Government of Republic of Korea)
- **Argentina** in 2015 (National Scientific Technical Research Council, CONICET)
- **Japan** in 2015 (Japan Society for the Promotion of Science, JSPS)
- **China** in 2015 (National Natural Science Foundation of China, NSFC)
- **South Africa** in 2015 (National Research Foundation, NRF)
- **Mexico** in 2015 (Mexican National Council of Science and Technology, Conacyt)
- **Brazil** in 2016 (Brazilian National Council of State Funding Agencies, CONFAP)
- **Canada** in 2016 (Tri-agency Institutional Programs Secretariat)

ERC grants are becoming more and more internationally recognised as awards for scientific excellence. Over **180 researchers moved to Europe** with an ERC grant, of which most are returning Europeans. ERC grantees, based in over 700 host institutions in 33 countries across Europe, hold nationalities from around the world: so far, **69 different nationalities**. In total, **537 researchers are non-Europeans**. They are mainly nationals of the US (218), Canada (63), Russia (44), India (38), Australia (37), Japan (25) and China (23). Also, 17% of ERC team members are non-Europeans.

Examples of returning talent:

*"The ERC grant was critical to me returning from Harvard to the UK. It provided a way to continue and expand my research at a world class standard within Europe in way that no other scheme could."*

**Kevin Foster, Starting Grant**

*"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."*

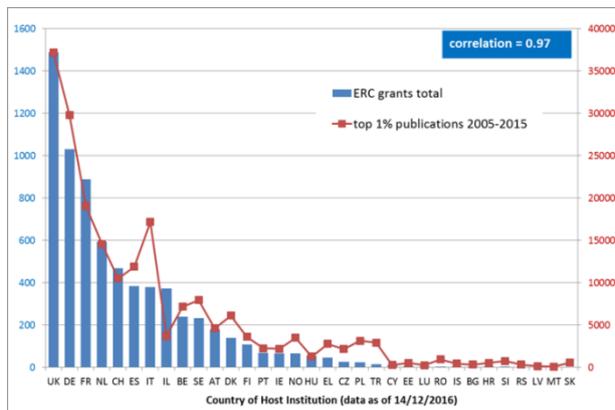
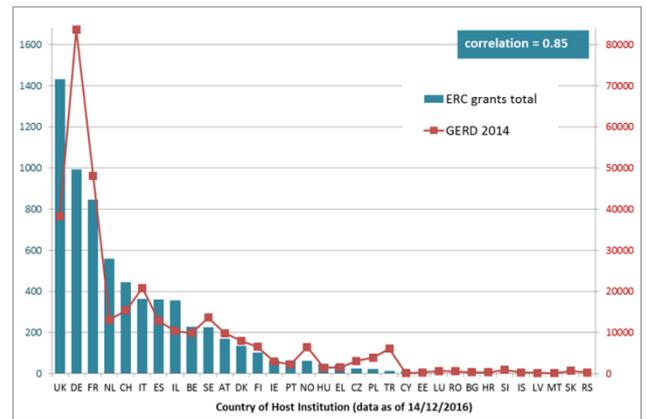
**Hélène Rey, Advanced Grant,**  
named "economist to watch 2016" by the Economist

# Funding top talent across Europe

The ERC has the very specific mission to fund individual top researchers and their cutting-edge ideas, wherever they may be found across Europe; it complements other EU and national programmes that are the main sources for research funding in Europe. In the ERC competitions there are no geographical quotas; excellence is the sole selection criterion. There are ERC grantees of all EU nationalities, working in over 700 institutions across the European Research Area.

Some countries and universities are more successful than others, which is linked to various factors, notably national spending on research.

A country's ERC performance corresponds to a large extent to its investment in Research and Development (*GERD*): generally speaking, **the more a country spends on research, the higher the number of ERC grantees it hosts.**



Similarly, the number of ERC grants in a given country, region or institute is closely linked to the number of **publications in the top 1% most cited scientific journals** worldwide.

The ERC Scientific Council, the ERC's governing body, acts as ambassador of excellent science in every corner of Europe and therefore holds meeting regularly around Europe. This is a chance to interact with local research communities and to promote the ERC funding. Whilst always maintaining the excellence criterion, the ERC takes the uneven distribution of grants seriously and set up a **"Widening Participation" Working Group** which:

- proposes measures to encourage high-calibre scientists from regions with a lower participation rate to successfully apply to the ERC;
- analyses data and processes to assure that the ERC peer review is unbiased and solely based on scientific quality, no matter which country the scientist comes from.

# Innovation, industry & society

The blue sky research at the frontiers of knowledge that the ERC funds often brings about ground-breaking discoveries that can lead to innovation. This ultimately boosts the economy, creates new jobs and benefits society at large. The ERC helps to nurture science-based industry and to create a greater impetus for research-based spin-offs.

Overall, ERC projects have led to over **75 new ventures** and more than **800 patent** applications. For example in the domains of Physics Science & Engineering and Life Sciences, 430 projects have developed at least one patent.

## Proof of Concept

In 2011, the ERC launched a Proof of Concept scheme for existing grantees and since then almost 600 of these top-up grants have helped ERC grantees bring the results of their frontier research to market.

Some examples of Proof of Concept grantees:

- Prof. Eiliv Lund is commercialising a **simple cheap blood test** that can be used to **diagnose breast cancer**.
- Prof. Marc Pollefeys is giving anyone the ability **to capture the world in 3D with their smartphone or tablet**, anywhere, anytime.
- Dr Armağan Koçer is working on the introduction of sensory pores into the liposomes that should ensure that **drug delivery matches the efficacy of the drugs**.

Another Proof of Concept recipient, Prof. Markus Aspelmeyer (Universitat Wien, AT), co-founded the start-up Crystalline Mirror Solutions (CMS); a company that manufactures high-performance mirrors for optical precision measurement with applications in advanced navigation systems, broadband communications and trace gas sensing.

*“The early support through a Proof of Concept grant made financing of our first prototypes possible. The grant helped to cover the initial costs of this ambitious project – funding which is absolutely crucial when starting your own business.”*

**Prof. Markus Aspelmeyer, Proof of Concept grantee**

## Relations to industry

The ERC encourages links between frontier research and the industry. It has therefore set up a special Working Group on innovation and relations to industry. Participating in the World Economic Forum summits in Davos, for instance, has been a way for the ERC to bring in science into the debate and to promote European scientists.

### Some voices from industry:

*"Truly excellent science is hard to identify in prospect and requires world class capability, both people and equipment – and the ERC has proven itself to be highly adept in supporting this kind of research."*

**David Eyton, Group Head of Technology, BP**

*"Basic research is the backbone for most research carried out in industry and also for ensuring that we have access to outstanding talents. Europe's future can only be built on its brains. To secure this, public funding of basic research is crucial both on an EU level as well as on national levels."*

**Leif Johansson, Chairman of Ericsson and Astra Zeneca PLC.**

## Societal impact

ERC-funded research is highly innovative and can make a major contribution to improving people's quality of life. For instance, since 2007, the ERC has supported more than 340 projects with a total amount of over €640 million in the field of cancer research. The ERC provides a mechanism for investing rapidly in research targeted at new and emerging issues confronting society.

Many ERC projects are also funded in areas such as climate change, transport, energy, new materials, neurosciences, economics, law etc.

Prof. Cédric Blanpain (Université Libre de Bruxelles, BE) has explored the importance of cancer stem cells during the different stages of tumour progression and for the first time, has showed the existence of cancer stem cells within their natural environment. These crucial findings on the cell origin of cancer and its progression with cancer stem cells could point at new targets for anti-cancer therapies and imply that drug developers should focus on killing these tumour-generating cells.

Dr Henry Snaith (Oxford University, UK) has unveiled a new generation of solar cell using 'Perovskite', a new photo voltaic material. His research helped simplify the cell's architecture and push its efficiency. The new solar cells can be embedded in windows to produce energy.

# Gender balance

The ERC Scientific Council takes the view that women and men are equally able to perform excellent frontier research. It continues its efforts to avoid gender bias and to encourage more female top scientists to apply for ERC grants, which is why it created a dedicated Working Group on gender balance in 2008.

The latest **ERC Gender Equality Plan** for 2014-2020, includes:

- **raising awareness** about the **ERC gender policy** among applicants
- working towards **improving the gender balance** among ERC applicants and within the ERC funded teams
- identifying and **removing any potential gender bias** in the ERC evaluation procedure
- **embedding gender awareness** within all levels of the ERC processes
- striving for gender balance among the ERC **peer reviewers** and ERC **decision-making bodies**

In all ERC calls until 2016, around **26% of applicants** and **23% of grantees** were women. The lower share of women in the ERC calls mirrors the overall situation in science in Europe.

The share of **women applicants** in Advanced Grants competition **increased from 13% to 17%** from 2010 to 2015, and women's share among Advanced **grantees rose from 10% to 18%** in the same period. Similar increases happened in the Starting Grant calls, while Consolidator Grants calls remained stable.

In the last three ERC Consolidator Grant calls (2014-2016) and in the 2015 ERC Advanced Grant call, the overall **success rate of women was higher** or equal to that of men.

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To help female scientists who are mothers, the ERC has established a **set rules regarding parental leave**. It allows them to have their eligibility window extended by 18 months per child. For example, if a scientist has one child, and she obtained her PhD 8 years earlier, she can still apply for a Starting Grant (although the general rule is that only those who received their PhD between 2 to 7 years are eligible).

*"The ERC Gender Balance Working Group undoubtedly has an important task to do all it can to make sure that neither country of origin nor gender are inherent disadvantages to applicants wanting to obtain funding. Work remains to be done, but there is clearly the appetite to get things as right as possible."*

**Dame Athene Donald,**  
**ERC Scientific Council member; member ERC Gender Balance Working Group**

*"This is perhaps one of the most progressive funding policies I've seen over the years and should be adopted by any agency looking to encourage women to continue in science."*

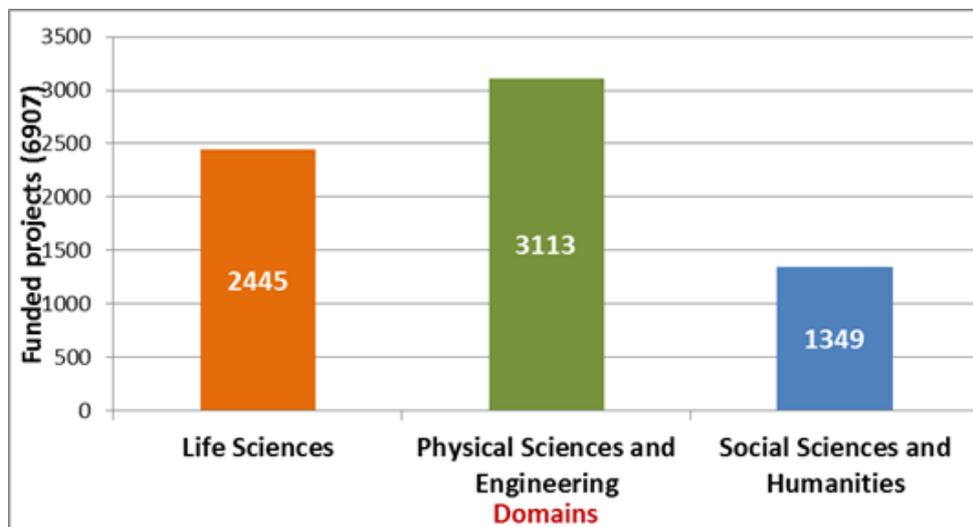
**David Kent, writer for *University Affairs***

# ANNEX

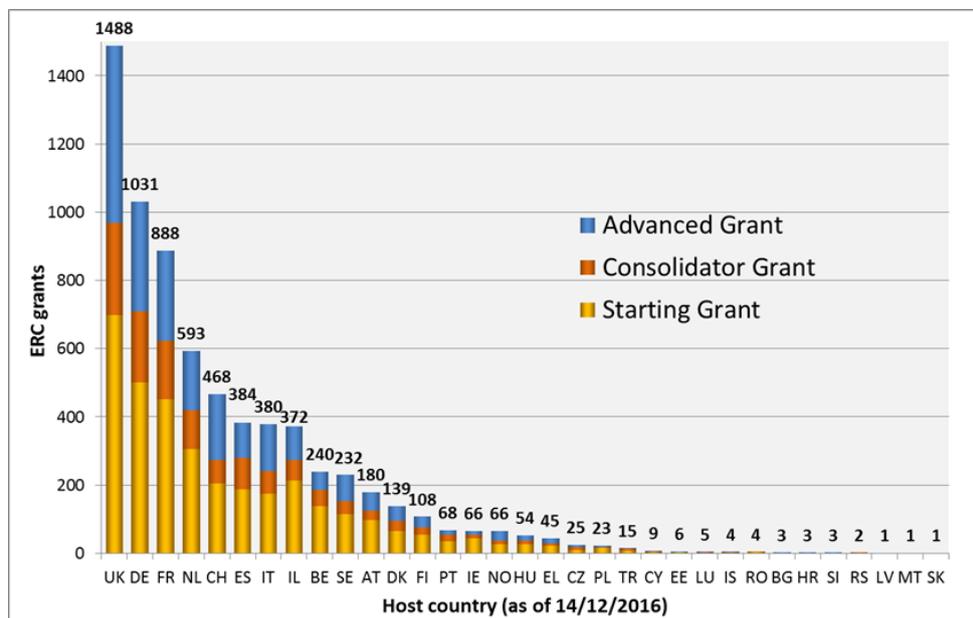
## Total number of grants

Funding schemes	Number of grants
Starting Grant 2007-2016	3428
Consolidator Grant 2013-2016	1301
Advanced Grant 2008-2015	2178
Synergy Grant 2012-2013	24
Proof of Concept Grant 2011-2016	592
<b>Total grants</b>	<b>7523</b>

## Funded projects per domain (Starting Grant, Consolidator Grant and Advanced Grant) Total: 6907



## Number of grants per host country. Total: 6907



Country of Host Institution	Number of grants
AT	180
BE	240
BG	3
CH	468
CY	9
CZ	25
DE	1031
DK	139
EE	6
EL	45
ES	384
FI	108
FR	888
HR	3
HU	54
IE	66
IL	372
IS	4
IT	380
MT	1
LU	5
LV	1
NL	593
NO	66
PL	23
PT	68
RO	4
RS	2
SE	232
SI	3
SK	1
TR	15
UK	1488
<b>Total</b>	<b>6907</b>

By nationality: European Research Area grantees	Total grants
Austria	132
Belgium	284
Bulgaria	15
Croatia	18
Cyprus	15
Czech Republic	42
Denmark	128
Estonia	11
Finland	109
France	758
Germany	1137
Greece	113
Hungary	76
Ireland	80
Israel	389
Italy	644
Luxembourg	7
Norway	49
Other	31
Poland	52
Portugal	103
Romania	32
Serbia	9
Spain	383
Sweden	174
Switzerland	178
The Netherlands	512
Turkey	31
United Kingdom	858
<b>Total</b>	<b>6370</b>

By nationality: Non-European grantees	Total grants
USA	218
Canada	63
Russia	44
India	38
Australia	37
Japan	25
China	23
New Zealand	17
Argentina	14
Other	58
<b>Total</b>	<b>537</b>