



European Research Council  
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*Under embargo until 6 February 2014 at noon*

## Press release

6 February 2014

### **Bridging the gap to the market: ERC funds 67 innovative projects**

**The European Research Council (ERC) has today announced the winners of the latest competition for its top-up funding, 'Proof of Concept'. A total of 67 researchers, who already hold ERC grants, have received up to €150,000 each to bring their pioneering 'blue sky' research closer to the market. The projects cover everything from an exploration of the molecular foundations of psychiatric disorders to technological innovations that could help rescue skiers caught in avalanches or measure extreme waves. (More information on projects below.)**

Fundamental, 'blue sky' science – the type of research that the ERC supports - is focused on advancing knowledge, but it can sometimes generate unexpected applications. With its 'Proof of Concept' scheme, the ERC enables the full exploitation of the excellent ideas it funds. This top-up funding can cover activities aimed at commercial and societal applications, such as establishing intellectual property rights, investigating commercial and business opportunities or technical validation.

EU Commissioner for Research, Innovation and Science Máire Geoghegan-Quinn said: *"The funding announced today will help turn ideas into innovation. The ERC Proof of Concept grants encourage a new type of thinking amongst scientists, backing them to make the most of their blue sky research. This mindset will help European recovery and improve our quality of life."*

On this occasion, ERC President Professor Jean-Pierre Bourguignon commented: *"I am delighted to see such pioneering projects in the latest Proof of Concept competition, selected through a fine-tuned peer review process. This system is one of the ERC trademarks, which has gained high respect in the scientific community. A continued increase in demand for these grants illustrates the interest of scientists in exploring possible extensions of their research. This scheme is most welcome as it helps push the best fundamental research towards the market. In my view, it is a truly original path taken by Europe to prompt innovation."*

In this call, a total of 67 grants have now been awarded, of which the final 34 were made public today (the first 33 grants were announced in September 2013). In this second round of funding, grants go to researchers in 13 countries across the European Research Area: the Netherlands (5), Germany (4), the United Kingdom (4), Ireland (3), Israel (3), Spain (3), Switzerland (3), Belgium (2), France (2), Sweden (2), Denmark (1), Finland (1) and Italy (1). Amongst the winners is Professor Ada Yonath, a Nobel Prize laureate in Chemistry (2009), who since 2012 has worked on a project funded through an ERC Advanced Grant.

A total of 147 proposals were submitted to this second round of the call. The demand in this entire call (293 applications) more than doubled compared to the 2012 call (139). The budget of the whole call is €10 million, of which nearly €5 million is earmarked for this second round. The next call for proposals - 'Proof of Concept' 2014 – is currently open (to ERC grant holders) with a first deadline of 1 April 2014.



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- [List \(second round\)](#) of the 34 selected researchers - alphabetical order within each country group
- [List \(entire call\)](#) of all 67 selected researchers in alphabetical order within each country group

### **Examples of projects selected for 'Proof of Concept' (PoC) funding in this call**

#### *Physical Sciences and Engineering*

##### **How technology can help to rescue skiers caught in avalanches**

Avalanche accidents kill people every winter. The survival rate is 90% if the victims are rescued within 15 minutes, but this figure drastically decreases after 45 minutes. With his PoC grant, Prof. Björn Ottersten is looking at ways to speed up the response time of rescuers, and in doing so save lives. While various electronic devices exist to locate skiers, they are not easy to use. The introduction of smartphones has revolutionised the use of mobile services. This ERC-funded project aims to develop a smartphone app which would be able to locate the injured skier just by using the signals emitted by the other skiers' devices. This new technology is revolutionary, as it does not require consumers to purchase any extra equipment. By wirelessly connecting various clusters of smartphones in the same vicinity, it would transform them into free, independent positioning devices. The idea derives from the research conducted by Prof. Ottersten in electrical engineering, and in particular from his ERC Advanced Grant's work on the analysis and design of multi-dimensional transmitters and receivers used in wireless communications.

ERC Grantee: Prof. Björn Ottersten

Host institution: Kungliga Tekniska Högskolan, Sweden

ERC Projects:

Cooperative Infrastructure Redundant Positioning by Consumer Devices (COREPOS)

Agile MIMO Systems for Communications, Biomedicine and Defense (AMIMOS)

ERC Funding: Advanced Grant 2008 (AMIMOS) € 1.8 million for five years and PoC Grant 2013 (COREPOS) € 150,000 for one year.

##### **Measuring 'rogue waves' in extreme sea conditions**

Recently, a new type of wave buoy reportedly measured a record wave height of 23.4 metres off the Northwestern coast of Ireland. Prof. Dias, an applied mathematician working in Ireland, aims to produce finely-attuned sensors for a similar buoy specially designed to measure such 'rogue waves' in extreme sea conditions. During his previous ERC project he studied the fundamental mechanisms underlying the physics of rogue waves – large coherent structures which emerge from a turbulent background. However, testing his theories about these structures proved more difficult, given the low reliability of conventional buoy measurements, especially in extreme conditions. So Dias has now secured a Proof-of-Concept grant to test his own measurement system, combining his research on the physics of extreme waves with the recent developments in buoy design, in order to optimise the new technology for waves of high amplitude and steepness. Commercial applications, if successful, would include marine renewable energies, shipping, marine forecasting, and ocean observation.

ERC Grantee: Prof. Frederic Dias

Host Institution: University College Dublin, National University of Ireland

ERC Projects:

Multidisciplinary Studies of Extreme Nonlinear and Rogue Wave Phenomena (MULTIWAVE)

Calibration of extreme wave measurement on the ocean surface (WAVEMEASUREMENT)

ERC Funding: Advanced Grant 2011 (MULTIWAVE) € 1.8 million for five years and PoC Grant 2013 (WAVEMEASUREMENT) € 150,000 for one year.



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## *Life sciences*

### **Developing better treatments for psychiatric disorders**

Dr Binder's research examines the molecular mechanisms which determine our long-term stress responses. Her ERC Starting Grant (GxE-molmech) explores the risk factors and triggers that predispose patients towards depression and anxiety disorders, such as Post Traumatic Stress Disorder (PTSD). The aim is to better determine the biology of these illnesses so that more appropriate treatments can be identified. Dr Binder and her team have isolated a molecular trigger (known as FKBP5) which is commonly accepted as a risk factor in the development of depressive illnesses and PTSD. Her "Proof of Concept" Grant aims to build upon these discoveries by undertaking an analysis of both the technical feasibility and the economic market for developing drug therapies which target FKBP5. This preparation is necessary in order to amass the weight of pre-clinical data needed to establish such drugs as a viable prospect. Her earlier grant has enabled her to identify a group of patients who would benefit from such personalised treatments. The challenge now is to move towards clinical validation of these new therapeutic tools by developing a pharmacological basis that meets industry standards, and an IP portfolio to match.

ERC Grantee: Dr Elisabeth Binder

Host Institution: Max-Planck-Institut für Psychiatrie, Munich, Germany

ERC Projects: Development of FKBP51-Inhibitors to treat stress-related disorders: assessment of feasibility (FKBP2Drug)

Gene x environment interactions on affective disorders – elucidating molecular mechanisms (GxE-molmech)

ERC Funding: Starting Grant 2011 (GxE-molmech) €1.25 million for five years and PoC Grant 2013 (FKBP2Drug) €150,000 for one year.

### **The role of genetic inversions in inherited diseases**

Dr Cáceres' ERC Starting Grant (INVVEST) examines the functional and evolutionary consequences of one particular type of structural variations in the human genome: inversions. Drawing on both empirical data and bioinformatics, Dr Cáceres and his team are exploring the association between genetic structural variations and the inheritance of particular diseases and traits. With his "Proof of Concept" funding, this research will be taken forward. The aim is to conduct a feasibility study for the development of a diagnostic kit that could genotype inversions. This background work, including a market analysis and Intellectual Property protection, is necessary in order to test the robustness of this tool for diagnostics and research applications before reaching out to an industrial partner. The contention driving this project is that new techniques are required for genomic inversions because they typically do not alter the amount of DNA, and so are not susceptible to existing forms of analysis. Inversions play a role in the development of inherited diseases such as haemophilia and Hunter's syndrome. Thus, a thorough study is required before bringing to the market tools which could identify personal genetic information in these cases: a breakthrough which could lead to new diagnostic methods and treatments.

ERC Grantee: Dr Mario Cáceres

Host Institution: **Institució Catalana de Recerca i Estudis Avançats** (ICREA) and Institut de Biotecnologia i de Biomedicina (IBB), Universitat Autònoma de Barcelona, Spain

ERC Projects: A novel high-throughput tool to genotype human genome inversions for personalised medicine (INGENIHUS)

Evolutionary and functional analysis of polymorphic inversions in the human genome (INVVEST)

ERC Funding: Starting Grant 2009 (INVVEST) €1.48 million for five years and PoC Grant 2013 (INGENIHUS) €150,000 for one year.



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## *Social Sciences and Humanities*

### **The commercial value of a good listener**

Is the 'a' in *bath* like *b $\bar{a}$ r* or like *b $\bar{a}$ t*? A small difference, but in reality every person pronounces every word differently, even when they repeat themselves. Most Automated Speech Recognition systems (i.e. computer systems you can talk to) require extensive training from thousands of recorded speakers just to master the variation within one dialect. Prof. Lahiri plans to solve this problem by adapting her linguistic model of the human cognitive representation of words to create a new system, called Flexible Speech Recognition (FlexSR). Lahiri's theoretical model claims that humans store a very basic acoustic representation of each word, accepting wide variation in the sounds themselves and recognising words by their general pattern. This method will be applied to FlexSR, so that the system can identify words across a wide range of speakers and dialects by extracting approximate sounds and matching these patterns with its internal word list. Without the need for extensive training, the new system is easily adaptable to other languages. So far, plans for FlexSR extend only to single word recognition. However, Lahiri hopes to use it as a demonstration system to attract speech technology companies, who may want to develop the method further and use it in commercial applications.

**ERC grantee:** Prof. Aditi Lahiri

**Host institution:** University of Oxford, UK

**ERC projects:**

Words: Asymmetry, change and processing in phonological mental representation (WORDS)

Flexible Speech Recognition System (FlexSR)

**ERC Funding:** Advanced Grant 2010 (WORDS) € 1.2 million for five years and PoC Grant 2013 (FlexSR) € 148,000 for one year.

### **Background**

Set up in 2007 by the EU, the European Research Council (ERC) is the first pan-European funding organisation for frontier research. It aims to stimulate scientific excellence in Europe by encouraging competition for funding between the very best, creative researchers of any nationality and age.

From 2007 to 2013 under the seventh EU Research Framework Programme (FP7), the ERC's budget was €7.5 billion. Under the new Framework Programme for Research and Innovation (2014-2020), Horizon 2020, the ERC has a substantially increased budget of over €13 billion. Since its launch, the ERC has funded over 4,500 researchers and their frontier research projects.

The ERC also strives to attract top researchers from anywhere in the world to come to Europe. It funds young, early-career top researchers ('ERC Starting grants'), already independent excellent scientists ('ERC Consolidator Grants'), and senior research leaders ('ERC Advanced Grants'). The substantial funding is awarded based on peer review evaluation and can amount to maximum €2 million for a Starting Grant, €2.75 million for a Consolidator Grant and €3.5 million for an Advanced Grant.

The funding scheme 'Proof of Concept' was introduced in 2011, as 'top-up' funding for ERC grantees, to contribute to stimulating innovation. A single grant can be worth up to €150,000. The call is open to all Principal Investigators benefitting from an on-going ERC grant or a grant that ended less than twelve months before the publication date of the call. The funding is for up to 18 months per project.



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The ERC consists of an independent Scientific Council and an Executive Agency. The Scientific Council, the ERC's governing body, is composed of 22 distinguished scientists and scholars, including the ERC President. They define the scientific funding strategy and methodologies, and act on behalf of the scientific community in Europe to promote creativity and innovative research. Since 1 January 2014, Prof. Jean-Pierre Bourguignon is the ERC President. The ERC Executive Agency implements the ERC component of the EU Programme Horizon 2020 and is led by Director Pablo Amor.

## Links

[ERC website](#)

[ERC Press Release on the 2012 Proof of Concept call](#) (Feb. 2013)

[ERC Press Release on first round of the 2013 Proof of concept call](#) (Sep. 2013)

[Striking ERC-funded projects](#)

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