Extra ERC funding to test market potential of 50 research projects

Developing therapies for children with congenital heart defects, monitoring water quality in real-time, improving the nutritional qualities of potatoes or making the best informed choices when buying a new house. These are some of the issues to be tackled by 50 outstanding scientists who are receiving 'Proof-of-Concept' grants of up to €150,000 each from the European Research Council (ERC). This 'top-up' funding is designed to help researchers who already hold an ERC grant, to test the market potential of their frontier research.

With a very limited part of the ERC budget, the 'Proof of Concept' scheme can help ERC grant holders unleash considerable innovation potential. The grant covers costs related to activities such as establishing intellectual property rights, investigating commercial and business opportunities (e.g. setting up a start-up) or technical validation (e.g. carrying out clinical tests).

ERC President Jean-Pierre Bourguignon commented: *"The ERC 'Proof of Concept' scheme makes it possible for ERC grant winners to get some extra support to investigate the innovation potential of their good ideas."* He added: *"More ERC grant winners apply for this call every year, which is a remarkable trend. It means that they see how their frontier research can be pushed beyond its initial frame and how their results can also be translated into marketable products and services. For them, this opens the way to a broader impact on society."*

A total of 182 proposals were submitted to the first round of this call, and the success rate is around 28%. Grants are being awarded to researchers based in 12 EU and associated countries in the European Research Area.

This call's overall budget is €15 million, of which half is earmarked for supporting projects in the first round of the competition. The second and final round of the ERC 'Proof-of-Concept'

call 2014 is currently open to ERC grant holders and the deadline for applications is **1 October 2014**.

For 2015, the ERC Scientific Council has decided to increase the 'Proof-of-Concept' call's overall budget to up to €20 million.

- [List of the 50 selected researchers by country of host institution](#)

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

Physical Sciences and Engineering

Novel 3D technology to improve the quality of life of kids with congenital heart defects
In the EU, one child out of 100 is born with an important congenital heart defect, representing around 47,000 children a year. With his PoC grant, Prof. Kerem Pekkan will develop a computer-based system to optimise paediatric cardiovascular surgeries. This new innovative technology is based on 3D modelling and allows clinicians, using an interactive web interface, to sketch and quickly implement an intervention the same way they would communicate it to their fellow clinicians or bioengineers. The main strength of this technique is that it incorporates 3D modelling, helping surgeons to estimate 3D vessel anatomy post-surgery before in vivo execution. The idea derives from a project funded through an ERC Starting Grant 2012 in which the research team in biomechanics studies the development and plasticity of vessels via different embryonic vascular growth models. With his PoC grant, Prof. Pekkan will be able to develop the prototype of surgical tool and prepare for its pre-clinical research design. He also hopes to set up a spin-off company (www.hemodyn.org) which online services could be used by any clinical centre in the world specialised in paediatric cardiovascular surgery.

ERC Grantee: Kerem Pekkan
Host institution: Koc University, Turkey
ERC Projects:
Bioengineering prediction of three-dimensional vascular growth and remodelling in embryonic great-vessel development (VASCULARGROWTH)
KidsSurgicalPlan: An Internet entreprise for sketch-based cardiovascular pre-surgical planning (KidsSurgicalPlan)
ERC Funding: Starting Grant 2012 (VASCULARGROWTH) € 2 million for five years and PoC Grant 2014 (KidsSurgicalPlan) € 150,000 for 18 months.

Looking for your dream house? Check this one-stop shop tool
Buying a flat can be one of the most stressful purchases. Who can tell you if it is better to buy a house with a garden or with a garage? Or where renovations will yield more rent over time? Prof. Georg Gottlob will try to answer some of these questions through a combination of big data extraction and analytics. In his PoC project, he will examine the uncontrollable information that is shaping the real estate sector. In this area, buyers have long suffered from

limited information whilst sellers are now using price intelligence solutions that are still unaffordable to buyers. The project will initially focus on the residential real estate in the UK, where buyers and renters are required to make fast decisions – often less than a week – with limited information. The research team expects to provide consumers and investors with a tool for better understanding the properties, their location, neighbourhood and investment potential compared to other properties. This idea derives from the 'DIADEM' ERC project where a system was developed to automatically extract data from thousands of websites in a given area (e.g. real estate and car retailers). The ultimate goal is now to offer consumers with structured data from websites operating in other business activities such as travel agents or restaurants.

ERC Grantee: Georg Gottlob
Host institution: University of Oxford, UK
ERC Projects: Domain-centric intelligent automated data extraction methodology (DIADEM)
ExtraLytics: Big Data Analytics for Real (ExtraLytics)
ERC Funding: Advanced Grant 2009 (DIADEM) € 2.4 million for five years and PoC Grant 2014 (ExtraLytics) € 150,000 for 18 months.

Water quality boosted by real-time monitoring
The access to clean drinking water is considered as a human right. However, in many areas worldwide, water quality is severely affected and water contamination, has dramatic effect on people's daily lives, especially in developing countries. The idea of Prof. Marios Polycarpou's team is to develop an intelligent system that uses spatial and temporal data for monitoring the quality of water and detecting contamination events. This system, called "SmartTap" relies on the combination of low-cost wireless sensory devices and a smart software and will be commercialized through the spin-off company Aqualligence Ltd. Suitable for public buildings such as schools, hospitals or hotels, "SmartTap" could also be deployed in individual homes, thereby helping consumers to monitor the quality of the water they use. If successful, it could reliably detect any contamination event within a few hours rather than days. The idea originates from an ERC Advanced Grant 2011 in which Prof. Polycarpou studied the ways to improve the performance of critical infrastructures, such as power, telecommunications and transportation systems.

ERC grantee: Marios Polycarpou
Host institution: University of Cyprus
ERC Projects:
Fault-Adaptive Monitoring and Control of Complex Distributed Dynamical Systems (FAULTADAPTIVE)
Real-Time Monitoring System for Water Quality (SmartTap)
ERC Funding: Advanced Grant 2011 (FAULTADAPTIVE) € 2 million for five years and PoC Grant 2014 (SmartTap) € 150,000 for 18 months.

Life Sciences

Nanotechnology for better and faster detection of cancer

Estimates show that 90% of cancer deaths are due to the development of cancer metastases. In his PoC project, Prof. Giacinto Scoles investigates a new system to detect circulating tumour cells (CTCs), the cells that are likely responsible for cancer dissemination. The CTCs have been identified in bladder, gastric, prostate, lung, breast and colon cancer. The chief goal of Prof. Scoles is to develop a CTC detection system that focuses on the metabolic features of these migratory cells, in particular both epithelial and mesenchymal cancer cells. His technique which differs from traditional diagnostic methods based on antibodies; it aims at separating cells into micro-droplets through water-in-oil emulsions and measuring changes of the pH in their surrounding environment due to their faster metabolism. It also provides a way to count and isolate the CTCs while maintaining them alive and intact for further studies. With their grant, the research team will now be able to assess the possibilities to commercialise this new cancer detection system.

ERC Grantee: Giacinto Scoles
Host institution: University Degli Studi di Udine, Italy
ERC Projects:
Molecular Nanotechnology for Life Science Applications: QUantitative Interactomics for Diagnostics, PROteomics and QUantitative Oncology (QUIDPROQUO)
Antibody-free method for Counting All Circulating Tumour cellS while maintaining them alive and intact (A CACTUS)
ERC Funding: Advanced Grant 2010 (QUIDPROQUO) € 2.9 million for five years and PoC Grant 2014 (A CACTUS) € 150,000 for a year.

How genetics can tailor potatoes?

A lot of attention has been given to the nutritional aspects of food plants but there is still very little knowledge about how to make the best use of biotechnology to reduce the level of anti-nutritional factors in existing crops. Anti-nutritional substances (e.g. toxic compounds) affect the digestion and the absorption of nutrients and can sometimes be dangerous for health. Dr Asaph Aharoni is looking at how to redesign potatoes to reduce the level of anti-nutritional substances such as glycoalkaloids (GLAs). Between 13% and 27% of potato crops are currently discarded because GLAs level are too high. Building on an ERC Starting grant 2007, Dr Aharoni is looking at specific genes in GLAs to engineer a new kind of potato, without having to insert foreign genes into them. These non-GMO potatoes with low GLA content will have a minimum impact on other plant characteristics. With their PoC grant, the research team will work on the intellectual property rights aspects of the project and will develop further the existing prototypes. Ultimately, their goal is to identify relevant partners or investors interested to produce healthy and safe food.

ERC Grantee: Asaph Aharoni
Host institution: Weizmann Institute of Science, Israel
ERC Projects:
Systems analysis of plant metabolism through the integration of heterogeneous data from genetics, informatics and metabolomics (SAMIT)
Precise and non-GMO Engineering of Nutritional Factors for Breeding High Quality Crops (MetKnock)

ERC Funding: Starting Grant 2007 (SAMIT) € 1.5 million for five years and PoC Grant 2014 (MetKnock) € 150,000 for 18 months.

Social Sciences and Humanities

Reinventing optical character recognition for early printed books
Current digitisation methods for early printed Latin books have an accuracy of no more than 15%. In her PoC grant, Prof. Barbara Graziosi will develop a free, open-source software to improve the accuracy of character recognition of Latin printed books. The richness of these books written on topics such as natural sciences, mathematics, philosophy, theology, law, geography, music, medicine etc., is tremendous for publishers, researchers, private collectors and librarians who are in demand for more and more digitised materials. What makes the project innovative is its Optical Character Recognition package (OCR), which will allow the researchers to respond to tailored requests for specific collections of books. The new OCR software, derives from results obtained during an ERC Starting Grant 2007 and is expected improve recognition accuracy of early printed books in Latin of up to 80 to 95%.

ERC Grantee: Barbara Graziosi
Host institution: University of Durham, UK
ERC Projects:
Living Poets: A New Approach to Ancient Poetry (LIVING POETS)
Digital Bridge: Optical Character Recognition for Early Printed Books in Latin (LatinOCR)
ERC Funding: Starting Grant 2007 (LIVING POETS) € 1.1 million for five years and PoC Grant 2014 (LatinOCR) € 150,000 for a year.

Note to the editors

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. The ERC also strives to attract top researchers from anywhere in the world to come to Europe.

From 2007 to 2013 under the seventh EU Research Framework Programme (FP7), the ERC's budget was €7.5 billion. Under the new EU research programme (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.

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. Prof. Jean-Pierre Bourguignon has been the ERC President since 1 January 2014. The ERC Executive Agency implements the ERC component of Horizon 2020 and is led by Director Pablo Amor.

Links

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