



European Research Council  
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# Pioneering excellence: How the ERC has advanced European science frontiers

Nearly two decades have elapsed since the establishment of the European Research Council (ERC), dedicated to supporting researchers across diverse scientific domains. Contemplating this journey raises an important question: Has the ERC effectively nurtured excellence and carved out a distinct position in European research through its commitment to frontier research?

Since 2015, the ERC has instituted an annual ex-post evaluation process to assess the impact of its funded projects under FP7 (2007-2013). These evaluations, conducted by independent experts and external peer-reviewers, illuminate the ERC's contributions to scientific advancement, innovation, policy and societal debates. In the words of Jesper Svejstrup, vice-president of the ERC Scientific Council: "As we examine the findings of these ex-post evaluations, we gain invaluable insights not only into the impact of the ERC's pioneering years, but also into the trajectory of future frontier research".

## Some key findings

- **20% of projects achieved groundbreaking scientific results and 58% contributed to major advances.** Only a fifth showed incremental progress or no discernible scientific impact. A scientific breakthrough was defined as work leading to significant changes in existing paradigms or opening new research avenues.
- The number of groundbreaking projects increased in parallel with the growth of the ERC budget. There are **no signs of saturation in the amount of excellent science that can be funded with the ERC programmes.**
- **ERC-funded projects are breaking barriers between academic disciplines,** with over 70% yielding cross-disciplinary results, **fostering collaborations between once-separate research fields.**
- **Interdisciplinary research, thanks to ERC funding, is driving pioneering discoveries.** Projects, bridging diverse disciplines are poised to advance scientific breakthroughs.
- **Institutions with few ERC grants are significant contributors to excellent scientific results,** underscoring the importance of initiatives like the Visiting Fellowship Programme and the Mentoring initiative to encourage **applications from underrepresented regions.**
- Nearly half of the projects **made impacts beyond scientific knowledge** influencing sectors like industry, economy, society, or policymaking.
- ERC-funded projects have led to diverse commercial products and startups, **stimulated by Proof of Concept grants,** some with market valuations exceeding 150 million euros.

## Some valuable insights

The percentage of breakthroughs remains stable in the FP7 although the number of funded project tripled in this period.

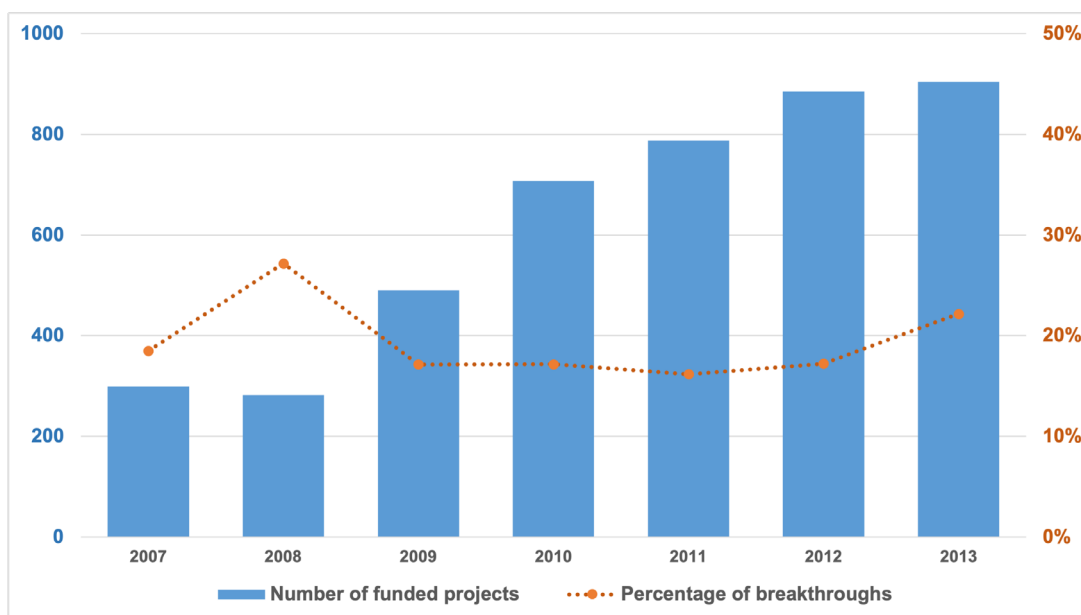


Figure 1. Percentage of breakthroughs by funding year

Considering the interdisciplinary nature of the funded research projects, more than 70% yielded results that were either applicable to areas beyond the main objectives of the project or interconnected research fields that previously had scarcely any interaction.

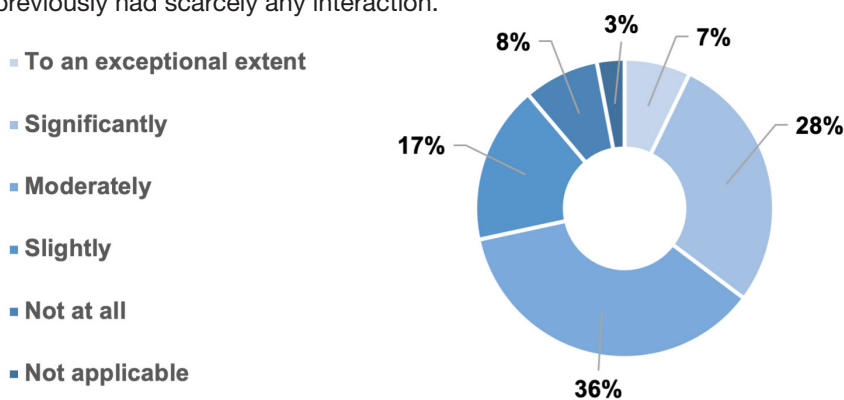


Figure 2. Connecting research areas with no previous interaction

Almost half of the projects already had an impact (at time of completion) that went beyond new scientific findings and additionally shaped current developments in the areas of industry, economy, society, and/or policy making.

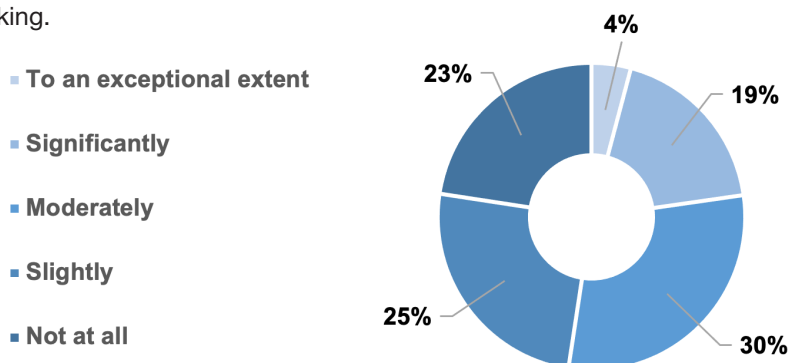
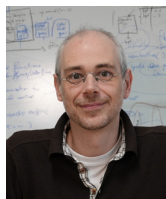


Figure 3. Projects' current economic and societal impact

## Breakthrough examples



The **PUZZLE\_CELL** project led by Thijs Ettema at Uppsala University (ERC Starting Grant 2012) has produced groundbreaking findings on fundamental questions regarding the origin of life, prompting significant changes in textbooks. It has provided several key insights into the early evolution of the eukaryotic cell, notably the discovery of the Asgard archaea, which resolves the debate between the 2- and 3-domain tree of life in favour of the 2-domain evolutionary model. This revolutionary discovery has profound implications for our understanding of life's evolution on Earth and stands as one of the most important scientific breakthroughs in microbiology and evolutionary biology in recent years.



The **CREAM** project led by Jean-Julien Aucouturier at CNRS (ERC Starting Grant 2013) pioneered innovative voice-transformation technology, catalysing a paradigm shift in the study of vocal and musical emotions, with the potential to decode social emotional interaction. With strong ties to real-world applications, both in industry and society, the project offers tools like communication smoothers to alleviate stress in social interactions.

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*ERC-funded projects have developed scientific knowledge that contributed to international debates on issues like social and economic inequality, immigration, food scarcity, fertility patterns, and climate change, providing insights to policymaking bodies on topics ranging from financial crises to regulatory policies.*

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The **2DNanoCaps** project led by Valeria Nicolosi at Trinity College Dublin (ERC Starting Grant 2011) introduces a new process for making 2D nanolayers from materials like graphene or chalcogenides by exfoliation in liquids. The project extends the exfoliation method to creating better electrodes for batteries and supercapacitors. It also developed a novel ink-jet printing process to produce thin-film supercapacitors that opened new horizons for energy storage devices. These achievements attracted industry partnerships, indicating its real-world impact.

