

Annual Report on the ERC activities and achievements in 2024

Prepared under the authority of the ERC Scientific Council



European Research Council Established by the European Commission



European Commission

EUROPEAN COMMISSION

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chapter one

Foreword

4 Annual Report 2024



Commissioner's message

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[...] through curiosity, resilience, and a shared commitment to advancing human knowledge, we can overcome any challenge.

As we reflect on the achievements and challenges of the past year, it is with immense pride and gratitude that we present the Annual Report of the European Research Council (ERC). This year has been one of remarkable progress, resilience, and continued innovation in the face of complex global challenges. The ERC stands as a beacon of excellence, pushing the boundaries of knowledge and fostering breakthroughs that not only advance science but also shape the future of society.

At the core of the ERC's mission is a commitment to support the brightest minds-researchers who are daring enough to explore the unknown, challenge conventional wisdom, and chart new paths of discovery. Through our funding programmes, we continue to empower the next generation of scientists, enabling them to pursue bold and ambitious research that will have far-reaching consequences across disciplines. The ERC is not just a funder; we are a partner in the journey of these remarkable individuals who are pushing the frontiers of human understanding.

This year, the projects funded by the ERC have produced groundbreaking results in areas such as health, climate change, digital technologies, and space exploration. From unlocking the mysteries of the human genome to developing sustainable energy solutions, ERC-funded researchers are not just contributing to the advancement of science—they are addressing some of the most pressing issues facing our world today. Their work exemplifies the values that the ERC holds dear: curiosity-driven research, scientific integrity, and a deep commitment to societal progress.

In addition to the scientific advancements, the past year has also seen the strengthening of collaborations across borders. As a distinctly European organisation, the ERC continues to foster a rich and diverse research environment, where crossdisciplinary and cross-cultural exchanges thrive. This collaborative spirit allows researchers to share knowledge, validate findings, and build upon each other's work, ensuring Europe's long-term scientific leadership and enhancing its innovation capacity.

As we look to the future, the ERC remains steadfast in its dedication to supporting pioneering research that will shape tomorrow's world. We are inspired by the progress made and motivated by the potential of what lies ahead. The journey of discovery is never without its obstacles, but together, through curiosity, resilience, and a shared commitment to advancing human knowledge, we can overcome any challenge.

Thank you to all of our researchers, partners, and supporters for their unwavering commitment to the mission of the ERC. The work we do together today will inspire generations of scientists to come, and the impact of their discoveries will continue to shape our world in ways we can only begin to imagine.

> *Ekaterina Zaharieva* Commissioner for Start-ups, Research and Innovation European Commission



President's message

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[...] Europe must step up and become a global leader in research and innovation [...]

Whilst the year was marked by geopolitical unrest, uncertainty and challenges, 2024 also brought heartening news for science in Europe. A broad consensus emerged around the conviction that Europe must step up and become a global leader in research and innovation if it is to play a leading role in the world. We couldn't agree more!

European Commission President Ursula von der Leven stated that research and innovation (R&I) must be at the heart of the European economy. The importance of research, and of the ERC in particular, for Europe's economy was emphasised notably in the Draghi report, the Letta report and the independent expert report by the group chaired by Manuel Heitor. The various reports also outline concrete steps for positioning Europe globally. The new European Commission has outlined a path for the future of European science: increase research spending, expand the ERC and close the innovation gap. This is in line with the position of the ERC Scientific Council on the next EU R&I framework as announced early 2024.

The year started with celebrating the return of the UK to the EU R&I Framework Programme (FP) at an event in London and the end of the year brought more excellent news; the EU and Switzerland reached an agreement on a broad package of issues, including Swiss association to the FP. From 2025, applicants based at Switzerland can once again take part in the ERC competitions. This will reinforce research in Europe.

The past year was also an important election year worldwide, which included the European elections and the subsequent changing of the guard at the European Parliament, after which the new Commission took office. With democracy taking centre stage, this topic was the focus of the <u>Nobel Prize Dialogue</u> - a first in Brussels - which the ERC jointly organised with the Nobel Prize Foundation. With some 2,000 people attending and nearly 100,000 having watched it online it broke our records. It helped take science to a wider audience, an ambition that the ERC also worked towards through its <u>Public Engagement with Research</u> <u>Award</u> that recognises ERC grantees who have gone the extra mile to take their research beyond their labs. The ERC also organised other sessions and attended many events, including in 'widening countries', which this review gives an overview of.

The success of the ERC lies in nurturing the pioneer spirit of our grantees to break new ground and move their field of research in a new direction. We are proud that many of them are recognised by the community for their ideas and work. Last year, several took home major international awards such as the Balzan Prize, the Kavli Prize and the Crafoord Prize.

Over the year, we implemented several changes. With the revision of our assessment rules, we have formalised the emphasis on the scientific excellence of the project. And applicants can now give a more holistic account of their research career and contributions through the narrative components of the CV and track record – a novelty that they have embraced. The ERC furthermore took a big step in simplifying the processes by introducing a new form of payment, lump sums, for the Advanced Grant call to reduce the administrative burden on grantees and their host institutions.

Our funding remains highly competitive and with a bigger budget we could support more top science in Europe. Success rates in ERC calls vary a great deal between countries and we see many of them step up efforts to boost their number of grantees. Last year, Czechia where scientists have been very active on that front - remarkably had the highest success rate of all countries in the 2024 Consolidator Grant call.

It is part of the culture at the ERC to continuously monitor and assess our activities. In that spirit, since 2015, the ERC ran annual ex-post reviews of ERC projects under the seventh EU research framework programme (2007-2013) to evaluate how ground-breaking they actually were. Last year, this exercise was more comprehensive, spanning the first seven years of the ERC. The report from this study illustrates how funding bottom-up frontier research is a winning strategy to nurture breakthroughs in both fundamental and applied science. These conclusions were mirrored in another report that gauged the broader impact of ERC-funded research in several fast-moving and emerging areas of science (page 22). The knowledge resulting from ERC projects also forms a useful asset for Europe to address societal challenges and shape EU policies, whether it is in biotechnology, Al technologies for applications or in the field of political sciences.

In terms of the governance of the ERC, at the beginning of the year, we welcomed Torsten Persson as a new Scientific Council member, and, by yearend, we bade farewell to Ben Feringa, Laszlo Lovász and Alice Valkárová. We thank them for their dedication to the ERC.

I hope you will enjoy learning more about these developments and other highlights from the past year in this review.

> Maria Leptin President European Research Council

chapter two

Strategy and Governance

ERC Mission

Pushing forward the frontiers of knowledge

Encourage the highest quality research in Europe through competitive funding and support investigator-driven frontier research across all fields, based on scientific excellence.

Research funded by the ERC is expected to lead to advances at the frontiers of knowledge and to set a clear and inspirational target for frontier research across Europe.

ERC Strategy

Excellence

Provide attractive long-term funding, awarded on the sole criterion of excellence.

The ERC operates on a "bottom-up" basis without predetermined priorities and its grants are open to individual researchers of any age, gender or nationality, and from any country in the world, working in Europe. Priority is given to assisting the best young researchers starting out with excellent ideas to make the transition to independence by providing adequate support at the critical stage when they are setting up or consolidating their own research team or programme.

The ERC aims to foster healthy competition across Europe based on robust, transparent and impartial evaluation procedures which address, in particular, potential gender bias.



Starting Grants (StG) support researchers at the early stage of their careers to become independent research leaders.



Consolidator Grants (CoG) support researchers who are at the early stage of their careers and are often already working with their own group.



Advanced Grants (AdG) support outstanding and established research leaders to continue their work in expanding the frontiers of scientific knowledge.



Synergy Grants (SyG) enable small groups of researchers to bring together complementary skills, knowledge and resources to address ambitious research problems.



Proof of Concept Grants (PoC) support ERC grantees in bridging the gap between their research ideas and potential social or commercial innovation.

ERC Scientific Council

The Scientific Council has the responsibility to establish the ERC's overall scientific strategy, the Work Programme and, from a scientific perspective, positions on the implementation and management of calls for proposals, evaluation criteria, peer-review processes and proposal evaluation.

It continuously monitors the quality of the operations and implementation, reviews and assesses the ERC's achievements and impact and contributes to raising the global profile and visibility of the ERC.

The Scientific Council is made up of members of the scientific community at the highest level, knowledgeable about the European scene, acting in their personal capacity and independently of political or other interests.

Its composition allows the Scientific Council to be independent, combining wisdom and experience with vision and imagination and reflecting the broad disciplinary scope of research.

The 22 individual members are selected based on their undisputed reputation as leaders and for their independence and commitment to research, following a transparent procedure by an independent committee of six highly respected personalities in European research.

They are appointed by the European Commission for a term of office limited to four years, renewable once, on the basis of a rotating system which ensures the continuity of the work of the Scientific Council.



Maria LEPTIN (Biology) ERC President



Gerd GIGERENZER (Psychology) Vice-President



Geneviève ALMOUZNI (Biology)



Eystein JANSEN (Earth Science) Vice-President



Harriet BULKELEY (Geography)



Jesper SVEJSTRUP (Biology) Vice-President



Ben FERINGA (Organic Chemistry)



Mercedes GARCÍA-ARENAL (History)



Thomas HENZINGER (Computer Science)



Liselotte HØJGAARD (Medicine)



Dirk INZÉ (Plant Biology)



Leszek KACZMAREK (Neurobiology)



Chryssa KOUVELIOTOU (High-Energy Astrophysics)



Sylvie LORENTE (Mechanical Engineering)



László LOVÁSZ (Mathematics)



Luke O'NEILL (Biochemistry & Immunology)



Björn OTTERSTEN (Electrical Engineering)



Giovanni SARTOR (Law)



Torsten PERSSON (Economics)



Alice VALKÁROVÁ (Physics)



Nicola SPALDIN (Materials Theory)



Milena ŽIC FUCHS (Linguistics)

Standing Committees

The Scientific Council may set up, from amongst its members, Standing Committees, Working Groups and other structures addressing specific tasks.

The Scientific Council has established three <u>Standing Committees</u> dedicated to specific topics:



The Standing Committee on Panels deals with the selection of evaluation panellists.

The Committee met three times in 2024.

The Standing Committee on Conflict of Interest, Scientific Misconduct and Ethical Issues (CoIME) provides guidance on conflict of interest, scientific misconduct and ethical issues.

In 2024, the CoIME gave its advice on 23 cases of alleged scientific misconduct.

The Committee met once in 2024.





The Standing Committee for Programme Impact Monitoring and Evaluation (PRIME) provides guidance regarding ERC tasks to monitor the quality of operations, evaluate programme implementation and achievements and make recommendations for future actions.

The Committee met four times in 2024.

Working Groups

The members of the Scientific Council also meet in Working Groups (WGs) that carry out analyses and contribute to the ERC's scientific strategy through proposals to be adopted by the Scientific Council in plenary in areas addressing specific issues.

There are currently four <u>Working Groups</u> dedicated to the following topics, which are of particular interest to the ERC:



Gender and diversity issues, to ensure that the ERC is at the forefront of best practices with regard to gender balance in research, promotes diversity and prevents any form of discrimination in its structures and operations.

The WG met four times in 2024.



Innovation, to develop ERC positions on the socio-economic impact of ERC-funded research and to establish relations with other parts of the Framework Programme dealing with innovation issues and policies.

The WG met twice in 2024.



Open Science, to develop an ERC position on issues related to open access to publications, research data management and sharing and open science more broadly.

The WG met twice in 2024.



Widening European participation, to strengthen participation in ERC calls by researchers from the EU's less researchperforming regions, to capitalise on the full European potential for frontier research without departing from the ERC's principle of excellence.

The WG met three times in 2024.

ERC President

The role of the President is to chair the ERC Scientific Council and ensure its leadership, to work closely with the ERC Executive Agency (ERCEA) and to act as an ambassador for the ERC in the world of science.

The President, an internationally renowned and respected scientist or scholar, is expected to be a prominent advocate of frontier research and an ambassador of European science within and beyond Europe. The President is appointed by the European Commission following a transparent recruitment procedure based on the recommendations of an independent, dedicated search committee and with the approval of the ERC Scientific Council.

ERC President Maria Leptin took office on 1 November 2021 and is the ERC's fifth President. A developmental biologist and immunologist, Maria Leptin was previously the Director of the European Molecular Biology Organization (EMBO) since 2010.

The founding ERC President was Fotis Kafatos (until 2010), succeeded by Helga Nowotny until the end of 2013. Jean-Pierre Bourguignon was President of the ERC from 1 January 2014 until the end of 2019. Following the resignation of his successor Mauro Ferrari at the request of the ERC Scientific Council, Jean-Pierre Bourguignon was re-appointed on an *ad interim* basis from July 2020 until end of August 2021.

Steering Committee

The ERCEA Steering Committee is responsible for overseeing the operations of the ERCEA and making decisions essential to its functioning. These include, among other things, the ERCEA's annual work programme, activity report, organisational structure, administrative budget, and annual accounts, as well as decisions related to the Staff Regulations.

The Steering Committee is composed of three senior managers from the Directorate-General (DG) for Research and Innovation, the ERCEA's parent DG, two members of the ERC Scientific Council, and one observer each from the Central Services of the Commission and the ERC Scientific Council.

In 2024, the ERCEA Steering Committee was chaired by Marc Lemaître, Director-General of the DG for Research and Innovation. The other members from the parent DG were Deputy Director-General Joanna Drake (Vice-Chairperson of the ERCEA Steering Committee) and Matthias Will, Director of the Common Implementation Centre. The ERC Scientific Council was represented by Milena Žic Fuchs and Dirk Inzé. The observers were ERC President Maria Leptin and Marco Umberto Moricca, Director for Careers and Staff Development in the DG for Human Resources.

ERC Executive Agency

The ERCEA is the Dedicated Implementation Structure that supports the ERC Scientific Council in the conduct of all its tasks.

It operates on the basis of the powers delegated to it by the European Commission, which has the ultimate political responsibility for the specific programme implementing the Framework Programme Horizon Europe.

The organisation of the ERCEA follows its operational and horizontal objectives and has the following structure:

- Support to the Scientific Council. The unit supports the ERC Scientific Council to establish the overall research funding and management strategy of the ERC, including the ERC annual work programme and leads on the assessment, monitoring, evaluation, reporting and statistical analysis of the ERC's activities.
- Communication. The unit assists the ERC Scientific Council and the ERCEA in their communication strategy towards the scientific community, public authorities, media and the public at large. It also advises and assists the President in terms of communication activities, including media interviews.
- Scientific Management. The Department sets-up the calls for applicants, works with the Scientific Council on the identification and recruitment of experts, ensures expert payment, administers the peer review scientific evaluation; processes redress requests from applicants, performs the ethics review and ethics checks on proposals selected for funding and carries out the scientific monitoring of grants.
- Grant Management. The Department is in charge of transforming selected proposals into ERC Grant Agreements, has responsibility for the execution of the relevant budget planned for the grants and for business process management concerning grant amendments; and it ensures the follow-up of the audits recommendations.
- Resources and Support. The Department has responsibility for the administrative budget, IT solutions and services, human resources and legal affairs and internal control.
- Accounting Officer, responsible for signing off the annual accounts of the ERCEA, certifying to have reasonable assurance that they present a true and fair view of the financial situation.

Laurence Moreau is the director of the ERCEA since 31 May 2022.

ERC Executive Agency management team



Front row (from left to right):

Eleni Zika, Anisoara Ulceluse-Pirvan, Katja Meinke, Soudaina Wala, Gwennael Joliff-Botrel, Raluca Ionescu, David Krasa, Jose Labastida, Angela Liberatore, Josefina Enfedaque, Martin Penny, Laurence Moreau, Lino Paula, Philippe Cupers, Pascale Cid, Athanasia Papathanasiou, Mila Bas Sanchez.

> Back row (from left to right): Nikola Car, Philippe Vijghen.

Absent: Niki Atzoulatou, Anita Kucharska, Claire Levacher, Alejandro Martin Hobdey, Carole Micmacher.

ERCEA staff

Number of staff





Staff by age (average = 48.9 years)





Seconded Temporary Agents are European Commission officials seconded to ERCEA in high responsibility management positions.

External Temporary Agents have positions of responsability in key scientific, operational and administrative posts.

Seconded National Experts are national civil servants seconded temporarily to ERCEA to assist in the execution of high-level tasks.

Contract Agents perform administrative, audit, advisory, executive, clerical, secretarial and other equivalent technical tasks.

chapter three

Achievements

ERC in figures





of the entire Horizon Europe budget





EUR 2.33 billion

payment credits fully executed in 2024 (EUR 0.8 billion for Horizon 2020 and EUR 1.53 billion for Horizon Europe)



> 17,000 projects of all types funded by the ERC since 2007



94 nationalities (ERC grantees)



EU and Associated Countries hosting ERC projects



> 250,000 publications reported by ERC projects



patents and other IPR applications reported by ERC projects



Assessing the ERC's impact on scientific progress in hot research areas

In 2024, a series of thematic studies conducted by external experts analysed the impact of ERC-funded research on scientific progress, focusing on highly dynamic fields where significant discoveries have been made in recent years—referred to as "hot research areas." These studies go beyond assessing the general presence of ERC-funded research in scientific literature. Instead, they examine how ERC funding has shaped ideas and research developments, providing a comprehensive picture of the knowledge generated by ERC-supported projects in the context of recent scientific advancements.

Following a pilot study conducted in 2022—which analysed 12 hot research areas—the 2024 study expands the scope by investigating 11 new research areas. This follow-up study incorporates a more robust methodology, integrating lessons learned and best practices from the pilot phase. In addition to measuring the ERC's impact on breakthrough research, these studies provide benchmarking against other funding bodies, assess potential impacts beyond the scientific realm, identify challenges, and offer expert recommendations. The findings contribute to an evolving narrative supported by various indicators, providing valuable feedback primarily to the ERC and its Scientific Council. Importantly, the studies also inform the broader scientific community, the public (given that many scientific breakthroughs extend beyond academia), and policymakers—highlighting experts' perspectives on future trends in emerging research fields.

The selection of 11 hot research areas was based on a bibliometric ranking methodology applied to Web of Science (WoS) publications from 2012 to 2021. These research areas comprised 47 distinct hot research fronts, encompassing almost 1,000 highly cited publications. The assessment involved 22 highly skilled experts (two per research area), representing 13 countries, with one-third being female scientists. These experts identified not only highly cited publications but also truly seminal papers that marked breakthroughs in research.

A breakthrough study was assessed based on four key criteria:

- novelty original findings that contribute new knowledge.
- impact research that significantly advances its field, opens new research directions, or fundamentally alters understanding.
- rigor robust and reliable methodologies producing credible results.
- interdisciplinary influence research that bridges multiple scientific disciplines.

The ERC's contribution to these breakthroughs was evaluated through an objective expert assessment, independent of prior knowledge of ERC involvement. This approach produced robust quantitative and qualitative evidence while maintaining methodological flexibility to accommodate the specific characteristics of each research area.

The experts conducted in-depth analyses of the nature, type, and significance of ERC-funded contributions, carefully parametrised according to the distinct characteristics of each field. Selected examples are illustrated below.

Proteolysis Targeting Chimera (PROTAC) and Targeted Protein Degradation (TPD)

The experts identified 124 seminal publications, categorised into five sub-areas reflecting the field's multidisciplinary nature. Among these, 57% were considered breakthroughs. The ERC's contribution to the field was remarkable, with 21% of all seminal publications and 30% of breakthrough seminal papers attributed to ERC-funded research.

Between 2009 and 2024, 20 ERC projects contributed to advancements in PROTAC/TPD research, with 9 of them (45%) producing seminal publications. ERC-funded projects—including DrugE3CRLs, Nedd8Activate, Glue2Degrade, CsnCRL, NucEM, MoBa-CS, and pArg_deg_ signal—resulted in 23 breakthrough seminal publications. These contributions played a key role in:

- establishing the concept of PROTACs,
- advancing the characterisation and development of new Molecular Glue degraders,
- investigating the structural aspects of PROTACs, Molecular Glues, and UPS proteins,
- exploring their therapeutic and biological implications, and



• expanding research into proximity-inducing compounds.

Proportion of ERC-acknowledging papers by sub-area of PROTACs and TPD

Breakthrough discoveries in protein degradation have also spurred innovation beyond academia, leading to the emergence of numerous biotech and drug discovery start-ups. Notably, two spin-off companies co-founded by ERC grantees (Amphista, UK and Proxygen, Austria) are now actively involved in the clinical development of PROTACs and Molecular Glues.

Use of Genomics in the Study of Ancestral Populations

The experts identified 115 seminal publications marking key milestones in ancient DNA research. As a highly multidisciplinary field, archaeo-genomics bridges the humanities and biological sciences, integrating diverse research approaches. To capture this complexity, experts further categorised the field into themes.

ERC-funded research has played a pivotal role in this domain, contributing to 58% of all seminal publications. Research breakthroughs in ancient DNA studies clustered into three key time periods.

- 2010: Breakthroughs included the sequencing of the first ancient human genome, the first genome of an extinct hominin, and the discovery of a previously unknown archaic hominin lineage. Two of these breakthroughs were supported by the ERC-funded TWOPAN project, led by Nobel Prize laureate Svante Pääbo.
- 2013–2015: This period saw breakthroughs across diverse subfields, with 50% of them receiving ERC support through two key projects: THE RISE and ADNABIOARC.
- 2021–2023: The ERC-funded projects COREX and PEGASUS combined efforts to produce three major breakthroughs—representing 100% of the field's seminal discoveries during this timeframe.



Breakdown of seminal papers by theme of the field (n = 115)

Machine Learning - Deep Learning in Medicine

The experts identified 216 seminal publications that have significantly shaped the field of deep learning in medicine. These publications were qualitatively assessed across major emerging themes, categorised into methodological, application, and resource-driven research.

Oncology and Neurology emerged as the dominant fields, collectively accounting for 51.4% of all seminal papers. Key research areas within these fields included:

- machine learning for detection and diagnosis,
- novel methods for image segmentation, and
- machine learning applications in histology studies.



Number of seminal papers in each defined category of major themes (x axis) by medical field of application (y axis)

The figure above provides a detailed parametrisation of all seminal publications, illustrating their distribution across various themes.

The ERC has played a crucial role in advancing machine learning for healthcare, driving progress in methodological innovations, clinical applications, and benchmarking resources. Key contributions include the development of novel algorithms for medical image analysis and new approaches for integrating multi-modal patient data.

An analysis of 21 ERC-funded publications identified 15 individual projects, spanning various grant types and career stages. The impact is particularly significant in Oncology, with over 40% of high-impact ERC-funded studies focusing on cancer applications. This research has placed a strong emphasis on medical imaging, contributing to:

- the creation of benchmarking datasets and tools,
- the development of advanced segmentation methods, and
- the use of AI for disease detection and diagnosis.

Among the ERC projects leading to breakthrough publications are CLONCELLBREAST, PhaseControl, and HOMOVIS. Additionally, 26 further ERC projects have contributed to advancements in personalised medicine, Al-driven prediction models, and machine learning-based image segmentation methodologies. These developments indicate significant potential breakthroughs in the coming years.

ERC Contributions to Dark Matter Research

The experts identified 62 key publications in the field of dark matter research, which has experienced dramatic progress in multiple areas. These include:

- high-precision mapping of dark matter distribution,
- enhanced sensitivity in detecting possible nongravitational dark matter signals through accelerators, laboratory experiments, and astronomical observations, and
- significant theoretical advancements in dark matter models.

The ERC has played a leading role in advancing the field by supporting new analysis techniques, breakthrough detection technologies, and innovative theoretical models. A total of 128 ERC grants have been dedicated to dark matter research, covering a diverse range of subfields, as illustrated in the figure below.

ERC-funded research has directly contributed to 27% of the seminal publications in the field and has been widely referenced across the broader scientific literature. Notable ERC projects driving breakthroughs include: CosmicDawn, ByoPiC, CMBSPEC, TESTDE, CoGS, GLOBE, Emergence, SENSE, LEDA, CosmoPars, cosmoIGM, DARKJETS, darkfrontier, and DMIDAS. These projects have contributed to:

- experimental advancements,
- improved theoretical modeling,
- innovative methodologies, and
- enhanced data analysis capabilities.

If the nature of dark matter is identified in the coming years, it may well be a result of foundational research made possible by ERC support.



Classification of ERC projects funded since 2007 by dark-matter research area (n = 128)



New survey reveals how ERC grantees utilise their patented inventions

The "<u>Survey on the Use of Patents by ERC Grantees</u>" was conducted between November 2023 and January 2024 to assess the technology transfer activities of ERC grantees. The study aimed to quantify and analyse the licensing and other uses of patents resulting from ERC-funded projects. Among the more than 12,000 researchers holding ERC grants at the time, the analysis focused on those who self-reported filing patent applications stemming from their ERC-funded research. The survey was distributed to a sample of 655 Principal Investigators who collectively reported around 1,500 patent applications.

Context and Broader Analysis

The survey is part of a larger investigation into the impact of publicly funded frontier research on technological progress. This broader study includes:

- an analysis of how ERC-funded research findings influence technological development by examining citations of ERC-supported publications in subsequent patented inventions. This <u>analysis</u> was published in 2023.
- a review of companies founded or co-founded by ERC grantees, or created as a result of ERC-funded research (<u>here</u> and <u>here</u>)

The 2023 study assessing the influence of ERC-funded research on patented inventions found that ERC projects significantly impact patentable technology. More than 40% of ERC grants generated research later cited in patents—a much higher percentage than the 10%-13% of projects that directly resulted in self-reported patents. This highlights both direct and indirect contributions of ERC-funded research to technological development.

Key Findings on Patent Utilisation

The latest survey on self-reported patent applications reveals that many ERC-funded projects generate results that are subsequently patented, and 44% of these patented inventions have been commercially utilised by ERC grantees. This rate is comparable to that of patent applicants in Public Research Institutions (PRIs) in other studies. The ways in which ERC grantees have used their patents include:

- Licensing (33.5%)
- Creating a start-up (26%)
- Direct exploitation (22%)
- Selling the patent (5%)

Notably, ERC grantees show a higher tendency to license patents and establish start-ups compared to PRIs in other studies.

The Role of ERC Funding in Technological Development

Analyses of publications cited in patents, start-up creation, and the use of self-declared patents indicate that besides contributing to the production of excellent scientific research, ERC funding also contributes to the production of research enabling technological development. However, translating these advancements into economic and societal benefits remains a challenge crucial to the EU's future competitiveness.

As noted in the European Commission's communication "<u>A Competitiveness Compass</u> for the EU," Europe's share of global patents is comparable to that of the US and China. Yet, only one-third of patents registered by EU universities are commercially exploited, reflecting the difficulties researchers face in bringing their inventions to market.

The ERC survey results show that ERC-funded grantees contribute significantly to the commercial exploitation of EU-funded research. This is further exemplified by companies founded with ERC-funded scientists that have secured EU funding from the EIC in strategic sectors such as quantum technology and biotechnology. However, these findings also highlight the need for a supportive system encompassing funding, collaboration, and an environment conducive to translating research into economic and societal benefits.

Challenges and Considerations

The survey uncovered several key insights regarding ERC grantees' patenting activities.

- In most cases, the licensee company is located in the same country as the Host Institution of the ERC grant or in a neighbouring European or Associated Country.
- The primary reason for not licensing a patent was a lack of interest, often due to the need for extensive proof of technology viability. In fact, 68% of companies acquiring licenses from ERC grantees were founded or co-founded by the ERC Principal Investigator themselves.
- A very low percentage of patent applications were sold, primarily because of a lack of interested buyers or Host Institutions' policies against selling patents.

- ERC grantees have a relatively larger share of "sleeping patents" (unused patents) compared to PRIs in other studies, indicating challenges in bringing patented inventions to market.
- ERC grantees with a Proof of Concept (PoC) grant had a higher share of utilised patents and fewer sleeping patents than those without a PoC grant, reinforcing the PoC grant's role in fostering academic entrepreneurship.

The prevalence of sleeping patents among ERC grantees may be attributed to limited resources dedicated by academic Host Institutions for commercialising potential innovations. Additionally, inventions arising from frontier research projects are often in early developmental stages and require time and investment before they become commercially viable.

Rethinking the Role of Patents

Many ERC-funded research outcomes, start-ups, and patented inventions are at an early stage, making them less attractive to corporations, venture capitalists, and business angels. This raises the question of whether universities focus too much on patents as monetisable assets rather than as protections for inventions. Such a rent-seeking approach could have negative societal impacts.

This perspective aligns with the European Commission's initiatives to improve universitybusiness relations and enhance the commercial prospects of patents, as outlined in "A Competitiveness Compass for the EU." Strengthening these connections and creating a more conducive ecosystem for innovation commercialisation will be essential for maximising the impact of ERC-funded research on economic and technological progress.





Frontier research for transformative change towards sustainable and just societies

What are the barriers hindering green transitions? Can ERC projects identify factors that accelerate the adoption of existing, sustainable solutions and technologies? These are the questions the ERC Scientific Council sought to explore.

The report *Transformative Change for a Sustainable Future* presents insights from over 300 projects that help us understand the profound transformation needed for societies to respond, adapt, and thrive amid the combined crises of climate change, biodiversity loss, and pollution.

Guided by Scientific Council members Harriet Bulkeley and Eystein Jansen, the <u>report</u> highlights the challenges, opportunities, and trade-offs involved in advancing the European Green Deal and achieving the Sustainable Development Goals. The analysis, based on the projects' findings, was enriched by interviews with ERC grantees, offering valuable perspectives on how to drive just, green transitions.

The report explores key leverage points for transformative change, including institutions, governance, behavior, and finance. It also examines how to foster healthy environments and sustainable urban development that can enable human activities to thrive.

Findings from ERC-funded research indicate that green transitions are already reshaping societal systems. The research emphasises the need to rethink systems such as the economy, food, and energy, and stresses the importance of multidisciplinary approaches to address these complex challenges while integrating justice and equity principles. Two chapters of the report focus specifically on justice and equity in green transitions, as well as how prosperity can be redefined in the context of post-growth models, the circular economy, new production models, and raw materials extraction.

Many barriers to transformative change are social, economic, cultural, and political, as illustrated by the featured projects. These barriers underscore the critical role that frontier research in the social sciences and humanities can play in offering fresh perspectives on societal dynamics and shaping policies.

The report was released ahead of the 11th plenary session of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES 11), which adopted a landmark assessment on transformative change. It was also part of the <u>EU's</u> <u>contributions</u> to the plenary.

As part of its "feedback to policy" activities, the ERC analyses its portfolio to assess how ERC-funded projects contribute to EU policy priorities. In addition to transformative change for sustainability, analyses in 2024 led to reports on <u>frontier research for democracy</u>, <u>Artificial Intelligence</u>, and <u>gene-editing technologies</u> like CRISPR/Cas. This mapping effort by the ERCEA supported the work of the Science Advice Mechanism (SAM) and the European Group on Ethics (EGE), among other European Commission services, contributing to their 2024 policy activities and reports on issues such as AI in science, democracy, solar radiation modification, and the one-health approach.



ERC projects relevance to Sustainable Development Goals (SDGs)



Source: ERC report: European Commission: European Research Council Executive Agency, Mapping ERC frontier research – <u>Transformative change for a sustainable future</u>, Publications Office of the European Union, 2024.



Report presenting the impact of the ERC's first years of research

As part of its mandate, the ERC Scientific Council tasked the ERCEA with evaluating the quality of its funding strategy. To this end, approximately 40% of completed projects funded under FP7 were assessed by external experts. This evaluation led to the publication of the 2024 report <u>The ERC pioneering years</u>, which consolidates the results of seven annual ex-post evaluations.

The report highlights that 20% of ERC-funded projects led to breakthroughs, while approximately 58% resulted in major scientific advances. Over 70% of the projects exhibited some level of interdisciplinarity, with interdisciplinary research being more likely to yield significant advances and breakthroughs. Notably, nearly half of the projects had a measurable impact on industry, the economy, society, and policymaking, supporting high-value start-ups, fostering innovation, and influencing international debates on key issues.

Finally, the report underscores that excellence is widespread across European research organisations, and that outstanding frontier research is only constrained by the available budget.



chapter four

2024 in Review



Nobel Prize Dialogue: Fact & Fiction - The Future of Democracy

In March, a <u>Nobel Prize Dialogue</u> – the first of its kind in Belgium – was organised jointly by the Nobel Foundation and the ERC, under the auspices of Belgium's EU Presidency. It gathered Nobel Prize laureates, policy-makers, thought leaders and ERC grantees. In a big election year, not least with an eye on the European elections, it focused on the future of democracy, with a special focus on the challenges and opportunities posed by Artificial Intelligence. The dialogue put the spotlight on the importance of fact-based world views and science in democratic societies.

Nobel Prize laureates Sir Paul Nurse (Physiology or Medicine Prize 2001), Ben Feringa (Chemistry Prize 2016 and ERC grantee), Oleksandra Matviichuk from Ukraine's Centre for Civil Liberties (Peace Prize 2022) and Maria Ressa (Peace Prize 2021) shared their insights and divers perspectives. Another prominent speaker, Demis Hassabis, CEO Google Deep Mind, was later in the year awarded the Chemistry Nobel Prize 2024. On the EU side, European Commission Vice-President Věra Jourová and ERC President Maria Leptin took part, alongside ERC grantees Michael Bruter, Emilie Caspar and Stefania Milan.

This evening event took place in the historic BOZAR in Brussels with some 2,000 people attending. The purpose of reaching a broader audience was achieved with close to 100,000 watching online, either live or via video recordings. It was also well covered in the press and on social media.



ERC Annual Conference 2024: Frontier research within and beyond the planetary boundaries

On 5 December, ERCEA held the ERC annual conference in Brussels, themed "Frontier research within and beyond the planetary boundaries". The conference presented ERC funded research with a focus on the key interfaces between the environment, humans, and technology 'within' and 'beyond' the Earth's planetary boundaries. The boundaries themselves were understood as spatial, ecological, biological, physical, geopolitical, and mental. The conference covered research projects from all scientific domains and beyond.

The event was opened by the new European Commissioner for Start-ups, Research and Innovation - Ekaterina Zaharieva, who expressed her strong support for the ERC's mission and the groundbreaking research it fosters. In the keynote address, Nebojsa Nakicenovic (International Institute for Applied Systems Analysis) stressed the need for a deeper understanding of Earth system justice and explained that a decent living and sufficiency for all is possible but needs a substantial transformation and awareness of disruptive technologies.

The first session of the conference addressed the importance of the interplay between planetary boundaries and interrelated processes within the complex biophysical Earth system. The importance of tropical forest ecosystems and their successional drivers were presented. It was concluded that while we have made substantial strides in Planetary Boundary science, major scientific challenges still lie ahead. Beyond the terrestrial environments, investigations on the habitability potential of the Martian near-surface environment were also introduced.

The second session examined the effect of many anthropogenic activities, often irreversible. They are demonstrated in regions ranging from the Arctic to the Amazon and even beyond the planet's boundary, challenging the long-term sustainability of the Earth's orbit. The presentations confirmed that we are currently in a critical time regarding the impacts of human actions such as the production of aerosols and harmful atmospheric particles, the pressure of fisheries, or the deployment of space technologies.

The third session focused on some potential solutions to the human induced problems. It explored tools for greenhouse gas removal and solar radiation management, the possibility to create synthetic cells with life-like properties and aimed to understand if rationally engineered molecular systems could surpass natural capabilities. Finally, related philosophical implications and metaphysical concepts interacting with cutting-edge natural sciences and technologies were discussed.

The conference concluded with a roundtable discussion on the importance of challenging and crossing the boundaries between science, diplomacy, industry and art. For the first time, not only researchers, but also artists were invited to the table. Marc Lemaître, Director-General of the DG for Research and Innovation, closed the event with concluding remarks. The conference was complemented by a science photograph exhibition and the sci-fi perspective on possible futures presented by a renowned writer. The recording of the conference as well as a summary report and the speaker presentations are available on the conference website.



Highlights

The 2024 Crafoord Prize in Astronomy has been awarded to Douglas Gough (University of Cambridge, UK), Jørgen Christensen-Dalsgaard (Aarhus University, Denmark), and Conny Aerts (KU Leuven, Belgium) for their pioneering work in asteroseismology and its application to understanding the interiors of the Sun and other stars.

Conny Aerts previously secured two ERC Advanced Grants, one for asteroseismology (2009) and another for researching massive stars (2016). In 2023, she co-received an ERC Synergy Grant to tackle the challenge of accurately determining stellar ages through massive star modelling.

Jørgen Christensen-Dalsgaard, an ERC grant recipient in 2011, significantly advanced asteroseismology's first-generation development by integrating stellar oscillation observations with cutting-edge stellar modelling, particularly in studying low-mass cool stars.

• The 2024 Crafoord Prize in Mathematics was awarded to Claire Voisin (Institut de Mathématiques de Jussieu, France) for her exceptional contributions to complex and algebraic geometry, encompassing Hodge theory, algebraic cycles, and hyperkähler geometry. Voisin, the first woman to receive the Crafoord Prize in Mathematics, co-received an ERC Synergy Grant in 2020 and has made influential contributions to algebraic geometry, offering both groundbreaking counterexamples and remarkable solutions to some of its most challenging problems.



Opportunities for Canadian researchers to join the ERC

In March, a new initiative was launched to encourage Canadian researchers to join ERC-funded teams in Europe. The agreement, signed by the European Commission and Canadian counterparts of the ERC in the presence of ERC President Maria Leptin, enables researchers supported by Canada's Social Sciences and Humanities Research Council, the Natural Sciences and Engineering Research Council, and the Canadian Institutes of Health Research to temporarily join research teams led by ERC grantees.

The parties acknowledged the constructive cooperation achieved through a similar initiative signed in 2016 and expressed their commitment to further intensifying their collaboration under the new agreement.



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The Kavli 2024 Prize in Astrophysics goes to ERC grantee Sara Seager, a scientist from the Massachusetts Institute of Technology, and David Charbonneau from Harvard University. The award recognises their pioneering contributions to the discovery and characterisation of exoplanets and their atmospheres. They developed innovative methods for detecting atomic species in planetary atmospheres and measuring their thermal infrared emissions, laying the groundwork for identifying molecular fingerprints in the atmospheres of both giant and rocky planets. In 2023, Sara Seager was awarded ERC Synergy Grant **REVEAL** (REVEALing Signatures of Habitable Worlds Hidden by Stellar Activity) that unites experts in stellar activity and exoplanet research to identify planets capable of supporting life. Sara Seager's group focuses on detecting lifefriendly atmospheres, using data from NASA's James Webb Space Telescope. The Kavli Prize celebrates breakthroughs in astrophysics, nanoscience, and neuroscience, honouring discoveries that transform our understanding of the universe's vast, tiny, and complex phenomena.



The EMBO Gold Medal 2024 has been awarded to Elvan Böke from the Centre for Genomic Regulation in Barcelona, Spain, for her pioneering research on physiological mechanisms that enable female germ cells, oocytes, to stay healthy over decades of dormancy. Oocytes have the remarkable ability to survive for long periods of time - up to 50 years in humans - while retaining the ability to give rise to new organisms. They are key to understanding female fertility and ageing. Elvan Böke won an ERC Starting Grant in 2017 and an ERC Consolidator Grant in 2023. The EMBO Gold Medal rewards researchers under the age of 40 for outstanding contributions to the life sciences in Europe.



ERC grantee Michael N. Hall from Biozentrum, University of Basel, has won the **2024 Balzan Prize** for "groundbreaking contributions to our understanding of the molecular mechanisms regulating cell growth" Michael Hall identified two proteins, TOR1 and TOR2, which regulate cell growth and metabolism in response to nutrient availability. These proteins are crucial in the ageing process and in the onset of age-related diseases such as cancer, diabetes, and cardiovascular conditions. He has won an ERC Synergy Grant in 2013 with the research project Mechanisms of Evasive Resistance in Cancer and then an ERC Proof of Concept in 2019 working on Novel selective mTORC1 inhibitors. The International Balzan Prize Foundation aims to promote culture, sciences, and the most meritorious initiatives in the cause of humanity, peace, and fraternity among peoples throughout the world.



The winners of the 2024 Public Engagement with Research Award, a prize that recognises ERC grantees who successfully engage audiences outside their academic domain, were announced in an award ceremony in Brussels on 24 October 2024. The researchers who won the prize are: Lucie Cluver from the University of Oxford "for initiating and fostering global collaboration to provide research-based parenting support in crises, improving the well-being of millions worldwide"; Frédéric Dias from ENS Paris-Saclay "for engaging people living on the Aran Islands in frontier science, integrating local expertise with ocean wave research to advance knowledge and to improve community resilience"; Tobias Hauser from University College London and Tubingen University "for co-creating an accessible, interactive resource on obsessive-compulsive disorders, bridging neuroscience and community needs for real impact"; Orla Muldoon from the University of Limerick "for advancing public understanding of gender-based violence, highlighting its systemic nature and driving societal change"; Philipp Stockhammer from LMU Munich "for innovative public engagement on the ancient origins of the Mediterranean diet, reaching global audiences through edutainment and media"; Mathilde Touvier from the French National Institute for Health and Medical Research (INSERM) "for promoting innovative and far-reaching public engagement on food additives, improving global public health awareness and nutrition policies". The six winners were selected by a jury composed of experts in public engagement and science.



The ERC Scientific Council introduced changes in the evaluation processes and evaluation forms for the 2024 calls for research proposals, as described in the ERC Work Programme and the associated guidance documents. At the beginning of 2024, ERC President Maria Leptin published a report about the changes, the discussions that led to them, and the reasoning behind them: "Evaluation of research proposals: the why and what of the ERC's recent changes".



Brazilian researchers to gain new opportunities with ERC-funded teams in Europe

Another international initiative was launched in December to encourage researchers backed by the Brazilian National Council for Scientific and Technological Development (CNPq) to temporarily join research teams led by ERC grantees in Europe.

The new arrangement was signed by the European Commission and CNPq in a ceremony attended by ERC Scientific Council Vice-President Eystein Jansen. The initiative will deepen cooperation between the European scientific community and Brazil, while further reinforcing the ERC's mission to foster frontier research and being open to the world.

The ERC has signed 18 such initiatives with funding agencies from 13 different countries worldwide.



EU and Switzerland conclude negotiations on **Horizon Europe**

On 20 December, on behalf of the Scientific Council, ERC President Maria Leptin welcomed the agreement between the European Union and Switzerland, which included the terms for Switzerland's association to Horizon Europe. This agreement marked a turning point, ensuring that researchers based at Swiss host institutions could once again receive EU funding for ERC grants starting with the ERC 2025 Work Programme. This was a long-awaited moment for renewed collaboration in fundamental frontier research. Researchers based in Switzerland, an integral part of the European research community, have been missed at the ERC. Their full participation will reinforce research in Europe.



ERC at the World Economic Forum's annual meeting 2024 in Davos

The ERC brought once more science to the discussions at the World Economic Forum (WEF) annual meeting in Davos, Switzerland, from 15 to 19 January. The theme of this year's edition was "Rebuilding trust". ERC-funded researchers Johan Rockström, Joyeeta Gupta and Martin Vetteri shared their latest scientific insights, and ERC President Maria Leptin participated in several sessions, such as on "Europe's Rush to Innovate" and a session part of the WEF Open Forum programme on "R&D disrupted". There was also a side-event - "Fact & Fiction: Protecting Democracies in the 21st Century" - with Belgian Prime Minister Alexander De Croo, Belarusian opposition leader Sviatlana Tsikhanouskaya, Nobel Laureate astrophysicist Brian Schmid, climate scientist Johan Rockström and ERC President Maria Leptin. This debate, hosted at the Belgium House in Davos, served as a kickoff ahead of the Nobel Prize Dialogue that took place on 5 March in Brussels.

The future _____ ____ of European competitiveness

C European Commission

Mario Draghi's report on "The Future of European Competitiveness"

In September, former European Central Bank President Mario Draghi published a comprehensive report titled "The Future of European Competitiveness - A Competitiveness Strategy for Europe". The report examines the challenges Europe faces in maintaining its economic position amid intensifying global competition, particularly from the United States and China. Draghi identifies three key areas for action to reignite sustainable growth, with the most critical being the persistent innovation gap between Europe and its competitors. He stresses the urgency of boosting productivity through substantial investments while also calling for more coordinated industrial policies, faster decision-making processes, and significant financial commitments to strengthen Europe's leadership in key technological sectors and enhance economic resilience. The report highlights several pressing concerns, including a shortage of fundamental research achieving world-class excellence, weak links between research and commercialisation. and an industrial structure overly reliant on mature technologies with limited breakthrough potential. While the report does not focus on specific institutions, it underscores the vital role of research and innovation in strengthening Europe's competitiveness. Recognising the ERC as a key driver of European scientific excellence, it acknowledges that many promising research proposals go unfunded due to limited financial resources. To address this, the report recommends doubling funding for fundamental research through the ERC, significantly increasing the number of grant recipients while maintaining the value of individual grants. Additionally, it proposes the creation of a highly competitive, excellence-based "ERC for Institutions" program to provide academic institutions with the necessary resources to thrive. To further attract and retain toptier scholars, the report suggests introducing a new "EU Chair" position, which would appoint world-class researchers as European officials, reinforcing the EU's ability to compete for global talent.

Align Act Accelerate

Research, Technology and Innovation to boost European Competitiveness

"Align, Act, Accelerate: Research, Technology and Innovation to boost European Competitiveness"

European Commission

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At the end of 2023, a high-level group of 15 experts from across Europe, representing diverse backgrounds, was appointed to conduct the interim evaluation of Horizon Europe. Their task was to provide the European Commission with concrete recommendations on how to enhance the EU's research and innovation programme in both the short and long term. Chaired by Manuel Heitor, former Secretary of State for Science, Technology, and Higher Education of Portugal, the group published its report "Align, Act, Accelerate: Research, Technology, and Innovation to Boost European Competitiveness" in October 2024. The report presents twelve key recommendations based on extensive stakeholder consultations, external studies, and a broad body of evidence and analysis. Among the key proposals, the report highlights the need for more excellent research, high-impact innovation, and technology scale-ups to strengthen Europe's global competitiveness, security, and sustainability. One specific recommendation calls for reinforcing competitive excellence by expanding funding for the ERC, as well as for the European Innovation Council (EIC), and the Marie Skłodowska-Curie Actions, to attract and retain top research talent in Europe. A similar promise was made in July in the "Political Guidelines for the Next European Commission 2024-2029" by Ursula von der Leyen, at that moment candidate for European Commission President. In the text she announced an increase of research spending to focus more on strategic priorities, on groundbreaking fundamental research and disruptive innovation, and on scientific excellence. "To do this - she said - we will expand the European Research Council and the European Innovation Council".

Research and Innovation Week

Brussels, 18 - 21 March 2024

ERC at EU Research and Innovation Week 2024

The ERC again took part in the Research and Innovation (R&I) Week in March - this time with a session on "Europe: a scientific powerhouse" featuring amongst others 2023 Physics Nobel Prize laureate and longstanding ERC grantee Anne L'Huillier. ERC Scientific Council member Harriet Bulkelev moderated a session with ERC grantees and ERC President Maria Leptin spoke at the closing session of the event. The 2024 conference provided an opportunity to debate how to make Europe greener, fairer and more competitive under a common narrative: a 40-year journey through the EU R&I Framework Programmes.

ERC grantees at Science is Wonderful! - 2024 edition

European Commission

The "Science is Wonderfull" fair is an annual event organised by the European Commission that brings the world of cutting-edge research to young scientists in primary and secondary schools all over Europe. This year's edition took place in Brussels and featured over 100 researchers from across Europe. The event included interactive presentations, hands-on experiments, games, and guizzes. Two ERC grantees, David Fernandez Rivas and Jadranka Šepić, along with their team members, actively participated in the event by hosting a booth and delivering engaging Science Shows.



ERC at the UN Forum on Science, Technology & **Innovation for SDGs**

ERC President Maria Leptin took part as a speaker in several sessions of the 9th UN Multi-stakeholder Forum on Science, Technology & Innovation for the Sustainable Development Goals (STI Forum) on 9 and 10 May 2024 in New York City. ERC grantee Joyeeta Gupta, Professor of Environment and Development, Faculty of Social and Behavioural Sciences, University of Amsterdam and Professor on Sustainability, IHE Delft Institute for Water Education, was also a speaker. The ERC also jointly organised an official side session (virtual only) on AI and climate with ERC President Maria Leptin and ERC grantees Gustau Camps-Valls, Veronika Eyring, Pierre Gentine and Markus Reichstein amongst the speakers. The theme of this year's edition of the STI Forum was "Science, technology and innovation for reinforcing the 2030 Agenda and eradicating poverty in times of multiple crises: the effective delivery of sustainable, resilient and innovative solutions".

United Nations





Science, Technology & Innovation for the Sustainable Development Goals





ERC at Viva Technology 2024

The ERC attended Viva Technology, the annual technology conference in Paris, for the first time to highlight the connection between basic research and innovation. Scientific Council member and Chair of the ERC Innovation Working Group, Sylvie Lorente, along with ERC grantee Amanda Silva Brun, participated in the CNRS Innovation and Prospective Talks—a series of roundtable discussions bringing together scientists and representatives from the innovation ecosystem.

The 12th Annual Meeting of the Global Research Council took place on 29 - 30 May in Interlaken, Switzerland. The meeting was hosted by the Swiss National Science Foundation (SNSF) and the Fonds Ivoirien pour la Science, la Technologie et l'Innovation (FONSTI). ERC President Maria Leptin attended for the ERC. The topic of this year's meeting was sustainable research, in three dimensions: research on sustainability; sustainability of research; and use of sustainability science for society. The head of the ERCEA Scientific Department Angela Liberatore presented research funded by the ERC in areas such as the SDGs, biodiversity and sustainable food production at the session "Making research more sustainable".





ESOF - EuroScience Open Forum 2024

The eleventh edition of the EuroScience Open Forum (ESOF) took place for the first time in Katowice, Poland with a focus on "Life Changes Science". The event explored six key areas: energy transition, sustainable environment, cultural identity, societal transformation, scientific excellence, and healthy society. It also delved into the digital transformation and its impact on our lives.

The ERC took part in this event with a rich programme: four scientific sessions featuring more than 10 grantees, organised by ERC scientific and ethics officers covered topics such as invisible contaminants, the role of machine learning and Artificial Intelligence in digital transition, European ecosystems conservation and tissue regeneration.

ERC Scientific Council member Leszek Kaczmarek also attended the conference and spoke at various sessions. The 2024 edition of ESOF was the very last gathering after a decade and a half of such interdisciplinary science meetings in Europe.



ERC President Maria Leptin represented the ERC at the G7 Science and Technology Ministerial Meeting in Bologna on 10 July. In her speech, Maria Leptin highlighted the importance of openness and international collaboration in science, which drive innovation and address global challenges like climate change and pandemics. With examples such as the Human Genome Project and SARS-CoV-2 sequencing, she illustrated the transformative impact of shared knowledge. However, she said that rising geopolitical tensions and security concerns were prompting restrictions on scientific cooperation, risking slower progress and reduced global partnerships. She called for a balanced approach that protects security while maintaining openness, distinguishing between basic and applied research to avoid unnecessary burdens on researchers. By fostering trust, communication, and collaboration, science can remain a powerful tool for innovation and addressing society's pressing needs, while carefully navigating security challenges.

The ERC published four reports showcasing how **ERC**-funded frontier research can inform policies in various sectors, as part of the Scientific Council Mapping Frontier Research initiative and the Agency's feedback to policy work. The report on democracy presents research addressing democratic governance and participation, disinformation, elections, polarisation, and authoritarianism among other issues. A second report highlights how curiosity-driven research projects are developing or using Artificial Intelligence in their scientific processes and how they contribute to key EU policy domains such as health, environmental sustainability, justice, employment and education. The report on gene editing technologies such as CRISPR/Cas showed how ERC grantees have rapidly adopted and expanded the use of these technologies across diverse scientific fields. Finally, the Transformative change for a sustainable future report looked into frontier research for just green transitions.







Data access pilot with ERC researchers: Article 40 of the European Union's <u>Digital Services Act (DSA)</u> allows vetted researchers to request data from very large online platforms and search engines to study systemic risks in the European Union (as outlined in <u>Article 34(1)</u>. Risks include issues amplified or generated by such platforms, like the spread of disinformation, its effects on democratic processes, cyberbullying, online harassment, harmful content exposure, and the impact on minors' physical and mental well-being.

A small group of ERC grantees is currently part of a pilot project to test the data access process under the DSA framework. This project, coordinated by the Commission's Directorate-General for Communications Networks, Content and Technology and the European Centre for Algorithmic Transparency, is supported by the Agency in the context of its feedback-to-policy input to the European Commission and the ERC Open Science Working Group.

The pilot brings together ERC researchers and Digital Services Coordinators (DSCs) to test the process for data access applications. DSCs are independent authorities appointed by each EU Member State who will assess researchers' applications and act as intermediaries between the researchers and the platforms.

The European Commission organised two workshops (in July 2024 and February 2025) for ERC researchers and DSCs to discuss the types of information needed for applications, how the data will help answer new research questions, and how to make application processes as effective and efficient as possible. Therefore, this pilot is not only meant to help identify upcoming challenges but also to build capacity among all involved.

A <u>Delegated Act</u>, which will be adopted before the summer, will outline the final application procedures and conditions to be met by researchers.



ERC high-level plenary at Falling Walls Science Summit

In 2024, the ERC for the first time partnered with Falling Walls Science Summit. The centrepiece of the participation was a live-streamed ERC plenary on 'Boosting Frontier Research: Europe's Next Move', featuring three research Ministers - French Minister Patrick Hetzel, Czech Deputy Minister Jana Havlikova and Polish Deputy Minister Andrzej Szeptycki - as well as Marie Noelle Semeria, CTO of Total Energies, Alain Aspect, Nobel Prize laureate and ERC grantee, and ERC President Maria Leptin.

A networking event was organised for the thirty ERC grantees attending the Summit, of which several received prizes such as the Falling Walls Science Breakthrough of the Year. The head of the ERCEA Scientific Department, Angela Liberatore, contributed to a livestreamed session on science diplomacy and several grantees took the floor in other sessions.

Scientific Council statements and policies

ERC Statement on the next EU framework programme for research and innovation

The Scientific Council started to consider its position on the next EU framework programme for research and innovation for 2028 – 2034 as early as May 2023 on the understanding that the proposal for the new programme would be developed during 2024 and adopted in the first half of 2025. The Scientific Council's deliberations culminated in the publication of a statement in January 2024. The statement made the case for the continued relevance of the ERC's mission and the importance of its independence, as well as arguing for a doubled budget for research and innovation in the next Multiannual Financial Framework in the face of increasing global competition. The Scientific Council was very encouraged to see these views reflected in the <u>new Commission's Political Guidelines for 2024 – 2029</u> which promise to put research and innovation at the heart of Europe's economy and to expand the ERC and the EIC, as well as in the <u>Draghi Report</u> on the future of European competitiveness, the <u>Letta report</u> on the future of the Single Market and in the <u>report of the independent</u> expert group, chaired by Manuel Heitor which provided strategic recommendations on maximising the impact of EU Research and Innovation programmes in the future.



New guide on trusted repositories: Promoting open science and meeting grant requirements

Open Science policies are crucial for sharing knowledge with the global community and, therefore, advancing our understanding of the world. The ERC has long been a forerunner in promoting Open Science practices and helping researchers adhere to them.

In the latest effort to support ERC grantees, as well as other researchers funded via Horizon Europe, the ERC Open Science working group has commissioned a study, <u>published</u> in October 2024, to serve as an essential guide for grantees needing to deposit their peer-reviewed publications in an open access repository.

The study, titled "Update of the Study on the Readiness of Research Data and Literature Repositories to Facilitate Compliance with the Open Science Horizon Europe MGA Requirements", comes as a follow-up to a previous report issued in 2023. Recognising the rapidly evolving repository landscape, this update employs a redesigned methodology, resulting in a new classification of repositories across different research disciplines and introducing four degrees of readiness.

The study's comprehensive approach draws from extensive desk research and detailed surveys, targeting a wide array of repositories. An increase to 241 repositories, up from 220 in the previous study, illustrates the intended broadened scope and depth of the analysis. However, the resulting inventory should not be considered a white list, as not all existing repositories have been analysed.

One key aspect of the study is its incorporation of a self-assessment guide. This tool enables repository managers to evaluate their systems and make necessary adjustments to align with the HE Model Grant Agreement requirements.

The reception of the study within the research community underscores its significance. With over 3,000 downloads, in addition to the 8,000 downloads and 15,000 views of the 2023 study, it stands as a testament to the growing awareness and commitment to Open Science practices. Researchers and repository managers are actively leveraging this guidance to optimise their strategies and ensure compliance with open access mandates.

In response to the recommendations, several repositories have already initiated updates to their platforms, aiming to align more closely with the identified criteria. This proactive stance not only ensures current compliance but also sets a benchmark for best practices in the Open Science domain.

The impact of this study extends beyond compliance. By empowering researchers and repository managers with the tools to facilitate Open Science, the ERC is paving the way for more collaborative and inclusive research practices. Through this study, the ERC reaffirms its commitment to advancing Open Science, fostering an environment where sharing knowledge is not just encouraged but seamlessly integrated into the research process. The study stands as a critical milestone in the journey toward open, transparent, and collaborative scientific discovery.



Meetings

The ERC Scientific Council held regular plenary meetings in person in 2024, in Brussels (February/March, April and December), Bergen (June) and Berlin (October). In addition, in 2024 the members of the Scientific Council participated in other meetings and events representing the ERC, including scientific conferences.



January

- 15-19: World Economic Forum (Davos)
- 24: Presentation of the ERC Statement on FP10 to the ERAC Taskforce on FP10 (Brussels)



February

- 1: UN event "Global Elections Day" (New York City)
- 6: Visit to VIB (Ghent)
- 12: Horizon Europe Celebration Event at the Royal Society (London)
- 28: Meeting with the IGLO ERC Working Group (Brussels)
- 29/2-1/3: ScC Plenary (Brussels)

Nobel Prize Outreach. Photo: Clément Morin



March

- 5: Nobel Prize Dialogue in partnership with the ERC "Fact & Fiction - The Future of Democracy" (Brussels)
- 14: The Guild conference "Re-framing innovation policy: The dynamics between the R and I" (Brussels)
- 15: Annual conference of the Marie Curie Alumni Association (Milan, online)
- 20-21: European R&I Days (Brussels)



April

- 14-19: EGU General Assembly (Vienna)
- 18: Panel at German Parliament "World-Power-Science: Between Cooperation and Competition" (Berlin)
- 25-26: ScC Plenary (Brussels)
- 29: ERC seminar at Johns Hopkins University and visit to Office of Science and Technology Policy (Washington DC)



May

- 7: Public event at the University of Luxembourg SnT Partnership Day (Luxembourg)
- 9-10: UN STI Forum for SDGs (New York City)
- 15: Public event at the Institute for Advanced Study (Paris)
- 22-25: VivaTech technology and startup event (Paris)
- 27-31: 12th Annual Meeting of the Global Research Council (Interlaken)



June

- 4-6: High-level scientific event of the African Academy of Sciences (Hammamet, online)
- 12-13: Public events at the Czech Institute of Informatics, Robotics and Cybernetics (Prague) and CEITEC Masaryk University (Brno)
- 12-15: EuroScience Open Forum (Katowice)
- 26: Public event "Frontier research in Norway" (Bergen)
- 26-28: ScC Plenary (Bergen)



- 4-5: 50th Anniversary EMBL (Heidelberg)
- 9-11: G7 Ministers' Meeting on Science and Technology (Bologna and Forli)
- 10: ERC Session at CRS Annual Meeting (Bologna)



August



September

- 3-4: Kavli Prize Award Ceremony (Oslo)
- 17: EMBO-LINCEI workshop "From
- EMBO to ERC" (Rome) • 19-20: Hamburg Science Summit
- 23: Conference "Focus on Frontier Research with the ERC" organised by the Polish Academy of Sciences (Warsaw)
- 23-24: Nordic University Days (Brussels) • 24: Estonian Research Council Birthday
- Seminar (Brussels)



October

- 3-4: EUA Funding Forum (Helsinki)
- 16: BMBF High-Level Exchange (Berlin)
- 17-18: ScC Plenary (Berlin)
- 24: ERC Public Engagement with Research Award (Brussels)
- 28/10-1/11: 2nd nanoBalkan International Conference (Tirana)
- 29/10-1/11: 60th Anniversary of EMBO (Heidelberg)



November

- 7-9: Falling Walls Science Summit (Berlin)
- 12: Public event "Boosting frontier research" organised by the Cyprus Academy of Sciences, Letters, and Arts (Nicosia)
- 19-21: World Science Forum and High-Level Workshop on the European Research Area (Budapest)
- 27: Nobel Prize Jubilee Conference (Trondheim)



December

- 2: 1st Workshop on the ERC Portugal Programme (Lisbon)
- 5: ERC Annual Conference 2024 "Frontier Research Within and Beyond the Planetary Boundaries" (Brussels)
- 12-13: ScC Plenary (Brussels)
- 19: Research session organised by the Italian Rectors Conference at the Italian Senate

chapter five

Research Highlights

Research Highlights • chapter five

Showcase of ERC-funded research

Dr. Vaishnavi Venugopalan, Trinity College Dublin



Curbing the cell stress response

Chronic inflammation worsens diseases like cancer and obesity. Seamus Martin's research uncovers how cell stress triggers inflammation, with a key immune protein playing a surprising role. His goal: targeted therapies to suppress harmful stress-induced inflammation. Read more <u>here</u>.

Nature's puzzle: cracking walnuts for a greener tomorrow



Austrian scientist Notburga Gierlinger is turning discarded walnut and pistachio shells into strong, biodegradable materials. Their unique cell structure makes them ideal for eco-friendly alternatives to plastic and leather, reducing waste sustainably. Read more <u>here</u>.

New aerospace and building materials could repair themselves thanks to fungi and bacteria

ERC-funded scientists are developing living materials using fungi and bacteria to create self-healing, sensing structures. These could replace plastics in planes, protect buildings, and even help build space habitats—offering a sustainable future for industry. Read more <u>here</u>.

Studying gangs from the inside

Dennis Rodgers' research challenges gang stereotypes by immersing in their world. His ERC-funded study reveals gangs as social networks, not isolated criminals. Findings suggest tackling violence with community-based policies, not just repression. Read more <u>here</u>.

The flight of the robotic bird

Stefano Stramigioli's research on robotic birds led to breakthroughs in physics, fluid dynamics, and quantum mechanics. His modular modelling approach could improve wind energy, healthcare, and engineering advancing science beyond just better flying robots. Read more <u>here</u>. Research Highlights • chapter five

③ Gettyimages.com

How tiny plankton capture carbon

Tropical oceans trap more carbon than previously thought, thanks to special plankton called diazotrophs. Research by Sophie Bonnet reveals how they fuel a hidden carbon pump, locking away CO₂—findings that could reshape climate models and action. Read more <u>here</u>.

A monkey's perspective on culture

Vervet monkeys share knowledge and traditions, shaping their own cultures. Erica van de Waal's research shows how immigrant males introduce new behaviours, offering insights into primate social learning and the evolutionary roots of human culture. Read more <u>here</u>.

How beetles decode nature's signals

Dung beetles use the sun, moon, stars, and wind to navigate. Marie Dacke's research explores how their brains process these cues, using AI and robotics to decode their 'ultimate compass'—insights that could apply to insects, navigation, and technology. Read more <u>here</u>.

Dunes through time



Dunes, once seen as threats, are now vital coastal defences. Historian Joana Gaspar de Freitas explores how human actions have shaped dunes over centuries, using history to inform climate policies and guide sustainable coastal management for the future. Read more <u>here</u>.



Mental stress can be a real heart breaker

Acute and early-life stress can trigger heart disease. Hendrik Sager's research links short-term stress to heart attacks, while Karim Lekadir's study finds childhood stress increases lifelong health risks. Their work could lead to better prevention. Read more <u>here</u>.

Outstanding publications

This section covers ERC-funded research findings that made it into the list of the most important scientific discoveries of 2024

Several ERC-funded publications are among the runners-up of Science magazine's Breakthroughs of 2024:

Autoimmune diseases, like multiple sclerosis, occur when the immune system mistakenly attacks the body's healthy tissue. While current treatments, such as immune-suppressing drugs, can help, they don't always prevent the disease from getting worse and can cause serious side effects. In 2024, a new treatment called chimeric antigen receptor T-cell (CAR-T) therapy, which was originally developed for blood cancers nearly 15 years ago, showed promising results in patients with severe cases of autoimmune diseases. A group of ERC grantees (Synergie grantee: Georg SCHETT, Project 4D+ nanoSCOPE; Consolidator grantee Aline BOZEC, Project ODE; Starting grantee Andreas RAMMING, Project BARRIER BREAK) has published two studies (here and here) exploring CAR-T therapy as a potential new treatment for autoimmune diseases.





For almost 100 years, scientists knew about two types of magnets. Now, they have discovered a third type, called altermagnets, that combines features from both of the known magnet types, as shown in a <u>publication</u> with Synergy grantees Rafal DUNIN-BORKOWSKI and Mathias KLAUI (Project 3D MAGIC). The key idea is that the symmetry of spin interactions in materials can be changed to create spin structures that can be controlled by external factors like electric fields or temperature. Altermagnets could be useful for developing ultra-fast magnetic switches in electronics.



In 2024, Consolidator grantee Sascha BRUNE (Project EMERGE) published a <u>paper</u> which changes our view on plate tectonics. The Earth's surface is made up of land plates that move, shrink, and expand. Researchers now suggest that when continental plates pull apart, hot mantle rock rises up, creating so-called mantle waves, whirling currents beneath the continents. These waves might help explain unusual land formations and how diamonds, formed deep within the Earth, make their way to the surface.



In 2024, ancient DNA research took a more personal turn. Previously, studies focused on understanding broad population trends by looking at individuals from different places and times. But with the growing number of ancient human genomes available and increased computation power, researchers have begun exploring more detailed questions about family relations. Several ERC grantees at the Max Planck Institute for Evolutionary Anthropology have made significant contributions to these studies.

It has long been known that ancient humans (Homo sapiens) and Neanderthals interbred in Eurasia, as Neanderthal DNA is found in modern human genomes. Two publications (<u>here</u> and <u>here</u>) with Starting grantees Benjamin M. PETER (Project NEADMIX), Frido WELKER (Project PROSPER), and Kirsten BOS (Project CoDisEASe) now pinpoint when this occurred. Researchers compared Neanderthal and ancient human genomes across different time periods and were able to determine that the two species lived together around 47,000 years ago for around 7,000 years.

Starting grantee Stephan SCHIFFELS (Project MICROSCOPE) published a <u>study</u> on Celtic chieftains in southern Germany. By combining DNA data with details from their cemeteries, researchers revealed that 2500 years ago, the region's most powerful men inherited their might through their mothers, a social structure called matrilineality. This shows how genetic kinship can provide insights into past societies that archaeology alone never could.

Several ERC-funded publications are also among Physics World Breakthrough of the Year 2024:



Positronium is a system made up of an electron and its antiparticle, and it's the lightest known particle system, though it's very unstable. When positronium is cooled, it moves less, allowing physicists to take more precise measurements of its properties. Using a new laser cooling technique, a team at CERN, Starting grantee Daniel COMPARAT (Project COLDNANO) and Advanced grantee Eberhard WIDMANN (Project HBAR-HFS) published a <u>study</u> how they reduced the temperature of a positronium cloud so much that the movement of electrons and positrons slowed significantly. This breakthrough could become a powerful tool to explore the most detailed structure of the atoms that make up the Universe.

Researchers at the National Graphene Institute in the UK have made a breakthrough that could change how we harness energy and process information. Graphene, a very thin material, is incredibly strong, flexible, and conductive, making it perfect for electronics and energy storage. In a <u>study</u> together with Synergy grantee Angelos MICHAELIDES (Project n-AQUA), they looked at proton-related processes in graphene, which are usually linked together and hard to control separately. However, they discovered a way to separate these processes. By using electric fields, they found they could speed up proton movement and control hydrogenation independently, offering a new approach to manage electrochemical processes.

In 2024, Starting grantee Hugo DEFIENNE (Project SQiMic) published two studies (here and here) that made important progress in using entangled photons for imaging. Their technique allows images to be seen only by a highly sensitive camera, making them invisible to the naked eye. This method could lead to optical systems that are less affected by scattering and able to produce sharper images than traditional microscopes. These advancements are key to developing quantum microscopes, particularly for imaging biological tissues.



Sciences et Avenir/La Recherche magazine has highlighted the genomic reconstruction of mammoth DNA as one of the major scientific achievements of 2024. The challenge is that ancient DNA breaks down over time into small fragments, losing the 3D structure found in living cells. For the first time, however, the genome of an extinct animal has been fully reconstructed. In a <u>publication</u> by Synergy grantee Marc MARTI-RAMON (Project 4D-GENOME), Consolidator grantee M. Thomas P. GILBERT (Project Extinction Genomics), and Advanced grantee Love DALEN (Project PrimiGenomes), they used a special technique on a skin sample from a 52,000-year-old woolly mammoth to rebuild its original 3D structure. This method allowed them to piece together the genome at the chromosome level, detect specific genetic features, and even learn about gene activity.



Discover magazine points out one of the major breakthroughs of 2024 that is linked to the development of a blood test to detect cognitive decline. Alzheimer's is a devastating disease for everyone involved, and diagnosing it often requires specialised scans that are typically only available in hospitals, which can delay diagnosis. In 2024, a <u>study</u> involving Starting grantee Rik OSSENKOPPELE (Project AU-NOW) and Advanced grantee Oskar HANSSON (Project ADVANCE-AD) showed that a simple blood test could accurately detect Alzheimer's. While the test still needs some refinement, it has the potential to significantly improve patients' lives in the future.

Knowable magazine acknowledges future water security as one of the biggest science stories of 2024, especially after the Paris Summer Olympics brought attention to water pollution. Athletes voiced strong concerns about the poor condition of the Seine, which was supposed to be cleaned up for the games. Paris isn't the only place facing this issue—rivers around the world are struggling with pollution, reduced water supply, and other challenges. A 2024 <u>publication</u> with Starting grantee Michelle VAN VLIET (Project B-WEX) found that out of 10,000 river basins worldwide, around 1,000 are dealing with water scarcity. When nitrogen pollution from agricultural runoff is factored in, that number more than doubles to 2,500. These findings highlight the urgent need to improve water quality in future water management policies to achieve the Sustainable Development Goals.



Science News and Physics World – Particle and Nuclear have recognised the development of nuclear clocks as one of the major breakthroughs of 2024, highlighting a major study by Synergy grantee Thorsten SCHUMM (Project ThoriumNuclearClock). A nuclear clock is an advanced timekeeping device that measures time using the vibrations of atomic nuclei, rather than the electron transitions used in traditional atomic clocks. These vibrations are extremely stable and precise, offering the potential for much greater accuracy. The stability of these nuclear transitions could lead to even more precise time measurements, with possible applications in areas like GPS, scientific research, and testing fundamental theories in physics.

Physics World – Quantum reported a remarkable rise in ideas for using quantum devices to study gravity in 2024. Synergy grantee Martin PLENIO (Project HyperQ) published a <u>study</u> investigating whether gravity is a classical or quantum phenomenon. The proposed experiment could bring us closer to understanding if gravity can be reconciled with the quantum-mechanical descriptions of the other fundamental forces of nature.

Physics World – Medical Physics highlighted a 2024 <u>study</u> by Consolidator grantee Samuel SANCHEZ ORDONEZ (Project i-NANOSWARMS) on nanobots. Researchers created self-moving nanoparticles with radioactive iodine to shrink bladder tumors. When injected into the body, these "nanobots" target and collect in cancerous tissue, delivering radiation therapy directly to the tumor. Mice treated with a single dose of the nanobots experienced a 90% reduction in tumor size compared to untreated mice.

chapter six

Advancing Frontier Research





LS = Life Sciences | PE = Physical Sciences and Engineering | SH = Social Sciences and Humanities

ERC calls in Horizon Europe

	total	of which			
	applications	evaluated*	evaluated CH and UK	funded	success rates**
Starting Grant 2021	4,066	3,454	562	470	13.6
Starting Grant 2022	2,932	2,485	353	411	16.5
Starting Grant 2023	2,696	2,430	198	400	16.5
Starting Grant 2024	3,474	3,434		493	14.4
Starting Grant 2025	3,928				
Consolidator Grant 2021	2,652	2,231	372	318	14.3
Consolidator Grant 2022	2,222	1,896	272	323	17.0
Consolidator Grant 2023	2,130	1,892	181	307	16.2
Consolidator Grant 2024	2,313	2,262		329	14.5
Consolidator Grant 2025	3,121				
Advanced Grant 2021	1,735	1,457	240	255	17.5
Advanced Grant 2022	1,647	1,339	249	218	16.3
Advanced Grant 2023	1,829	1,530	226	255	16.7
Advanced Grant 2024	2,534				
Proof of Concept 2022 - 1st call	352	302	46	156	51.7
Proof of Concept 2022 - 2nd call	457	387	61	210	54.3
Proof of Concept 2023	608	495	69	240	48.5
Proof of Concept 2024	728	698		245	35.1
Synergy Grant 2022	359	355		34	9.6
Synergy Grant 2023	395	387		37	9.6
Synergy Grant 2024	548	541		57	10.5
Synergy Grant 2025	712				

Note: evaluated proposals based in CH (StG and CoG 2021) and UK (2021 - 2023 calls) are presented separately; following the termination of the exploratory talks, CH was considered a country non-associated to Horizon Europe so entities established in CH were not eligible for funding in the 2021 calls and could not apply afterwards until AdG 2024; entitites established in UK could continue to apply pending the adoption of the association Protocol, but were not eligible for funding in the ERC calls 2021-2023; CH proposals and UK proposals which were transfered to an eligible host institution and were funded by the ERC are counted in column "evaluated"; data as of February 2025.

- * withdrawn and ineligible proposals not taken into account
- ** percentage of funded proposals in relation to evaluated proposals

Geogra	phical distrik	oution of gra	antees for ea	ch call
	Advanced 2023	Starting 2024	Consolidator 2024	
Austria	535	4 12 8	5 1 5	
Belgium	2 5 3	8 6 9	126	
Croatia	000		001	
Cyprus	0 1 0	000	000	
Czech Republic	000		3 4 3	
Denmark	304	657	3 1 3	
Estonia	000	002	001	
Finland	153	3 3 8	142	
France	10 24 13	15 21 10	18 13 6	Life Colonada
Germany	26 23 10	37 43 14	20 33 15	Life Sciences
Greece	000	0 0 2	000	Physical Sciences and
Hungary			0 1 0	Engineering
Ireland	002	341	0 1 6	Casial
Israel	572	9 18 2	11 4 2	Sciences and
Italy	4 6 3	9 27 8	4 6 10	Humanities
Latvia				
Lithuania		110		
Luxembourg	0 1 0	000	010	
Malta			001	
Netherlands	11 13 7	11 17 25	9 20 8	
Norway	1 4 5	2 5 6	3 3 5	
Poland	031	003		
Portugal	000	0 1 3	021	
Slovenia			020	
Spain	3 7 6	8 16 9	6 8 7	
Sweden	4 3 3		5 4 5	
Switzerland (CERN)				
Turkev				
United Kinadom*		16 21 14	4 19 15	
0				

* Entities established in the UK were not eligible for funding in AdG 2023 Data as of February 2025

Chairs of ERC evaluation panels 2024

Panel	Starting Grant 2024	Consolidator Grant 2024	Advanced Grant 2024	
Life Sciences				
LS1 Molecules of Life: Biological Mechanisms, Structures and Functions	Reinhard Jahn	Bert Poolman María García-Pa		
LS2 Integrative Biology: From Genes and Genomes to Systems	Fyodor Kondrashov	Magnus Nordborg	Hinrich Gronemeyer	
LS3 Cell Biology, Development, Stem Cells and Regeneration	Elly Tanaka	Florian Greten	Philip Ingham	
LS4 Physiology in Health, Disease and Ageing	Karine Przyklenk	James Woodgett	Daniela Cota	
LS5 Neuroscience and Disorders of the Nervous System	Carmen Sandi	Michael Brecht	Christian Büchel	
LS6 Immunity, Infection and Immunotherapy	Dominique Soldati-Favre	Jacques Neefjes	Maria Grazia Masucci	
LS7 Prevention, Diagnosis and Treatment of Human Diseases	Emmanuel Delamarche	Marianne Van der Sande	Dominique Costagliola	
LS8 Environmental Biology, Ecology and Evolution	Graham Budd	Arjen Biere	Joy Bergelson	
LS9 Biotechnology and Biosystems Engineering	Lene Jespersen	Anne Meyer	Nicholas Talbot	
Physical Sciences and Engineering	J			
PE1 Mathematics	Sofia Olhede	Judith Rousseau	Sara van de Geer	
PE2 Fundamental Constituents of Matter	Martina Knoop	David Charlton	María José García Borge	
PE3 Condensed Matter Physics	Silke Biermann	Jelena Klinovaja	Bernhard Keimer	
PE4 Physical and Analytical Chemical Sciences	Marco Musiani	Zoltan Takats	Malcom Levitt	
PE5 Synthetic Chemistry and Materials	Janine Cossy	Benoit Champagne	Bruno Chaudret	
PE6 Computer Science and Informatics	Josep Domingo-Ferrer	Tinne Tuytelaars	Philippe Palanque	
PE7 Systems and Communication Engineering	Rick Middleton	Sandra Hirche	Peter Kennedy	
PE8 Products and Processes Engineering	Antonio De Simone	Craig Priest Michael Grätzel		
PE9 Universe Sciences	Maria Alessandra Papa	Heino Falcke	Carlos Frenk	
PE10 Earth System Science	Veronique Dehant	Alberto Montanari	Caroline Slomp	
PE11 Materials Engineering	Maria Antonietta Loi	Fergal O'Brien	Jean-Marie Tarascon	
Social Sciences and Humanities				
SH1 Individuals, Markets and Organisations	Tobias Kretschmer	Jan Eeckhout	Bettina Rockenbach	
SH2 Institutions, Governance and Legal Systems	Andrej Zwitter	Markus Lederer	Emilie Cloatre	
SH3 The Social World and its Interactions	Henrik Erdman Vigh	Stefan Stürmer	Olivier Servais	
SH4 The Human Mind and Its Complexity	Ruth de Diego-Balaguer	Lydia Krabbendam	Arturo E. Hernandez	
SH5 Texts and Concepts	Jan Opsomer	Ingela Nilsson	Sonja Smets	
SH6 The Study of the Human Past	Jo van Steenbergen	On Barak	Francesca Tinti	
SH7 Human Mobility, Environment, and Space	Rob Kitchin	Alun Jones	Ole Mertz	
SH8 Studies of Cultures and Arts	John Nguyet Erni	Mara Benadusi	Matthew Rampley	
Synergy Grant 2024				
Carlo W.J. Beenakker Pierre Braun	stein Anne Ephrussi	Bernd Fleischmann M	elinda Mills	

chapter seven

Communication

Communication actions

The ERC Scientific Council has a mandate to communicate with the scientific community, key stakeholders, the media and the public at large.

All communication actions performed during the year were guided by the three overarching objectives set out in the Scientific Council's annual communication strategy – explaining the intrinsic value of frontier research, providing timely information about ERC funding opportunities and promoting the public understanding of science.

The ERC Communication Unit uses a range of methods to communicate - from handling press relations including press briefings and media interviews with its leaders and grantees to organising public sessions and events and more. Key tools to communicate include the ERC social media channels, the website, a newsletter and a magazine, as well as videos and ERC podcasts.

Last year saw significant coverage of the ERC in traditional media and increased engagement on social media, with particularly high levels of interest in the results of ERC funding calls. There was substantial growth in followers in the ERC LinkedIn and Instagram platforms and the newly created WhatsApp channel.

Explaining the intrinsic value frontier research

The ERC President and the Scientific Council members participated in numerous high-profile events and bilateral meetings, demonstrating to policy-makers, the business community, and the media how supporting frontier research can help tackle both immediate and long-term economic, environmental, and societal challenges. A major event – a Nobel Prize Dialogue - was organised by the ERC jointly with the Nobel Foundation at Bozar in Brussels, bringing together Nobel Laureates, policy-makers, thought leaders and ERC grantees to discuss the future of democracy and the role of science. This was the largest event that the ERC has ever organised, with over 2,000 attendees and some 100,000 views online. The ERC also had sessions and visibility at the World Economic Forum in Davos, the Falling Walls Conference in Berlin, the EU Research & Innovation Week in Brussels and the EuroScience Open Forum in Katowice, as well as in the context of numerous visits of the ERC President, including for instance to Czechia, Poland, Cyprus, Germany and Norway.

Keeping the research community updated

The ERC organised several webinars to inform potential applicants about the grant schemes, call calendar and funding opportunities. These included information on the ERC's plan for 2025 (the work programme) and the introduction of a new form of payment for grantees via lump sums for the 2024 Advanced Grant call, which both had over 800 live views. A virtual information event for the widening countries received more than 6,000 views. The ERC organised three information events for the National Contact Points in the EU Member States and Associated Countries. Cooperation continued with the Euraxess network and the EU's Delegations across the world to promote funding opportunities at international level.

Promoting public understanding of science

Many ERC grantees engage the public with their research, showing commitment to bridging the gap between science and society. To reward those who go the extra mile and inspire others to follow suit, we organised the third edition of the ERC Public Engagement with Reseach Award in a festive ceremony in Brussels. Videos of the event, notably the post event videos with reactions from the ceremony, were viewed more than 27,000 times. Another initiative that that the ERC has launched to promote the understanding of science is the ERC Science Journalism Initiative. Last year, the first residencies of journalists in European research groups took place under this scheme.

In line with our ambition to bring science to wider audiences, the ERC also developed and shared over 200 science stories based on grantees and their research, through the ERC website, newsletter and social media channels.

Communication figures



press announcements released by the ERC





events (organised by the ERC and partners both online and in-person)





followers on social media

ິ
18.000

event participants



4,230

participants of webinars

organised for potential applicants

	_	-

60,800

science stories readership



970,000 website unique visitors



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> Maria Leptin ERC President and Chair of the ERC Scientific Council



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