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The ANR funds research in all its diversity

2024 Annual Report

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EDITORIAL

The ANR has actively pursued the aims of the Research Programming Law and France 2030

In 2024, over 2,000 projects were funded as part of the ANR's Work Programme, including 1,700 via the Generic Call for Proposals (AAPG) for a total of nearly 810 million euros. As the operator for the France 2030 plan since 2010, the Agency contracted more than 380 projects in 2024, for a cumulative amount of 2.5 billion euros.

The Research Programming Law and the ramping-up of France 2030 in recent years have made considerable demands of the ANR, which has deployed robust and demanding processes in accompanying this growth.

Partnership-based research experienced a significant rise in 2024, especially due to the adjustments made in 2023 to the LabCom instrument: the number of submitted projects rose 85%, driven by the programme opening up to start-ups, in addition to CIFRE theses and a wider range of collaborations.

The Agency also strengthened its partnerships on the territorial level, in line with an emphasis on cohesion and on a national foundation. The strategic agreement signed with the Réunion region illustrates this will to support research and innovation in connection with the French territories.

On the international level, the ANR established new bilateral and multilateral partnerships, in keeping with the French government's objectives for international collaboration. In 2024, two agreements were signed with India and Brazil, and the Agency celebrated ten years of fruitful cooperation with the Swiss National Science Foundation, reflecting the sound, long-term partnerships established with this major country for research.

CLAIRE GIRY

ANR President & CEO

In 2024, the ANR took a further step forward in its mission as a public actor in knowledge with the launch of ANR Data.

In 2024, the ANR took a further step forward in its mission as a public actor in knowledge with the launch of ANR Data. This structural instrument facilitates the access and use of the Agency's open data, with a view to enhancing transparency and offering decision support. ANR Data visualises and filters various data sets, providing an overview of key figures for both the Work Programme and France 2030 (number of projects, partners, funding allocation, etc.).

With respect to commitments, the ANR continued its pursuit of societal responsibility. It published its second gender equality action plan, created a road map for sustainable development and ESR, and signed the Heidelberg Agreement on Environmental Sustainability in Research Funding. Professional ethics and scientific integrity were also reaffirmed as pillars of its action.

The ANR's trajectory and performance were recently recognised in the evaluation report from the High Council for the Evaluation of Research and Higher Education (Hcéres), which stated that the Agency 'met the high expectations set for it in the French research and innovation ecosystem', adding that it 'is among the best research funding agencies in Europe'. This evaluation, which Hcéres completed in late 2024, was preceded by a stimulating self-assessment process involving over 130 ANR staff members. It will serve as one of the foundations for developing the 2026-2030 Objectives and Performance Contract between the French government and the ANR.

This recognised success is firstly that of the Agency's teams. Their commitment, professionalism, and sense of public service maintained consistent quality across all of its actions. I salute their efforts, which enabled the Agency to rigorously manage the 2024 Work Programme, thereby ensuring a selection rate around 24% for the AAPG, and to continue leading the higher education and research component of the ambitious France 2030 programme.

// According to the evaluation report issued by Hcéres in late 2024, the Agency 'met the high expectations set for it in the French research and innovation ecosystem'.

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The ANR is France's public, project-based research funding agency, as well as the government's operator for the higher education and research component of France 2030. Amounts disbursed, number of projects funded, resources mobilised... Key figures for the ANR's activity in 2024.

WORK PROGRAMME

€1.24 billion
funding budget

2,093
new projects funded,
including **1,713** via the Generic Call for Proposals, open to all scientific communities

24.2%
overall success rate

Over 30,000
projects supported
since 2005

FRANCE 2030

€2.5 billion
under contract in 2024

388
new projects funded

Since 2010,
€31 billion
under contract

2,090
projects funded

SAPS PROGRAMME
(Science with and for society)

€9.7 million
1.05% of the call for proposals budget

PRECIPUT

a rate of 30%
(additional funding allocated to the institutions managing or hosting funded research projects)

MANAGEMENT BUDGET

€57.3 million
in payment authorisations

Staff **€31.9 million**
Investments **€3 million**
Operation **€22.4 million**
(including scientific expertise and holding evaluation panels)

RETROSPECTIVE

2024 highlights

A look back at a few remarkable and emblematic moments from ANR actions in the service of science and society

15 FEBRUARY

OPEN DATA

data.anr.fr: the Agency launches its open data platform

With this new tool, the ANR makes available to the public a broad range of visualisations for data sets from the calls, programmes, and projects it operates. This will facilitate their uptake and reuse by research and innovation stakeholders. The platform will be expanded regularly, a reflection of the Agency's commitment to a policy of open access and use for its data. */ see page 36 /*

29 FEBRUARY

SPECIAL FEATURE

Rare diseases in the spotlight

To mark Rare Disease Day, the ANR featured its continued efforts to address therapeutic challenges in this field. With a series of articles focusing on the innovative projects it supports in gene therapy for myopathies, targeted biological therapies for mucoviscidosis (cystic fibrosis), and in silico modelling for the rarest diseases, the Agency affirmed its commitment at a time when three million individuals suffer from a rare disease in France.

LEARN MORE ABOUT OUR SPECIAL FEATURE

14-15 MARCH

EVENT

Interdisciplinary Workshop on Global Security (WISG): Research on Alert

Faced with hybrid risks and emerging threats, the 16th edition of the WISG brought together researchers, institutions, and security operators in Rennes. Co-organised with the Ministry of Higher Education and Research as well as the SGDSN, the event featured projects on disinformation, the protection of critical infrastructure and cybersecurity. The goal is to better anticipate, understand, and respond to contemporary crises—cyber, climatic, or geopolitical—by strengthening the bridges between research and public decision making.

5 APRIL

REGIONAL PARTNERSHIP

New momentum for research on Réunion

The cooperation framework agreement signed by Huguette Bello, President of the Regional Council of Réunion, and ANR President Thierry Damerval promotes the development of research and innovation across the territory, promotes synergies between support instruments, and fosters leadership for Réunion research on the local, national, and international level. This promising partnership, which is in effect until 2027, enabled the ANR to evaluate over 30 projects as part of the 2021-2027 AMI PO FEDER, in addition to the co-organisation of gatherings to encourage the participation of scientists from Réunion in the LabCom programme. */ see the interview with Huguette Bello on page 20 /*

16 APRIL

REGIONAL PARTNERSHIP

Brittany commits alongside the ANR

Thierry Damerval, the President of the ANR, and Olivier David, the Vice President for Student Life, Higher Education, and Research of the Regional Council of Brittany, signed a three-year cooperation agreement. The goal is to support and strengthen the research and innovation ecosystem in Brittany, which today includes 19,000 individuals and forty institutions. This first partnership notably translated into a first joint initiative: evaluating the projects submitted as part of the Bienvenüe instrument.

21 APRIL

DOCUMENTARY

Hurricane Irma: science in the eye of the storm

What lessons can be learned from Hurricane Irma in 2017? How to prepare for such extreme weather events? That is the goal of the documentary *Irma: In the Eyes of Science*, co-produced by L'Esprit Sorcier and the ANR, and broadcast for the first time in April 2024. It offers an educational, behind-the-scenes look at the research conducted after the disaster, via four scientific projects that grew out of the ANR's OURAGANS 2017 'flash' call for projects.

19 JUNE

EUROPEAN PROGRAMME

Launch of FutureFoodS, for a more sustainable European food system

The FutureFoodS European partnership was officially launched in Dijon, which the ANR is coordinating in close collaboration with the German Federal Office for Agriculture and Food (BLE). This initiative brings together nearly 86 partners from 29 countries around an ambitious goal: establishing the scientific conditions needed for a European food system that is healthy and sustainable for humans, the planet, and the climate. The programme, which was selected in connection with the Horizon Europe call for proposals, received 32 million euros of funding for the first two years from the European Commission.

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JULY-AUGUST

SCIENCE AND SOCIETY

The ANR and France 2030 actively present for the Paris Games

On the occasion of the Olympic and Paralympic Games, the ANR and France 2030 supported Team France by holding a stand alongside the French Ministry of Higher Education and Research (MESR) and the General Secretariat for Investment (SGPI). The programme included demonstrations, videos, and discussions surrounding research on parasports, nutrition for athletes, and biomechanics. The cherry on top: twelve projects were featured from the High-performance Sport Priority Research Programme funded by France 2030, bringing together scientists and elite athletes.

LEARN MORE ABOUT THE BROCHURE ENTITLED "SPORT AND PHYSICAL ACTIVITY: SCIENCE ENTERS THE GAME".

15 OCTOBER

FRANCE 2030

France 2030 celebrates its three-year anniversary!

Investing in innovation, research, industrialisation, and training in order to live better, produce better, and understand the world better. Those are the aims of France 2030, for which the ANR is the operator in the field of higher education and research. As such, the Agency selects projects via calls for proposals, and provides contracting, funding, monitoring, audits, evaluation, and research impact. From basic research to innovation and training, France 2030 has supported over 4,700 projects since 2021, for a total of nearly 35 billion euros.

6 NOVEMBER

PUBLICATION AND SEMINAR

Inequality and vulnerability: when research shines a light for public action

What view do the humanities and social sciences have of contemporary inequality? The handbook entitled 'Inequality, Vulnerability, Solidarity, Society: Assessment of Actions and Projects Funded 2005-2023' analyses the scientific dynamics connected to the many dimensions of inequality and vulnerability. Presented during the morning discussions held at the *École des Hautes Études en Sciences Sociales* (EHESS, School of Advanced Studies in the Social Sciences), which included scientists and actors in the field, this interdisciplinary effort underscores the essential role of research in analysing social tensions and building sustainable solutions.

10-12 DECEMBER

SEMINAR

The first seminar dedicated to the 'Academia Partnerships Africa-France' (PeA) programme

The AFD, Campus France, the ANR, and the Embassy of France in Benin brought together for the first time, in Cotonou, Benin, all of the leaders for the French-African projects supported by the PeA, along with actors from the academic and research ecosystem. This was an occasion for the nearly 250 participants to assess and identify prospects for this programme that develops professional training avenues in priority economic sectors for the African countries concerned.

/ see page 23 /

17 DECEMBER

ESR

A new gender equality action plan

By launching a second 2024-2027 action plan, the ANR has consolidated its commitment to gender equality both within its teams and in the world of research. The initiatives pursued since 2017 were renewed, and emphasis was placed on training for both staff and chairpersons of scientific evaluation panels.

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Our actions

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ANR Work Programme

The Work Programme, a roadmap for programming, identifies the scientific priorities, funding instruments, and calls for proposals launched each year by the Agency to fund research in all its diversity. Its implementation is based on a funding budget for research projects selected via calls.

IN NUMBERS

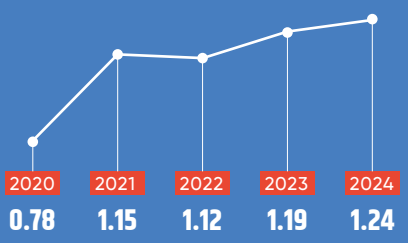
IN 2024

2,093
PROJECTS SELECTED

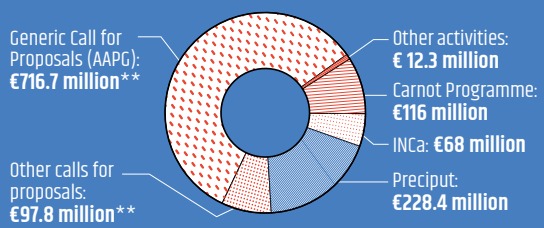
€1.24 billion
UNDER CONTRACT*
+ 3.9% compared to 2023 on a constant basis

24.2%
SUCCESS RATE

CHANGES TO THE FUNDING BUDGET SINCE THE RESEARCH PROGRAMMING LAW (BUDGET IN € BILLIONS)



ALLOCATION OF FUNDING BUDGET



* Amount not including the exceptional commitment of €148.9 million for contemporising.

** Amount not including the Management and Laboratory Preciput.

FUNDING BUDGET

Stabilised resources to stimulate research

Since 2021 and the Research Programming Law (LPR), the ANR's funding budget has continued to grow, reaching 1.24 billion euros in 2024.

A rising budget for research projects

The ANR mobilised 3.9% additional resources in 2024 on a constant basis, always with a view to funding more research projects, increasing the success rate for its calls, and strengthening its support for public-private partnership-based research. These funds are supplemented by co-funding and contributions from the European Commission for European partnerships that involve the Agency, totalling 22 million euros. While the distribution of funding among instruments remains stable overall, the growing budget and number of projects especially involves the AAPG, the ANR's primary call, with its more than 810 million euros representing 81.1% of submitted projects. The average amount allocated to selected projects increased 3.1% across all calls for proposals, reaching an average of 439,000 euros.

An increased Preciput rate for institutions and laboratories

The Preciput represents a financial contribution provided to institutions and laboratories whose research project was selected by the ANR. In 2024, the rate stabilised at 30%, with nearly 230 million euros. As a complement to the funding budget of 1.24 billion euros, an exceptional total of 148.9 million euros was allocated in 2024 for the Host and Site components of the Preciput during the year of the project's selection, rather than the following year as previously done (operation referred to as 'contemporising').

THE PRECIPUT: DISTRIBUTION IN FOUR PARTS

- **The Management share** covering the project's general costs,
- **The Host share,** contributing to the cost and quality of hosting teams,
- **The Laboratory share** supporting the scientific strategy and research units,
- **The Site share,** allocated to host institutions as a contribution to their scientific strategy.

COMPLEMENTARY INSTRUMENTS IN SUPPORT OF JOBS AND INNOVATION

Since 2022, the ANR has helped fund research projects associated with Junior Professor Chairs (CPJ), which complement existing recruitment avenues for researchers and senior lecturers. In late 2024, 388 chairs were supported by the ANR, with 77.6 million euros being disbursed to 87 institutions. Other instruments operated by the ANR include the Job Preservation Component of the France Relance recovery plan, and Flexible Degree Courses (PFL).

GENERIC CALL FOR PROPOSALS (AAPG)

Supporting free research across all disciplines

The ANR's primary call for proposals, the Generic Call for Proposals (AAPG), is open to all researchers regardless of their discipline or project. This allows the Agency to be highly attuned to the need of the scientific community, and to encourage highly diverse initiatives.

A success rate stable at 24.4%

Among the 7,017 eligible pre-proposals submitted as part of the 2024 AAGP, 1,713 projects were selected, representing 82% of all projects funded this year by the ANR. The success rate for this call remained stable at 24.4% (24.3% for the 2023 AAPG). The average aid allocated per project increased slightly to 473,000 euros, compared to 462,000 the preceding year. A global amount of 810.7 million euros was allocated to the projects selected, including the Management and Laboratory shares.

Projects aligned with strategic priorities

The ANR includes the strategic priorities defined by the French government within the AAPG, such as artificial intelligence, the humanities and social sciences, quantum technology, and translational research on rare diseases and autism. These priorities now include mathematics and the scientific use of the data generated by international scientific organisations (ISO) and research infrastructure* (IR, previously TGIR, very large-scale research infrastructure). In total 20.9 million euros were allocated to 40 projects in line with these orientations.

'ANR MEETINGS': SHINING A LIGHT ON THE APPG

In September 2024, the ANR organised webinars to present the AAPG, its scientific focus areas, and other topics (international actions, public-private partnerships, commitments, financial regulations, etc.). It provided an opportunity for researchers, managers, and institutional actors in research to better understand the call for proposals process, and to interact with representatives from the ANR's scientific and administrative departments. Other online meetings will also be proposed throughout the year on various subjects such as France 2030, consortium agreements, SAPS calls, and monitoring instruments, among other things.

IN NUMBERS

2024 Generic Call for Proposals
810.7 million euros

78% OF THE FUNDING BUDGET

1,713
SELECTED PROJECTS

€473 K
AVERAGE FUNDING PER PROJECT

24.4%
SUCCESS RATE

56 SCIENTIFIC RESEARCH AREAS

across 7 scientific fields and 7 interdisciplinary fields

5 FUNDING INSTRUMENTS

1. Young Researchers (JCJC)

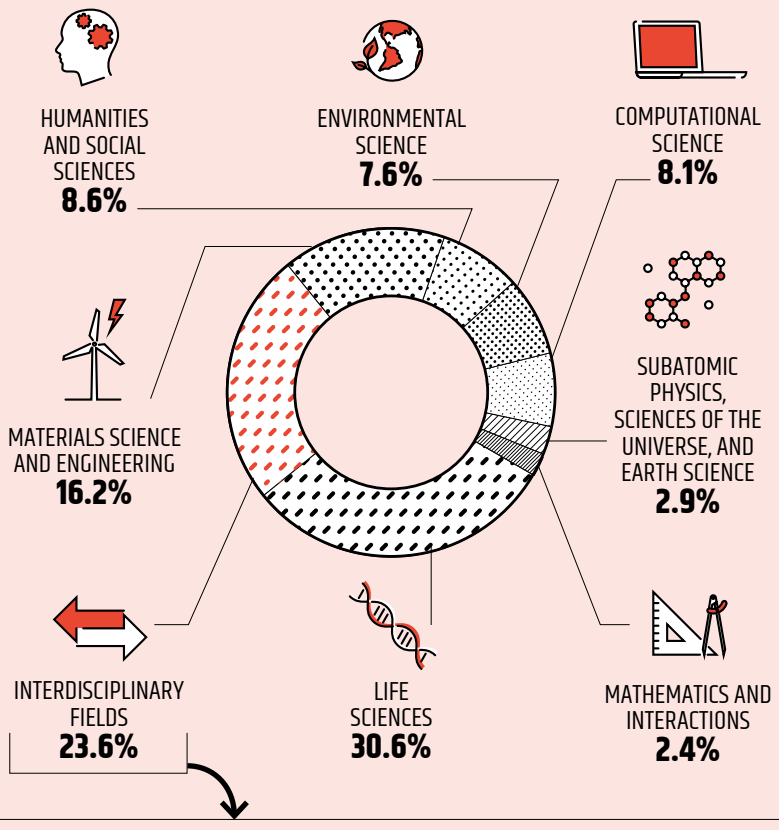
2. Single-team research projects (PRME)

3. Collaborative research projects (PRC)

4. Collaborative research projects involving enterprises (PRCE)

5. International collaborative research projects (PRCI)

DISTRIBUTION BY DISCIPLINE



Sustainability science / Digital transformation / One Health / Ecological and environmental transition / Energy transformation / Technological transitions / Transformations of sociotechnical systems

Mobilising research around targeted goals

New priorities established by the government, emerging scientific issues, strategic partnerships, exceptional emergencies... The ANR's specific programmes and calls complement the AAPG in order to meet scientific, technological, and societal challenges. A look back at the major actions that marked 2024.

2023 TSIA: giga-model seminar

On 24 April 2024, those selected for the 2023 TSIA, focusing on Giga-models for Automatic Processing of Natural Language and Multimodal Data, met to discuss their research on the challenges related to the learning and use of (transformer-based) giga-models. This will stimulate initiatives and promote the emergence of networks of researchers in this field.

Renewed support for the 'artificial intelligence' national strategy

In a constantly evolving AI landscape, the ANR is actively contributing to the national strategy for AI. In 2024, a new call for proposals on Specific Topics in Artificial Intelligence (TSIA) was launched for two multidisciplinary subjects heralding major scientific and technological breakthroughs. The first, Artificial Intelligence for Future Networks, makes AI integral to the communication networks of the future. It identifies the AI methods with the greatest potential for helping overcome difficulties in various layers of networks, from physical transmission up through applications.
The second topic, entitled Machine Learning Operations, Software Engineering for Artificial Intelligence, focuses on making machine learning (ML) operational, which would allow machines to learn from data without explicitly being programmed to do so. The goal is to develop new theories, methods, and techniques in software engineering that can improve developments in AI, including their reproducibility, long-term viability, and sharing. A total of ten projects were selected for the two topics in the call, for a cumulative aid of 5.77 million euros.

Open science, a research topic

After the strong mobilisation driven by the Research on Open Science Practices and Issues call for expression of interest from 2023, in 2024 the ANR launched a specific call for proposals, inviting scientific communities to adopt a reflexive and critical approach to their research practices during a time of open science. In addition to expanding the epistemology and understanding of scientific activity, this approach (often referred to as 'metascience' or 'research on research') is an invaluable source for public policy. The 37 selected projects explore subjects such as analysis of the open practices of researchers (values, policies, standards), curbs to the diffusion of open access publications, as well as economic models and their impact. Ten projects were selected for a total of 2.2 million euros.

52 PROJECT SELECTED IN 2024 AS PART OF SPECIFIC CALLS AND PROGRAMMES

€214 K AVERAGE FUNDING PER PROJECT

27.5% SUCCESS RATE

Close ties with French regions

In 2024, the ANR expanded its collaboration with the French administrative regions in order to co-construct targeted calls for proposals featuring regional scientific excellence, as well as to facilitate access to funding. The Agency notably accompanied the Normandy, Pays de la Loire, and Provence-Alpes-Côte d'Azur regions with a call for expression of interest in 2023, followed by a call for proposals in late 2024 on climate change's impact on regional ecosystems (ICCER). The goal is to generate new knowledge with a view to adapting public policy to the effects of climate change. The partnership between the ANR and the Provence-Alpes-Côte d'Azur region once again proved its worth in 2024. Since 2022, the LabCom and Industrial Chair projects selected by the ANR and located in the area received an additional contribution from the region. This incentive translated into an increasing number of projects being submitted by scientific and industrial communities in Provence. In 2024, two LabComs and an Industrial Chair received additional funding from the region, for a total of 576,000 euros. Finally, 2024 saw the signing of three new cooperation framework agreements with Brittany, Martinique, and Réunion / *see interview page 20* /, in addition to the renewal of the three-year collaboration with Guadeloupe.

ANR/REGION PARTNERSHIPS

9 partnerships, including 4 under contract in 2024

114 projects evaluated on behalf of regions

1 CFI (call for expression of interest) launched in collaboration with the Normandy and Pays de la Loire regions

2 informational webinars with the University of the French Antilles – Martinique and Guadeloupe (on LabComs and the AAPG), and 2 with the Réunion region (on LabComs)

MOBILEX CHALLENGE: FIRST CHALLENGE MET!

/ **The ANR's 'Challenge' instrument fosters competition between research teams developing competing approaches for overcoming major scientific and technological obstacles. This was the case for the Mobilising in a Complex Environment (MOBILEX) Challenge focusing on autonomous ground vehicles for military and civilian applications (agriculture, mining industry, etc.). Launched in 2023 with the French Defence Innovation Agency (DIA), the French National Space Agency (CNES), and the French Innovation Agency for Transport (AIT), its first challenge occurred in October 2024 in Bourges. This was an opportunity for the seven selected teams to test their technological solutions for complex environments (damaged roads, avoiding obstacles, edge monitoring) in connection with a dozen trials. Two other challenges are planned for 2025 and 2026.**

MOBILEX

7 selected projects

€3.22 million in aid allocated (€1.50 million by the ANR and €1.72 million by the AID)

INTERVIEW

FIRST COOPERATION AGREEMENT BETWEEN THE RÉUNION REGION AND THE ANR

‘A structural lever for the future of research in Réunion’

HUGUETTE BELLO President of the Regional Council of Réunion

On 5 April 2024, the Réunion region and the ANR signed a triennial cooperation framework agreement for the 2024-2027 period. Huguette Bello, the President of the Regional Council, looks back at the partnership’s concrete impact and shared ambition.

This cooperation agreement between the Réunion region and the ANR is a first. What does it aim to achieve?

First, our island has a high-quality research and innovation architecture, as well as a world-class network of scientific infrastructure in key fields such as atmospheric science, volcanology, agroecology, marine science, renewable energy, biotechnology, health, and the humanities and social sciences. Réunion has a strong concentration of cutting-edge equipment, which gives it a unique capacity to produce knowledge that is both relevant for its territory and recognised internationally, especially in relation to planetary issues. It also possesses a dynamic scientific and technological ecosystem conducive to the emergence of innovative projects. With this in mind, this agreement with the ANR represents a major step in strengthening regional research by supporting scientific projects that foster our development, and that make Réunion a centre of scientific excellence in the Indian Ocean.

> ***// This partnership between the Réunion region and the ANR is a major step toward the goal of making Réunion a key research centre in the Indian Ocean.***

What impact do you expect for local research, and more broadly for Réunion?

Innovation and research are pillars of the strategic sectors that will shape Réunion by 2030. The region is marshalling significant resources to this end, notably as the management authority for the FEDER-FSE+ 2021-2027 operational programme. In connection with its Intelligent Social and Sustainable Specialisation Strategy, it identified three priority research areas: the ecological transformations of insular systems, namely by anticipating the effects of demographic growth and their integration within a globalised world; the adaptation of islands to global change; and the empowerment of populations from the Southwest Indian Ocean. This partnership plays a decisive role in this dynamic, as it strengthens the visibility and

The signing, on 5 April 2024, of the 2017-2024 cooperation framework-agreement by Huguette Bello, President of the Regional Council of Réunion and Thierry Damerval, President of the ANR, at the Hôtel de Région in Saint-Denis de La Réunion.

competitiveness of researchers from Réunion, supports the development of ambitious scientific projects, stimulates relations between research and the business world, and highlights the value of scientific careers among youth in Réunion.

What does this concretely translate into?

An expert in funding for public and partnership-based research, the ANR provides recognised knowledge in numerous scientific fields. By facilitating access to the Agency's expertise and recommendations for Réunion researchers, this partnership helps them formulate and submit their projects, thereby increasing their success rate. The scientific expertise provided by the ANR in 2024 made it possible to evaluate over 30 research projects submitted as part of the calls for expression of interest (CEI) connected to the 2021-2027 FEDER Operational Programme (OP), with notable added value. This agreement also stimulates synergy between research laboratories and local economic actors, with a view to anchoring research within the realities and needs of the inhabitants of Réunion. Public-private cooperation instruments, such as associated research laboratories (LabCom) led by the ANR, are wholly in keeping with this logic. To encourage the participation of local actors, the Réunion region initiated actions raising awareness and fostering technology transfer, notably by co-organising a LabCom event with the ANR in September 2024 that brought together over 55 participants.

What other activities have been planned?

A monitoring committee will be established to ensure the relevance and effectiveness of this cooperation. The partnership also paves the way for ramping up activities. Targeted calls for proposals could eventually be co-constructed to transform scientific results into concrete solutions beneficial to the territory's economy. The creation of a network of scientific excellence in Réunion is also planned via strengthened cooperation between higher education institutions, research organisations, and international partners. This dynamic, based on a firm desire to pursue international openness, will enduringly position Réunion in line with major French and European research strategies.

Promoting international cooperation
in response to global challenges

The ANR is actively involved in European and international scientific programming bodies, and is committed to promoting collaboration between French and foreign researchers. To this end, it coordinates research efforts responding to major global issues.

// The partnerships established as part of the Horizon Europe programme aim to have a concrete impact in the everyday life of European citizens by 2050.

CLAUDE YVEN,
Coordinator for the FutureFoodS partnership at the ANR

Launch of FutureFoodS, for a sustainable food future

On 19 June 2024, the FutureFoodS European partnership was officially launched in Dijon for a period of ten years. Coordinated by the ANR in collaboration with the German Federal Office for Agriculture and Food (BLE), it includes 86 partners from 29 countries. Its objective is to establish the scientific basis for a European food system that is healthy and sustainable for humans, the planet, and the climate. Selected as part of the Horizon Europe programme, this major partnership received 32 million euros of funding from the European Commission for its first two years. Its first call for proposals, Transforming Food Systems: Reshaping Food System Interactions, Fostering Food Innovation and Empowering Sustainable Food Choices, was launched on 6 November 2024. It also plans to develop 'living laboratory' instruments, and to implement a European observatory for food systems.

QuantERA strategic conference: strengthening European leadership in quantum technology

On 24 and 25 September 2024, the ANR took part in the strategic conference organised in Amsterdam by the QuantERA European consortium, alongside 36 other research funding organisations. Open to a wide range of participants, this major event provided an opportunity to present the results of funded research projects, promote the consortium's programme, and debate challenges in the sector. The ANR's participation in the QuantERA consortium allowed French research teams to contribute to high-level scientific projects in quantum technology, a sector of the future that is a strategic priority for the government.

251 PROJECTS SELECTED IN 2024 AS PART OF EUROPEAN AND INTERNATIONAL RESEARCH

Not including AAPG/PRCI (International collaborative research projects)

€251 k AVERAGE FUNDING PER PROJECT

20.6% SUCCESS RATE

PAPFE: FACILITATING ACCESS TO EUROPEAN FUNDING

In connection with the National Action Plan to Improve French Participation in European Research and Innovation Funding Schemes (PAPFE), the ANR supports the involvement of French researchers in European funding instruments:

- The Tremplin-ERC and Access-ERC calls offer support for scientists affiliated with a French laboratory in their grant applications (European Research Council).
- Setting up European or International Scientific Networks (MRSEI) and Support for European or International Scientific Networks (SRSEI) provide support for submitting research projects to collaborative European and international calls.

In 2024, 70 projects were selected with a success rate of 26.4%, with each receiving on average 65,000 euros.

A first seminar for the 'Academia Partnerships Africa-France' (PeA)

Since 2020, the 'Academia Partnerships Africa-France' (PeA) has sought to strengthen cooperation between French and African higher education and research institutions. Its primary goal is to develop job-oriented training programmes (Bachelor, Master, and/or PhD) in priority economic sectors for African partner countries. From 10 to 12 December 2024, the AFD, Campus France, the ANR, and the Embassy of France in Benin brought together for the first time—at the French Institute in Cotonou, Benin—all of the leaders for the French-African projects supported by the PeA, in addition to actors from the academic and research ecosystem. This allowed the nearly 250 participants to assess the four years of collaboration, and to engage in discussion as part of roundtables, conferences, and workshops. At the time of the launch of its third call for proposals in late 2024, the PeA had financed thirteen projects since 2020, involving over fifty institutions in seven different countries.

Water4All makes its entrance at the 10th World Water Forum

Including 90 partners from 33 countries, the Water4All partnership coordinated by the ANR covers a broad range of research and innovation topics relating to fresh water. It participated in the 10th World Water Forum held from 18 to 25 May 2024 in Bali, Indonesia, on the topic of Water for Shared Prosperity. This was a first for this European programme launched in 2022, which seeks to ensure long-term water security for all. In addition to leading sessions on water governance with UNESCO and the International Office for Water and also sharing data, the Water4All team used the event to announce the launch of its atlas for the Water-Oriented Living Labs network. The World Water Forum brings the water-related community together every three years around crucial issues such as access to drinkable water, the sustainable management of resources, and purification.

// While this participation in the World Water Forum is a first for Water4All and the ANR, the goal is to take part in future editions to share the progress made and to highlight the programme's impact for the future.

ARIANE BLUM,
Coordinator of the Water4All European partnership at the ANR from 2022 to 2025

INTERVIEW

ANR-FNS: 10 YEARS OF EXEMPLARY SCIENTIFIC COOPERATION

‘A dynamic that benefits all research’

ANGELIKA KALT Director of the Swiss National Science Foundation (FNS) from 2016 to 2025

Over the last ten years, the ANR and the Swiss National Science Foundation (SNSF; Fondation National Suisse, FNS) have supported binational projects of excellence. For Angelika Kalt, the Director of the FNS, this unique collaboration has concretely deepened scientific ties between the two countries.

The ANR and the FNS have been committed to a partnership for over ten years. What is the strength of this collaboration?
Firstly it is proximity — geographic, linguistic, and cultural. But what makes this partnership so powerful is that we share the same values and scientific standards. Our two agencies collaborate at different levels, for example by funding projects or taking part in European and international forums, such as Science Europe and the Global Research Council. These close ties offer numerous possibilities for researchers! Mutual trust is essential, and that is precisely what distinguishes our partnership.

How does this partnership work in practice for scientists?
The partnership is based in particular on the ‘lead agency’ mechanism, which allows a French-Swiss team to submit a project to just one of the two agencies (i.e., to either the ANR or the FNS). The latter is responsible for evaluation, while the other finances the national share. This system simplifies processes for scientists, all while requiring great trust between our institutions. We also have instruments such as partnerships or international co-responsibilities for the scientific projects we fund, which are widely used with France. Finally, our exchanges have been driven by mobility grants: on average 26 Swiss grant recipients leave for France each year, while six French recipients come to Switzerland via the Ambizione grant.

> ***// This partnership strengthens not only our agencies, but also our capacity to influence on a European scale.***

What are the primary topics of the supported projects?
Almost half of the projects involve mathematics, the physical sciences, and engineering. Those are followed by the life sciences (approximately 35%), and the humanities and social sciences (12%). The topics vary greatly! The MtnPATHS project, for example, brings together the CNRS and ETH Zurich to study the adaptation trajectories of mountain socio-ecosystems in the face of global change. The DERIVREG project, between Paris-Nanterre and Zurich, examines the effects of regulation on banks. And the

On 10 December 2024, celebration in Bern for the tenth anniversary of the bilateral funding agreement between the ANR and the Swiss National Science Foundation (FNS).

At left: Claire Giry, ANR President.
At top, from left to right: Honorata Plewinska, International Bilateral Affairs Manager at the ANR; Elisabeth Schenker, FNS; Dominique Dunon-Bluteau, Scientific Operations Director at the ANR; Angelika Kalt, FNS Director.

liveHeart project explores cardiac regeneration via in vivo imaging. French-Swiss complementarity deepens research, and promotes shared scientific responsibility.

What is your assessment of these ten years of FNS-ANR partnership?
Highly positive. This is demonstrated not only by the popularity of the lead agency mechanism, but also by the quality of exchanges between the collaborators from our organisations. Our teams understand one another well, collaborate effectively, and also cooperate in multilateral bodies. With the ANR, together we advanced strong positions at Science Europe and the Global Research Council. This partnership strengthens not only our agencies, but also our capacity to influence on the European scale. Beyond scientific results, it instilled a genuine culture of collaboration between French and Swiss researchers. It offers a structural legacy: approaches confront and complement one another, with this diversity benefitting research overall. I am convinced that this dynamic will continue in the service of scientific excellence.

How do you envision the coming years of collaboration?
This partnership already functions at a very high level. The goal now is to raise awareness about it among researchers, and to be more attentive to multilateral initiatives in priority fields (sustainability, artificial intelligence, etc.). However, our two agencies share the same philosophy: supporting free research that is guided by the curiosity of scientists. Enhanced international cooperation is one of the new priorities of our four-year plan. More resources have been dedicated to it, despite a tight budgetary context. In the future, it will be key to broaden our collaboration beyond Europe, all while consolidating the strong ties that already exist, notably with France.

10 YEARS OF COOPERATION

The FNS is the ANR's second partner in terms of the number of bilateral research projects

132 bilateral projects funded between 2014 and 2023 for a total of 103 million euros

1,299 scientific publications identified

22 projects selected in 2024

85 French partner institutions

26 Swiss partner institutions

LEARN MORE ABOUT THE "FOCUS" ON THE 10-YEAR FRENCH-SWISS COLLABORATION 2014-2024

PUBLIC-PRIVATE PARTNERSHIP-BASED RESEARCH

Facilitating synergies between academic and industrial actors

The ANR plays a central role in promoting and funding partnership-based research in France, a source of innovation, competitiveness, and jobs. To support public-private cooperation, the ANR improves its instruments and initiates partnerships with the business world.

Primary funding instruments

INDUSTRIAL CHAIRS

10 projects selected

62.5% success rate

€752 K average funding per project

CARNOT

€116 million disbursed to public research structures awarded the Carnot label, recognised for their effective collaboration with social and economic actors

Strategic and job-oriented projects, the twin advantages of Industrial Chairs

The Industrial Chairs programme supports public laboratories in co-constructing chairs with enterprises of all sizes. Dedicated to developing projects of strategic interest, it notably allows graduate students to supplement their training with research. In 2024, this instrument also benefited from the accelerated procedure for awarding CIFRE contracts with the ANRT. New chairs have been inaugurated, including REASONS (see text box) and VIRESP, an Industrial Chair in infectiology including the Université Claude Bernard Lyon 1 (UCBL), the Hospices Civils de Lyon (HCL), and Sanofi, with a view to optimising analysis of infection risk in various populations, and determining the advantages of vaccination programmes.

Strengthened ties with competitiveness clusters

The ANR has close ties with competitiveness clusters that bring together enterprises, laboratories, and training institutions around targeted topics across the entire French territory. On 15 January 2024, the ANR and the French Association of Competitiveness Clusters (AFPC) signed a three-year partnership agreement to pool their expertise and services to better guide and support actors in partnership-based research. The ANR and AFPC will identify the initiatives with the greatest potential among those submitted, and will highlight the ANR projects awarded the "competitiveness cluster" label that have shown promising results.

REASONS, THE FIRST INDUSTRIAL CHAIR IN THE HUMANITIES AND SOCIAL SCIENCES LED BY THE ANR

How to encourage societal acceptance of technologies promoting the energy transition? That is the focus of the REASONS research project, which stands for Renewable Energy Age: Social Notices, and includes the TREE laboratory from the Université de Pau et des Pays de l'Adour (UPPA), the CNRS, and the Social Performance R&D at TotalEnergies (OneTech). Inaugurated on 4 April 2024 and supported by the ANR to the tune of a million euros over four years, this industrial chair notably facilitates the roll-out of renewable energy initiatives across French territory.

77 PROJECTS SELECTED IN 2024 AS PART OF PUBLIC-PRIVATE PARTNERSHIP-BASED RESEARCH

Excluding AAPG/PRCE (Collaborative research projects involving enterprises)

€449 k AVERAGE FUNDING PER PROJECT

33.8% SUCCESS RATE

Thanks to the VERTI-Lab LabCom, teams from Ifremer and HydroQuest have deepened their understanding of the hydrodynamics for sites with high hydropower potential.

LabComs in full expansion

The LabCom programme, which celebrated its tenth anniversary in 2023, is a key ANR initiative for partnership-based research, technology transfer, and competitiveness. It supports the creation of associated research laboratories between public research organisations and small and medium-sized enterprises (SMEs), as well as mid-sized enterprises (companies that do not belong to the SME category, with fewer than 5,000 employees). Entrepreneurs express a technological need and identify scientific obstacles to overcome, and researchers translate them into research topics. They then pool their resources to respond.

Changes were made to strengthen the programme's attractiveness in 2024, chief among them: the eligibility of start-ups that can prove more than one year of existence; the possibility of associating two laboratories for multidisciplinary projects; and facilitated access to CIFRE grants via a fast-track procedure. These measures yielded results: the number of projects submitted in 2024 increased by 85% compared to 2023, and the percentage of projects funded (including two involving a start-up) rose by 36%.

The LabComs that emerged in 2024 include:

• **Verti-Lab**, involving Ifremer and the enterprise HydroQuest around analytical and design tools for developing tidal stream generators;

• **ICARE**, led by the IREENA laboratory from Nantes Université and the XSun company, focusing on a new generation of solar-powered drones that are more autonomous and have a smaller environmental impact;

• **MATritime**, including Bañulsdesign, the CNRS, École Polytechnique and Inria, addressing the challenges of a more sustainable, green, and robust maritime industry;

• **TELKANTE LAB**, between the LETG (CNRS/Université Rennes 2/Nantes Université/UBO) and the company Alkante, with a view to identifying and interpreting geographic information based on satellite images.

LABCOM

34 projects selected

30.6% success rate

€360 K average funding per project

ASTRID PROGRAMME

33 projects selected

32.7% success rate

€449 K average funding per project

The ANR, operator for France 2030

The ANR is the government's primary operator for managing France 2030 in the field of higher education and research. Since 2021, it has allocated 12 billion euros to transform the French economy and meet major societal challenges.

IN NUMBERS

IN 2024

26 CALLS FOR PROPOSALS LAUNCHED

388 PROJECTS UNDER CONTRACT

FOR A TOTAL OF **€2.5 billion**

SINCE THE BEGINNING OF PIAS IN 2010

€31 billion under contract

143 calls for proposals launched and **3,640** project proposals submitted

2,090 projects funded

16,046 filings for patents that grew out of funded projects

Over **130,000** publications that emerged from funded projects

Preparing the France of the future
through research, innovation, and training

Artificial intelligence, digital health, training for the jobs of the future… To achieve the goals of France 2030, the ANR supports ambitious projects in the fields of tomorrow. An overview of the actions conducted in 2024.

Research Programmes in the Humanities and Social Sciences: a first major CEI dedicated to HSS

Using the humanities and social sciences (HSS) to enlighten decision makers facing current and future crises, in addition to strengthening and structuring these disciplines: that is the dual goal of this call for expression of interest (CEI) dedicated to HSS. Launched in the spring of 2024, the CEI ended last year with the selection of six programmes of excellence founded on broad and solid consortia led by a higher education and research institution. The recipients were each awarded a sum of 9 million euros, allowing them to develop in-depth research programmes and create cutting-edge expertise on topics involving major issues.

The six programmes selected:

- DECRIPT: Civilisations and geopolitical unrest (INALCO)
- DémoCIS: Evolution of democracies (Université de Lille)
- FORESEE: Consequences of climate change (Université Grenoble-Alpes)
- HERMES: Preservation of cultural heritage (Université Sorbonne Nouvelle)
- ReligiS: Religions (Université de Strasbourg)
- SPHINX: Preservation of cultural heritage (Sorbonne Université)

The Women's Cancers IHU, Scientific Excellence Coming to Patients' Rescue

The Women's Cancer Institute was officially launched on 25 June 2024, an important step in the fight against gynaecological and breast cancer, which affect nearly 78,000 women each year. This institute, resulting from a collaboration between the Institut Curie, the Université PSL, and Inserm aims to revolutionise the understanding, prevention, and treatment of women's cancers, thanks to a multidisciplinary approach combining basic research and clinical applications. In May 2023, it was awarded the Institut Hospitalo-Universitaire (IHU, or University Hospital) label, along with a budget of 20 million euros.

> ***// The projects selected successfully identified a high-quality scientific issue, and simultaneously proposed a strategy oriented towards public action and citizens, thereby charting out fascinating prospects for the role and contribution of HSS in our society.***
>
> **PHILIPPE TCHAMITCHIAN,** manager of HSS-CEI activities at the ANR

Eight of the IHU's working groups are already mobilised around 19 innovative projects. These include the Women's Cancer Atlas, which will feed into a multimodal database for 35,000 patients over a period of ten years; the development of 3D organoids, tumours-on-a-chip that create "biological avatars of patients" for testing treatments; and finally the use of AI for the diagnosis and prognosis of women's cancers.

Nine new AI Clusters in the artificial intelligence race

France has sought a leading role in artificial intelligence via its National Strategy for AI (SNIA) in place since 2018, as well as the France 2030 plan. The AI Cluster CEI is another illustration of this ambition. Launched in 2023 with a budget of 360 million euros over five years, it has three objectives: to increase the number of AI graduates in higher education; to create attractive centres of excellence on the international level; and to develop innovation and uses for artificial intelligence in primary sectors of socioeconomic activity (mobility, health, cybersecurity, etc.). On 21 May 2024, the French President announced the winners selected by the government on the recommendations of an international panel organised by the ANR. Of these, the four interdisciplinary artificial intelligence institutes (known as the "3IA")—the first centres of excellence launched in 2019—have been renewed, with five new clusters being awarded the label.

OVERVIEW OF PEPRS, THE LEADING ACTIONS OF FRANCE 2030

Priority Research Programmes and Equipment (PEPR) fund basic research and structure scientific ecosystems in strategic sectors for France's economy and technological leadership. With a budget of nearly three billion euros, they accelerate socioeconomic, health-related, and environmental transformations (national strategy PEPRs), and create groundbreaking innovation in emerging sectors (exploratory PEPRs).

The 9 'AI Clusters' selected:
- **ANITI IA Cluster** (Université de Toulouse)
- **DATAIA-Cluster** (Université Paris-Saclay)
- **ENACT** (Université de Lorraine)
- **Hi! PARIS Cluster 2030** (Institut Polytechnique de Paris)
- **MIAI Cluste**r (Université Grenoble-Alpes)
- **PostGenAI@PARIS** (Sorbonne University)
- **PR[AI]RIE – PSAI** (Université Paris Sciences et Lettres)
- **SequoIA** (Université de Rennes)
- **3IA Côte d'Azur 2030** (Université Côte d'Azur).

Future Skills and Profession (CMA): accelerating training for the jobs of the future

An essential lever of the France 2030 plan, and the result of unprecedented collaboration among six ministries, the Future Skills and Profession (CMA) initiative anticipates and develops the vital talent needed for strategic sectors and major environmental and digital transitions in France. Operated by the ANR and the Banque des Territoires (Caisse Des Dépôts Group), it uses a call for expression of interest to fund, as the need arises, analyses

PEPRS IN NUMBERS

398 projects across 42 PEPRs (with a start date before 1 November 2023) under contract for a total amount of **1.35 billion euros**, working on over 400 technologies

Nearly 2,000 publications and 300 data sets

Over 100 patent applications and 300 software patent applications

Approximately 90 project proposals submitted to the European Research Council, including thirty that were selected

Over 1,300 theses initiated and 800 postdoctoral fellows

More than 6,000 professors and academics mobilised, along with 3,400 research engineers.

Announcement of new recipients of the CMA instrument by Astrid Panosyan-Bouvet, Minister of Labour and Employment, and Bruno Bonnell, Secretary General for Investment in charge of France 2030.

of required skills, in addition to the creation/adaptation of both initial and continuing training instruments across all levels. The third national gathering for winners of the CMA and DEFFINUM (France Innovative Digital Training Programmes, led by the Ministry of Labour) were held on 26 and 27 November 2024 at AgroParisTech, bringing together over 300 participants. Aside from the announcement of the 62 new CMA recipients, it provided an opportunity to share experiences and expertise, notably via collaborative workshops co-developed by the Public Innovation Chair, and led by institutional actors. The issues discussed included educational transformations, inter-project alliances, and the organisation of consortia.

// The recipients for the 2nd edition of the CMA confirm the trends identified during the 1st edition, namely: the multilevel dimension of qualifications, their multidisciplinary nature, and teaching methods emphasising innovation, immersion, and hybridisation.

RODOLPHE DALLE,
CMA Manager at the ANR

FUTURE SKILLS AND PROFESSIONS (CMA)

Since the creation of CMA in 2021:

182 projects supported

€1.13 billion allocated to projects

Approximately **400,000** trained per year by 2030

NCU: 5 YEARS OF HIGHER LEARNING TRANSFORMATION

/ Through the New University Curricula (NCU) instrument, the ANR supports establishments seeking to diversify their training offerings in response to current challenges in higher education, with the primary goal of promoting the success of all students. Following two rounds of calls for proposals in 2017 and 2018, 36 projects were selected for a total amount of 326 million euros. From 25 to 27 September 2024, an unprecedented conference brought together 300 actors at the Université Gustave-Eiffel for an update on the instrument. Participants shared and disseminated best practices relating to more flexible pathways, new educational tools, and professionalisation.

INTERVIEW

FRANCE 2030 CHAIRS OF EXCELLENCE IN BIOLOGY-HEALTH

‘A boost for biology and health research in France’

ALAIN FISCHER Professor of paediatric immunology and researcher in medicine and gene therapy, member of the French Academy of Science, and president of the evaluation panel for the call for proposals

Chairs of excellence in biology and health support the attractiveness and excellence of French research in the field of health, with an eventual goal of funding 40-50 high-level research teams. Alain Fischer, who presided over the international panel selecting the first recipients, looks back at the advantages of this flagship instrument of France 2030.

What are the objective of chairs of excellence in biology and health?
There are two primary objectives: attracting researchers of excellence to France, whether they be French scholars living abroad or internationals, and offering researchers already in France optimal conditions for pursuing their research. The key is for these chairs to fund not only the project leader, but also that person’s entire team, for a duration of five years. This provides genuine scientific stability, and allows for implementing ambitious projects. It entails expanding the ability of researchers to target highly-competitive funding, such as that of the European Research Council (ERC). The instrument is very positive, as it offers substantial support of up to two million euros, and even more with equipment.

The call for proposals launched by the ANR generated 600 applications. How did the panel select the recipients?
There was first a pre-selection based on applications, and then an interview with selected applicants. The primary criterion was scientific excellence: the quality of the career path, results, and project. The recipients come from very different backgrounds: neuroscience, immunology, microbiology, genetics, developmental biology, cancerology, rare diseases. They include biologists, a few doctors, women and men, both young researchers and those with more experience. They have strong profiles and lead ambitious projects, often at the intersection of basic research and medical applications.

> ***// This instrument will allow researchers to work in genuine conditions of excellence.***

You co-presided over this international panel with the biologist Elena Conti. How did this collaboration proceed?
We were very complementary: she specialises in the fundamental mechanisms of

The first recipients of chairs of excellence in biology-health, revealed on 22 April 2024 at l'Institut Pasteur, will receive a total of 47 million euros in funding. The goal is to better understand biological mechanisms, especially those involved in certain disorders and diseases, and to develop the medicines and health technologies of the future.

RNA, while I am closer to medical research. Together we led the debates. The panel consisted of fifteen international scientists, all of a very high level. This fostered demanding but fair evaluation across all fields.

What trends did you identify? To what innovative therapeutic avenues could the selected projects contribute?

The general trend is to focus on a single cell, by combining analysis of DNA, RNA, proteins, and other data. This involves systemic biology approaches, active use of digital technology, and artificial intelligence. These projects embody twenty-first century biology. Some remain very basic in nature, without us being able to predict their clinical impact. Others are much closer to applications. These include new strategies for treating certain tumours or rare diseases, inhibitors for the enzymes involved in malformations, or research on the genetic factors involved in cerebrovascular accidents. In all cases, the projects have true potential to eventually improve care, diagnosis, and prevention.

What is the potential long-term impact of these chairs of excellence for French research in biology and health?

If this instrument is renewed regularly, it could become a strategic lever for the country. Within a few years, a hundred teams could receive support. This would help make French research in biology and health, which requires new momentum, truly dynamic. France has quality teams, but is lagging behind its European neighbours. To reverse this trend, we must not only perpetuate such initiatives, but also support structural measures: the attractiveness of careers, increased salaries, simplified laboratory functioning, etc.

THE CHAIRS OF EXCELLENCE IN BIOLOGY AND HEALTH INSTRUMENT

Objective:
40 - 50 chairs of excellence funded, for a total budget of **80 million euros**

22 initial recipients supported in April 2024 for a total of **47 million euros**

LEARN MORE ABOUT THE RECIPIENTS

From assessment to impact, what the ANR does

One of the missions of the ANR since 2014 has been 'analysing the evolution of research offerings and measuring the impact of funding allocated by the Agency on national scientific production'. This represents an essential aspect of the Agency's activity, on which it has concentrated efforts in recent years by using ever more high-performance methods and tools.

SINCE 2021, A TRANSVERSAL ORGANISATION

/ In 2021 the ANR created a Digital Strategy and Data Department (DSD), consisting notably of a Data Governance Service and a Review, Study, and Impact Service specifically tasked with measuring the effectiveness of Agency funding. To analyse and highlight research results relating to the ANR Work Programme, the DSD works with the scientific departments of the ANR Scientific Operations Division (DGDS). The Major Government Investment Programmes Division (DGPIE), in connection with the DSD, includes a dedicated service for reviewing, evaluating, and completing impact studies for France 2030 projects, for which the shared indicators were identified in connection with the General Secretariat for Investment (SGPI). The Agency is also involved in international organisations such as the OECD and Science Europe, with a view to identifying and sharing methods and indicators.

1. COLLECTING AND EDITORIALISING RESEARCH DATA

Data collection occurs at all stages of research projects: submission, evaluation, selection, contracting, monitoring, and impact. To facilitate reporting for projects from the Work Programme, in 2024 the Agency implemented a new tool, OASIS, for monitoring ongoing projects from its Generic or Specific Calls for Proposals */ see page 69 /*. It carries out occasional studies to shed light on certain aspects of projects, all while providing access to data in real time. The data pertaining to France 2030 projects is gathered annually via a dedicated tool, Ac@cia, on the basis of objectives and performance indicators defined by an agreement between the French government and the ANR. '*We gather information pertaining scientific and technological production (publications, patents, etc.), dedicated human resources (researchers, doctoral students, postdoctoral fellows), and qualitative elements relating to the progress and impact of projects*', explains Patrick Éparvier, the France 2030 Studies and Evaluations Manager at the Agency.

Another significant advancement is that since June 2023 and the launch of the data.anr.fr platform, all ANR staff members use a single source of reliable

// Step by step, tracing the path toward impact.

MARTINE GARNIER-RIZET,
Director of Digital Strategy and Data

Measuring the 'impact' of research is not simple in a field characterised by long timescales and uncertainty. The scientific process is not linear, its ends are not always predefined, and its results are determined by a multitude of factors, some unpredictable. Both researchers and the ANR are firstly interested in the 'impact path', which is to say all of the stages that lead–or do not lead–to impact (implicitly with an ultimate benefit for society).

Maïa Néouze, Manager of the Review, Study, and Impact Service, and Martine Garnier-Rizet, Director of the Digital Strategy and Data Department.

and editorialised data. '*The data from data.anr.fr provides the first levels for assessment, analysis, and comparison. Over time, it will also help consolidate the results of our studies and observe trends*', points out Maïa Néouze, Manager of the Review, Study, and Impact Service. This internal data is supplemented by the data collected as part of a major monitoring effort on the European and international scale, with a view to providing context and perspective for projects funded by the ANR.

2. MEASURING AND ANALYSING RESULTS

On this basis, the ANR develops quantitative assessments–per project and portfolio of projects–using specific impact indicators depending on the field of research. France 2030 projects are subject to syntheses, impact studies, and evaluations in connection with the assessment programme of the Supervisory Committee for Investments for the Future (CSIA). For example, a study was launched in 2024 on the PEPRs relating to national acceleration strategies. For projects connected to the ANR Work Programme, the process is different, as explained by Martine Garnier-Rizet, Director of the Digital Strategy and Data Department: '*Unlike the more oriented research projects of France 2030, projects from the ANR's Work Programme, focusing on upstream and "curiosity-driven" research, have few a priori indicators, with the measurement of results proceeding a posteriori*'. This is central to ex-post analyses, which require in-depth study, investigation, and cooperation from external experts in accordance with needs.

14 **analyses** produced or updated by the ANR in 2024

Beyond evaluating projects, these assessments and analyses, which are grouped together by funding instrument, scientific topic, region, etc., allow the ANR to refine the strategic management of investments, and to adjust the programming for its Work Programme and associated investments. "*For example, four years ago the number and scope of research areas in the humanities and social sciences were revisited in order to cover the entire field, with this recasting translating into a 50% increase in submissions to our Generic Call for Proposals in this field,*" explains Garnier-Rizet. At the same time, specific studies are also produced in response to requests from various actors (partners, supervisory ministry, *Cour des Comptes*, general inspections, parliamentary inspections, etc.).

THE STAGES ALONG THE IMPACT PATH

INPUTS →	ACTIVITIES →	OUTPUTS →	OUTCOMES →	IMPACT
= initial elements from the research project	= research conducted	= results of this research (e.g., publications, data sets, software, source codes, etc.)	= appropriation and use of results (such as citations in public policy documents, scientific journals, etc.)	= concrete effects of research results

3. WIDELY COMMUNICATING RESEARCH RESULTS

Supporting scientific communities, inspiring public policy...The impact of research is also based on the diffusion and transfer of its results. In 2024, the ANR launched its platform data.anr.fr (see text box), and also increased publications and meetings. '*Over time, we have developed an entire technology transfer ecosystem combining targeted publications with more open communication actions, such as conferences, intended for an ever larger audience,*' details Fabrice Impériali, the ANR Director of Information and Communication. Drawing on sources from data.anr.fr—and the upstream work by the DSD, DGPIE, and the scientific departments of the DGDS, and informed by the views of researchers—these productions highlight a broad understanding of research, its methods, projects, and results, doing so in the service of dialogue between science and society.

DATA.ANR.FR: A TOOL FOR ANALYSIS AND TRANSPARENCY IN PUBLIC ACTION

/ To complement the 'raw' data it has made available since 2018 on data.gouv.fr, in 2024 the Agency made public its own open data platform. This will facilitate the exploration and reuse of data by its supervisory ministry, partners (regions and co-funders), decision makers, enterprises, and the broader scientific community. Informative and interactive, it can filter different data sets—by funding instrument, topic, region, and France 2030 action—as well as visualise it in graphic form to facilitate analysis.

LEARN MORE ABOUT DATA.ANR.FR

AN OVERVIEW OF ANR PRODUCTIONS IN 2024

PUBLICATIONS

/ 'Focus'
synthesising quantitative data pertaining to the Agency's actions and funding instruments over a given period.

FEBRUARY 2024 / **15 years of French-German cooperation in the humanities and social sciences 2007-2022**

DECEMBER 2024 / **10 years of French-Swiss cooperation 2014-2024**

/ Thematic handbooks
providing an overview of ongoing research, innovation, and technological advances in a specific field.

SEPTEMBER 2024 / **Challenges of the city in transition** – Projects funded for the 2005-2022 period

NOVEMBER 2024 / **Inequality, vulnerability, solidarity, society** – assessment of actions and funded projects 2005-2023

LEARN MORE ABOUT ANR PUBLICATIONS

/ 'Projects' booklets
presenting accounts and projects on a topical subject.

JULY 2024 / **Sport and physical activity: science joins the Olympic Games**

SELECTION OF EVENTS

Organised by the ANR on its own or in partnership with other organisations, these event feature scientific programmes or funding instruments among scientific communities, stakeholders, regional authorities, associations, NGOs, journalists, members of parliament, etc.

14-15 MARCH / **Interdisciplinary Workshop on Global Security - WISG** (ANR / French Ministry of Higher Education and Research / SGDSN).

10 APRIL / **Inequality, Vulnerability, Solidarity, Society: Analysis and Public Policy Workshop** (ANR / Economic, Social, and Environmental Council - ESEC).

13 JUNE / **Endocrine Disruptors: New Research Challenges scientific gathering** (ANR / Anses).

24-25 SEPTEMBER / **The Challenges of the City in Transition: Research Assessment and Prospects Conference** (ANR / ADEME).

20 featured scientific projects

"

The projects supported by the ANR cover a broad range of scientific disciplines, and respond to issues in global research. An illustration through 20 initiatives funded as part of the ANR Work Programme and France 2030.

GENERIC CALL FOR PROPOSALS

38 VISUAL
39 ACTC
40 PARIS-FTMW
41 MAIT
42 ADEQUATEDL
43 TONGA
44 POMADE
45 CEAS-OFM
46 ENERGY-4S
47 WINFIL

PUBLIC-PRIVATE PARTNERSHIP-BASED RESEARCH

48 QPEG
49 GEO3I LAB
50 ARENA

EUROPEAN AND INTERNATIONAL RESEARCH

51 HETER-OMICS
52 BIORODDIS
53 IMAGEUN

FRANCE 2030

54 REIL
55 EVIRED
56 ATLASEA
57 AIR

GENERIC CALL FOR PROPOSALS

VISUAL

Taking the visual thinking of autistic persons into account for greater inclusion

Project
Visual cognitive style in autism: evaluation and repercussions

Programme
AAPG - JCJC

Edition
2019

ANR grant
€193,242

Project duration
54 months

Coordination
Lucie Bouvet

Coordinating institution
Centre for Studies and Research in Psychopathology and Health - CERPPS, Université Toulouse-Jean-Jaurès

Partners
University of Quebec in Montreal, Toulouse House of Human Sciences - MSHS-T

Project reference
ANR-19-CE28-0012

Do autistic persons think in images? The VISUAL project confirmed that autistic persons have more vivid mental representations. This distinctive characteristic influences their communication and learning strategies, emphasizing the need for adapted teaching methods that foster their inclusion.

What if seeing the world changed everything? Autism spectrum disorder is characterised by difficulties in social interaction and communication, as well as a specific cognitive profile in connection with atypical sensory processing. Using interviews, questionnaires, and the evaluation of experimental tasks, the VISUAL project confirmed that autistic persons are endowed with mental representations that are more vivid, and present greater performance in mental imagery. The hypothesis of a visual thinking associated with autism is often mentioned in the literature, but had never been studied as such. This cognitive particularity could have a significant impact on daily life, as it leads to difficulties in oral communication, and influences learning strategies.

PROSPECTS

The project's research highlighted a visual cognitive profile that is specific to autism, and emphasised the need for adapted teaching strategies. Future research will focus on educational innovation that promotes the inclusion and active participation of autistic individuals in society.

GENERIC CALL FOR PROPOSALS

ACTC

Reverse mathematics at the foundation of Ramsey's theorem

Project
Computational aspects of combinatory theorems

Programme
AAPG - JCJC

Edition
2018

ANR grant
€362,802

Project duration
36 months

Coordination
Ludovic Patey

Coordinating institution
Camille Jordan Institute, Université Claude-Bernard-Lyon-1

Project reference
ANR-19-CE48-0012

Reverse mathematics shows that most theorems are equivalent to one of the five systems of axioms. The ACTC project developed a formal framework that expands the tools of computational analysis to a sub-field of mathematics linked to Ramsey's theorem. It enhanced the visibility of the French community for reverse mathematics and computability.

What if we did mathematics backwards? That is what is known as reverse mathematics, which studies the axioms needed to prove common theorems. It has been shown that the majority of ordinary theorems are equivalent to one of five systems of axioms. However, a sub-field of mathematics connected to Ramsey's theorem resists this classification, prompting the mathematical community to develop new methods. The ACTC project provided them with a formal framework by developing a theory of naturality in computability, in order to limit the problems involved to a sub-field of 'natural' problems, and to satisfy the structural properties observed. This project enhanced the visibility of the French computability community by organizing a summer session and an international conference bringing together experts in reverse mathematics and computability.

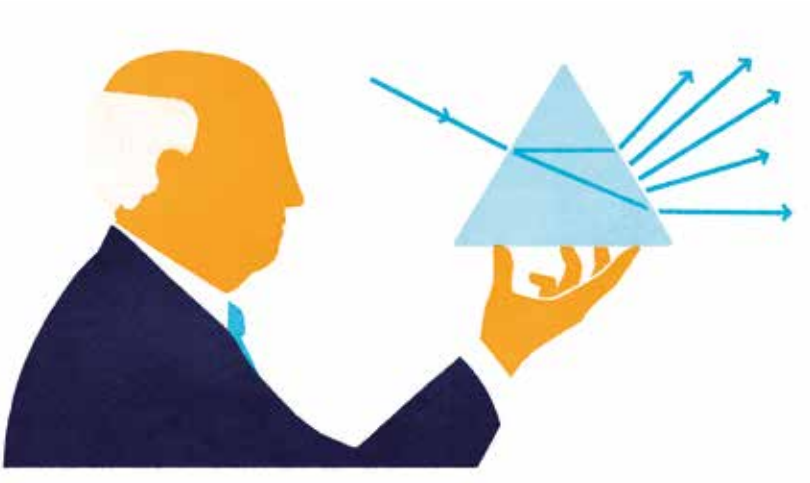
PROSPECTS

Incompleteness theorems have shown the inability of mathematics to prove its own coherence. Reverse mathematics can be seen as a rescue plan that lists the theorems that remain valid if certain axioms prove contradictory.

GENERIC CALL FOR PROPOSALS

PARIS-FTMW

The best of spectroscopy to study chemical complexity



Project
Chirped Pulse And Resonator In one Spectrometer: A novel combined molecular jet chirped pulse/cavity Fourier Transform MicroWave spectrometer for fast scan, high-resolution, and chiral discrimination – PARIS-FTMW

Programme
AAPG - JCJC

Edition
2019

ANR grant
€ 461,328

Project duration
48 months

Coordination
Ha Vinh Lam Nguyen

Website
lam-nguyen.de/PARIS-FTMW

Coordinating institution
Inter-university Laboratory of Atmospheric systems - LISA, Université Paris-Est-Créteil

Project reference
ANR-19-CE09-0021

Atmospheric chemistry, biology, and the potential extraterrestrial origin of life depend on the properties of highly complex molecules. To study them, the spectrometer developed in connection with the PARIS-FTMW project for the first time combined the advantages of the two primary techniques of microwave spectroscopy. The result was an instrument with record resolution and sensitivity.

A two-in-one spectrometer! The PARIS-FTMW offers a Fourier transform microwave spectrometer that can conduct rotational spectral analysis and determine molecular structure with exceptional sensitivity and resolution. The originality of this new spectrometer is the combination of a chirped pulse and a resonator within the same instrument. The first quickly scans a broad spectrum of frequencies using a variable frequency pulse (chirped pulse). The second makes measurements with great sensitivity. Even better: the two functional modes can be alternated instantly, with no transition time. In addition, the PARIS spectrometer adopted an innovative and resource-saving approach, as most of its electronic components are dual use, and almost all vacuum equipment is shared. With its reduced cost in comparison to its two associated instruments, PARIS surpasses the cumulative advantages of the two techniques.

PROSPECTS

PARIS was the foundation of the ERC-LACRIDO project. It used the spectrometer to identify molecular structure and study chemical reactions, notably using a laser to produce the energy needed to trigger and analyse these reactions.

GENERIC CALL FOR PROPOSALS

MAIT

T cells against chronic intestinal inflammation

Project
Innate-like T cells specific for microbial metabolites: development and interactions with the microbiota in vivo – MAIT

Programme
AAPG - JCJC

Edition
2018

ANR grant
€241,608

Project duration
36 months

Coordination
François Legoux

Website
igdr.univ-rennes.fr/equipe-interactionshote-microbiote

Coordinating institution
Institute of Genetics and Development of Rennes - IGDR, Université de Rennes 1, CNRS

Project reference
ANR-19-CE15-0002

The MAIT project highlighted the role of T cells, known as MAIT, in reducing the inflammation caused by the proliferation of certain bacteria in gut microbiota. This observation offered a new therapeutic target to combat the intestinal inflammation behind some colorectal cancers.

Friend or enemy, gut microbiota play an essential role in digestion and protecting against pathogenic agents, and can also contribute to chronic inflammatory diseases of the intestine. The MAIT project described a new monitoring mechanism for microbiota using the MAIT cells that reside in mucous tissue, such as the skin and the intestines. In cases of colon inflammation sparked by the proliferation of certain bacteria, the synthesis of small bacterial molecules that specifically activate MAIT cells was observed. This early activation leads to the production of anti-inflammatory proteins and molecules that accelerate tissue repair. MAIT cells thus play a role in reducing the intestinal inflammation that can lead to the development of colorectal cancers.

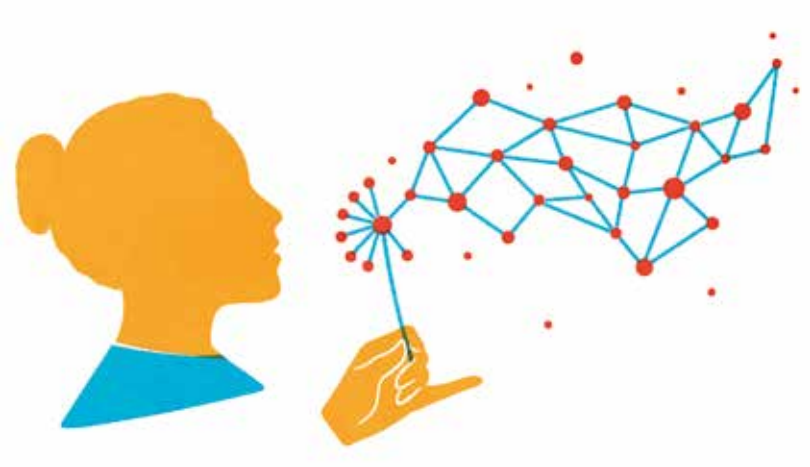
PROSPECTS

The project identified MAIT cells as potential therapeutic targets for reducing intestinal inflammation. The next step will be to clarify the mechanisms by which MAIT cells act during intestinal inflammation.

GENERIC CALL FOR PROPOSALS

ADEQUATEDL

Approximate computing for more efficient and energy-saving AI



Project
Approximating Deep Learning Accelerators

Programme
AAPG - PRC

Edition
2018

ANR grant
€559,126

Project duration
42 months

Coordination
Olivier Sentieys

Coordinating institution
Inria Centre of l'Université de Rennes

Partners
Laboratory for Integration of Systems and Technology (CEA-LIST), Laboratory of Computer Science, Robotics and Microelectronics of Montpellier (LIRMM), Lyon Institut of Nanotechnology (INL)

Project reference
ANR-18-CE23-0012

The computing power needed for deep neural networks is often beyond the reach of embedded systems. To remedy this, AdequateDL explores how approximate computing can revolutionise the efficiency of electronic components (hardware accelerators) dedicated to deep learning, paving the way for AI that is faster and consumes less energy.

Less is more: the adage also applies to artificial intelligence! The computing load required to operate neural networks often places them beyond the reach of embedded systems. The solution resides in approximate computing. The AdequateDL project explores how approximation techniques—low-precision arithmetic, representations of numbers, algorithmic transformations—can improve the performance and energy efficiency of the material accelerators involved in deep learning. The result is a tool that can find the best compromise between result quality and per-watt performance gains for approximate accelerators, all while keeping these results within a precision threshold defined by the user. The goal of AdequateDL is to influence the design of future IT systems dedicated to deep learning applications, in both the embedded and cloud markets.

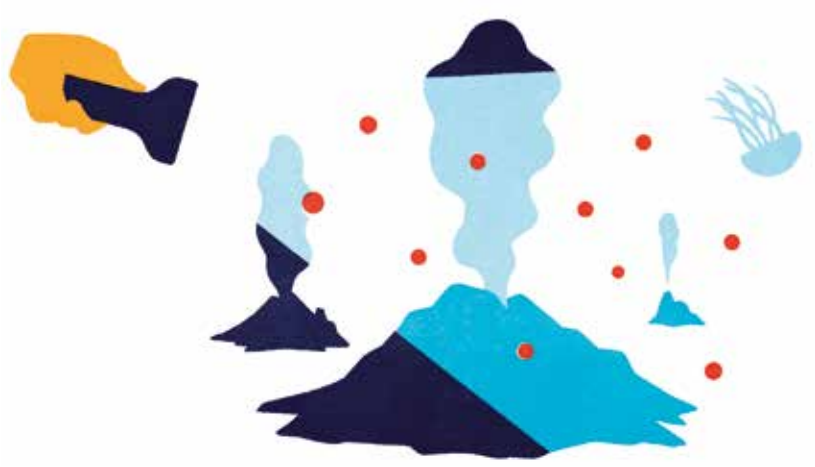
PROSPECTS

The project is continuing, notably with the integration of reduced-precision floating-point operators in the quantification module recently developed in the N2D2 environment (now DeepGreen/Aidge) to design, train, and optimise neural networks. The acceleration of training for low-precision convolutional neural networks is also a goal.

GENERIC CALL FOR PROPOSALS

TONGA

Ocean carbon sinks stimulated by hydrothermal activity



Project
shallow hydroThermal sOurces of trace elemeNts: potential impacts on biological productivity and the bioloGicAl carbon pump – TONGA

Programme
AAPG - PRC

Edition
2018

ANR grant
€417,650

Project duration
54 months

Coordination
Sophie Bonnet and Cécile Guieu

Website
tonga-project.org/web

Coordinating institution
Mediterranean Institute of Oceanology, Université Aix-Marseille/Université de Toulon/CNRS/IRD

Partners
Laboratories AD2M, Géoazur, GET, LaMP, LEMAR, LEGOS, LISA, LOCEAN, LOPS, LOV Ifremer, Geological Service of New Caledonia, School of Environmental Sciences, University of Liverpool, Institute for Marine and Antarctic Studies, University of Tasmania, Florida State University

Project reference
ANR-18-CE01-0016

The TONGA project studied the impact that micronutrients of shallow hydrothermal origin have on ocean productivity and carbon sequestration in the Pacific Ocean near the Tonga archipelago. It showed how contributions in iron and the other compounds that spread in the water column stimulate plankton activity, thereby promoting the sequestration of atmospheric carbon and its transfer toward the bottom.

Oceans absorb a substantial portion of atmospheric carbon dioxide. Hydrothermal activity contributes to this, according to the mechanisms studied by the TONGA project along the Tonga volcanic arc in the Pacific Ocean. During a 37-day oceanographic expedition on board the Atalante, the exploration of two shallow volcanos revealed that the vertical diffusion of the emitted fluids has a substantial impact on iron concentrations in the productive layer. This enrichment stimulates photosynthesis, helping to create a patch of chlorophyll measuring approximately 400,000 km2. The activity of diazotrophic photosynthetic organisms there was 2-8 times greater than in nearby non-fertilised waters. Similarly, the carbon export flow towards the bottom was 2-3 times greater. These results revealed an as-yet-undescribed mechanism from the natural fertilisation of oceans via hydrothermal iron that drives regional atmospheric carbon dioxide sinks.

PROSPECTS

The TONGA project revealed the role of shallow hydrothermalism as a means for natural ocean fertilisation. The next step is to quantify its impact on a global scale.

GENERIC CALL FOR PROPOSALS

POMADE

Nanostructured magnets for the autonomy of portable devices

Project
Submillimeter magnets for POrtable MAgnetic DEvices – POMADE

Programme
AAPG - PRC

Edition
2019

ANR grant
€514,565

Project duration
48 months

Coordination
Lise Marie Lacroix

Coordinating institution
Laboratory of Physics and Chemistry of Nano-Objets - LPCNO, INSA Toulouse

Partners
Toulouse Institute of Fluid Mechanics Laboratory for Analysis and Architecture of Systems of the CNRS, Institut Néel

Project reference
ANR-19-CE09-0021

The rise of autonomous portable devices, with applications for biomedical implants or sensors for the Internet of Things, is based on the ability to integrate micromagnets within them. To this end, the POMADE project proposed a complete physicochemical process for manufacturing nanostructured magnetic materials that can produce high-performance energy recovery systems.

Making movement a renewable energy, that is the promise of various portable energy recovery microsystems for biomedical implants and networks of wireless sensors in connection with the Internet of Things. The rise of these devices nevertheless runs up against the absence of a technological sector enabling permanent magnet integration within them. The POMADE project developed new nanostructured magnets and integrated them within functional devices. A chemical approach based on the controlled assembly of cobalt nanorods enabled the synthesis of magnetic materials of substantial thickness. A physical approach using high rate sputtering led to dense Neodymium-Iron-Boron films and controlled dimensions. Together they offer a complete microproduction process, and can produce state of the art energy recovery systems.

PROSPECTS

The results reinforced the positioning of the Néel Institute, led to the creation of the Magnetfab start-up, and drove a prematuration project at the Laboratory of Physics and Chemistry of Nano-Objects.

GENERIC CALL FOR PROPOSALS

CEAS-OFM

Follow the growth of thin layers 'in minute detail'

Project
Cavity enhanced absorption spectroscopy for optical flux monitoring during thin film growth – CEAS-OFM

Programme
AAPG - PRCE

Edition
2021

ANR grant
€376,156

Project duration
36 months

Coordination
Guillaume Saint-Girons

Coordinating institution
Lyon Institute of Nanotechnology - INL, CNRS/ ECL/INSA/ Université Lyon 1/CPE Lyon

Partners
Institute of Light and Matter RIBER / R&D

Project reference
ANR-21-CE24-0003

Online control of thin layers remains a challenge. The CEAS-OFM project developed an innovative sensor based on optical absorption, integrating a cavity for greater sensitivity, as well as an anti-drift system for unmatched stability. This innovation will be part of a maturation project in preparation for its potential industrialisation.

The depositing of thin layers is a key technological process, but is also a subtle art for which there is no satisfying solution when it comes to in situ online control. To address this lack, the CEAS-OFM project developed a sensor with a precision and reproducibility beyond the state of the art. This device uses the principle of absorption-based sensors, which measure the thickness of a material via its absorption of light. The addition of an optical cavity, similar to those used in measurement systems for pollutant traces, resulted in a considerable gain in sensitivity. Moreover, a correction system for optical path drift offered unmatched stability. Three patents were filed to protect this technology.

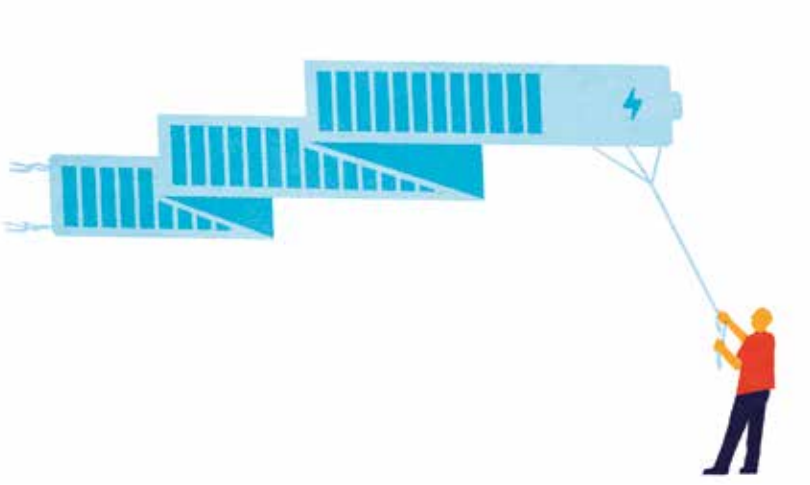
PROSPECTS

A maturation project co-developed with the industrial actor DCA was launched with the SATT PULSALYS. Its goals is to create a marketable sensor based on the results of this project.

GENERIC CALL FOR PROPOSALS

ENERGY-4S

Boosting the capacity of organic batteries for renewable energy storage



Project
Aqueous redox flow batteries for sustainable storage of intermittent energy – Energy-4S

Programme
AAPG - PRCE

Edition
2020

ANR grant
€549,439

Project duration
36 months

Coordination
Didier Floner

Coordinating institution
Rennes Institute of Chemical Sciences - ISCR, CNRS/Université de Rennes/ENSCR/INSA de Rennes

Partners
Kemiwatt, Catalysis and Solid-state Chemistry Unit, Chevreul Institute, Université de Lille

Project reference
ANR-19-CE05-0012

The intermittency of renewable energy requires solutions for its storage. In this context, redox batteries offer a high-capacity solution. The Energy-4S project maximised the solubility of organic redox molecules in order to formulate high-density electrolytic storage solutions.

The storage of renewable energy is a key to the energy transition. To this end, redox flow batteries—in which a liquid electrolyte containing redox species is placed in tanks—offer a solution suitable for stationary storage. The Energy-4S project increased the storage capacity of next generation flow redox batteries based on organic molecules. The project closely studied the mechanisms associated with the solubility of various anthraquinone used as redox molecules, with a view to increasing it. A first strategy focused on the chemical and electrochemical behaviour of anthraquinone based on the electrolyte's pH, all while examining the influence of various hydrotropic molecules. The second featured the influence of the cationic environment on anthraquinones in a basic medium. The optimisation of these different parameters made it possible to formulate electrolytic solutions with high anthraquinone levels, above 0.5 moles per litre.

PROSPECTS

The emergence of organic flow batteries requires the development of new cationic membranes suitable for electrolytic solutions with high levels of cations of different natures.

GENERIC CALL FOR PROPOSALS

WINFIL

A 'smart' window to renew indoor air

Project
Development and characterisation of a multifunctional window for energy savings and indoor air quality – WINFIL

Programme
AAPG - PRCE

Edition
2019

ANR grant
€232,259

Project duration
36 months

Coordination
Patrice Blondeau

Coordinating institution
Laboratory of Engineering Sciences for the Environment - LaSIE, CNRS/La Rochelle Université

Partners
UMR 5271 LOCIE, CNRS/ Université Savoie-Mont-Blanc, TEQOYA, Groupe Ridoret

Project reference
ANR-19-CE04-0012

In urban areas, energy sobriety, air quality, and indoor comfort have led to the rethinking of building openings. The WINFIL project proposed a window prototype offering advanced thermal and acoustic qualities, coupled with a particle electrofiltering module. It will eventually be brought to market.

Increasing episodes of air pollution in urban areas call into question the soundness of building ventilation that introduces outdoor air through openings in the facade. The WINFIL project developed and characterised the performance of an innovative window with an electrofiltering module for the particles contained in the ventilated air. The developments were made on the basis of a next generation parietodynamic window offering advanced thermal and acoustic properties. Test bench measurements helped initially identify the geometry, location, and optimal electrical parameters for the electrofilter. The WINFIL window's ability to reduce indoor particle concentrations, with minimal energy consumption and no production of undesirable substances, was then demonstrated via in situ measurements and digital simulations.

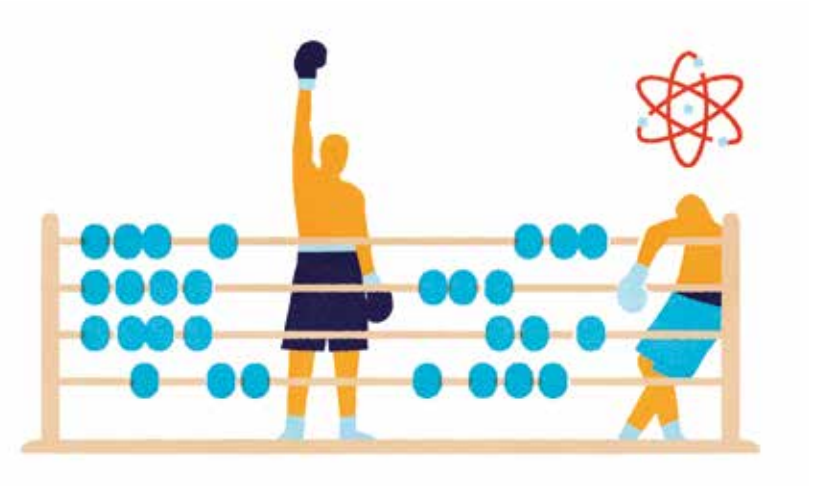
PROSPECTS

The WINFIL window is a solution adapted to urban environments in which atmospheric and noise pollution combine issues relating to energy sobriety, air quality, and comfort. Optimisation avenues were identified in order to pursue an enduring and recyclable commercial product.

PUBLIC-PRIVATE PARTNERSHIP-BASED RESEARCH

QPEG

Quantum computing beaten by classical 'compressed' algorithms



Project
Algorithms for quantum state compression – QPEG

Programme
ASTRID

Edition
2020

ANR grant
€286,683

Project duration
36 months

Coordination
Thomas Ayral

Coordinating institution
BULL SAS

Partners
EA Grenoble ATOS

Project reference
ANR-20-ASTQ-0004

The promise of quantum computing has fuelled much hope. Yet the concrete possibilities offered by today's quantum processors remain very limited. In this context, the QPEG project demonstrated that classical tensor network 'compression' algorithms surpass their quantum counterparts at solving some calculations.

Quantum versus classical computers: the contest is far from over! This is especially true of tensor network 'compression' techniques, also referred to as QPEG in reference to the compression of JPEG images, which accelerate problem solving without using quantum algorithms. The QPEG project explored their potential and compared their performance to that of their quantum counterparts. While QPEG algorithm compression degrades the quality of computation, the performance of today's quantum components still remains highly limited. Concretely, the project pushed back the 'quantum advantage' for the sampling of random circuits, as well as for more useful tasks such as combinatorial optimisation and calculations for quantum chemistry. With respect to the latter, the result remains valid, even when including quantum error correction. The project also generated an emulation library available on the Eviden Qaptiva quantum platform.

PROSPECTS

Beyond the quantum/classical opposition, the project paved the way for linking tensor networks and quantum algorithmic techniques. A first series of calculations will be made on a classical processor, before a second phase on a quantum processor.

PUBLIC-PRIVATE PARTNERSHIP-BASED RESEARCH

GEO3I LAB

Evaluation geophysical risks in the era of global warming

Project
Geophysics, Geomechanics and Geotechnic Innovation Laboratory – GEO3I LAB

Programme
LabCom

Edition
2017

ANR grant
€300,000

Project duration
36 months

Coordination
Eric Larose

Coordinating institution
Institute of Earth Sciences, Université Grenoble-Alpes

Partner
Géolithe

Project reference
ANR-17-LCV2-0007

The prevention of geophysical risks calls for developing devices for characterisation, monitoring, and warning. That was the goal of the Geophysics, Geomechanics, and Geotechnics Innovation Laboratory – GEO3I LAB, which brought together the Institute of Earth Sciences and the enterprise Géolithe. It constantly evolved with a view to offering solutions at all scales to evaluate the soundness of a rock wall, the activity of a glacier, or risks on the scale of a territory using satellites.

Landslides, melting permafrost, collapses...The management of geophysical risks, heightened by global warming, is a key issue for mountain territories. The GEO3I LAB LabCom thus sought to develop methods and technologies for civil engineering, specifically to predict ruptures and monitor the evolution of mechanical properties for natural materials. Hosted by the Institute for Earth Sciences, this new LabCom was based on the expertise of research teams focusing on the "geophysics of risks and the environment", in addition to 'fault mechanics'. It was led in partnership with the enterprise Géolithe, a specialist in both engineering and geological, geotechnical, and geophysical consulting. It allowed scientists to access data obtained from real sites, which will be used to develop new monitoring and prediction methods. The latter will primarily be transferred by Géolithe, with GEO3I LAB offering prospects for developing exports.

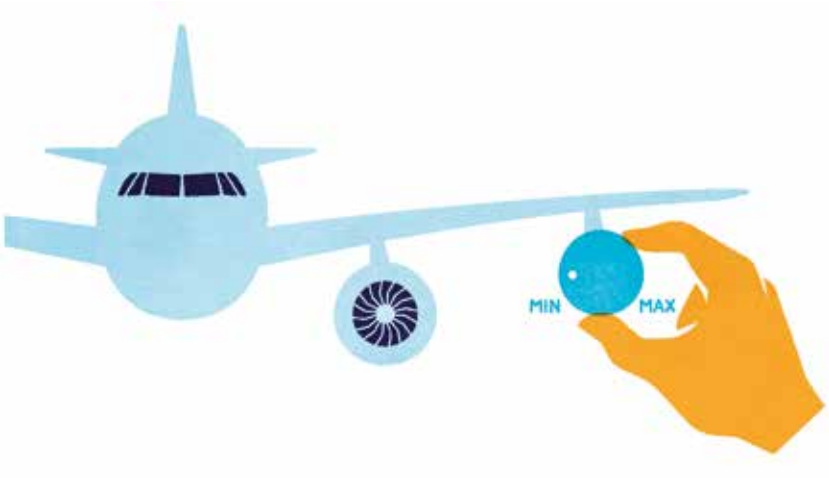
PROSPECTS

The GEO3I LAB was supported by the Auvergne-Rhône-Alpes Region, which notably funded the RISKID project developing géo-RFID technology, in addition to the NETRISK project seeking to create a low-cost, communicating seismological digitizer.

PUBLIC-PRIVATE PARTNERSHIP-BASED RESEARCH

ARENA

A chair for reducing noise from civil aviation



Project
Aeroacoustics of new engine architectures in aeronautics – ARENA

Programme
Industrial Chair Programme

Edition
2018

ANR grant
€1,015,459

Project duration
48 months

Coordination
Christophe Bailly

Coordinating institution
Fluid Mechanics and Acoustics Laboratory - LMFA, Centrale Lyon

Partner
Safran Aircraft Engines

Project duration
ANR-18-CHIN-0004

By 2050, Europe is seeking to reduce the perceived noise of civil aviation by 65% compared to the year 2000. To satisfy these criteria, new motor architectures are being studied. The primary objective of ARENA was to create new knowledge on the generation, propagation, and radiation of airplane noise, by using very large experimental installations and intensive calculation.

Millions of individuals are exposed to civil aviation noise in France. To reduce this impact, the ARENA industrial chair pursued the central goal of generating new knowledge on the physics of the aeroacoustic phenomena associated with airplane noise. The project developed intensive digital simulation modelling the sources of noise, with special attention paid to the rotor (the large propeller located in the front of the twin-flow turbo jet engine), the primary source of noise in new engine architectures with very high dilution rates. At the same time, the methods and devices for detecting radial and azimuthal acoustic modes were developed, which could be used in academic and industrial test benches. Analytic approaches adapted to simple geometries were also developed. Finally, digital models were compared and an open experimental rotor configuration was designed at the Fluid Mechanics and Acoustics Laboratory.

PROSPECTS

The digital methodologies developed to analyse a rotor's broad noise band were deployed in new configurations based on European resources in high-performance computing. An associated research laboratory including the project partners will be created.

EUROPEAN AND INTERNATIONAL RESEARCH

HETER-OMICS

Towards a better understanding of cerebral malformations and their consequences

Project
Multi-OMICS interrogation of cerebral cortical malformations

Programme
ERA-NET E-Rare 3

Edition
2018

ANR grant
€409,000

Project duration
49 months

Coordination
Fiona Francis

Coordinating institution
Institut du Fer à Moulin, Inserm

Partner
Mediterranean Institute of Neurobiology

Project reference
ANR-18-RAR3-0002

Heretopias include a series of cerebral malformations of genetic origin. While these disorders are incurable, a better understanding of the mechanisms connected to them could nevertheless lead to treatments targeting their effects. This was the goal of the HETER-OMICS project, which sought to grasp heterotopia in all their dimensions, from the molecular level to their clinical and therapeutic aspects.

During development, billions of neurons position themselves in space to form a functional brain. A disturbance of this process leads to malformations known as heterotopia, which cause intellectual deficiency and epilepsy. To understand the origin of these anomalies, the HETEROMICS project compared different models of heterotopia at the molecular, cellular, and functional level. Genetic screening conducted among patients identified variants associated with human heterotopia that were subsequently published in public databases. A gene expression database was also created. This research advanced our understanding of the mechanisms behind heterotopia, in addition to their physiological and clinical consequences, resulting in improved classification. The identification of abnormal mechanisms helped evaluate potential medicines to better correct some of these brain abnormalities.

PROSPECTS

The genes involved in heterotopia, identified during the course of the project, must be characterised on the functional level. The integration of molecular, cellular, and functional data will enable the identification of deregulated avenues, thereby helping develop a 'drug repurposing' approach.

BIORODDIS

Managing biodiversity to combat zoonotic diseases

Project
Managing biodiversity in forests and urban green spaces: Dilution and amplification effects on rodent microbiomes and rodent-borne diseases

Programme
Biodiversa

Edition
2020

ANR grant
€299,656

Project duration
46 months

Coordination
Nathalie Charbonnel

Coordinating institution
Biology Centre for Population Management - CBGP, INRAE

Partners
UMR MIVEGEC, University of Antwerp, University of Potsdam, Medical University of Gdańsk, Munster Technological University, University of Helsinki

Project reference
ANR-19-EBI3-0009/

The loss of forest biodiversity in the form of urban green spaces increases the risk of zoonotic diseases, which are transmitted to humans via animals. As part of the BioRodDis project, eco-epidemiological approaches and mathematical modelling revealed the dynamics at work, and helped identify management strategies beneficial for biodiversity and health.

Five years after the appearance of Covid-19, where will the next health crisis come from? The persistence and emergence of zoonotic diseases is closely linked to the loss of biodiversity. But based on what dynamics? The BioRodDis project studies these relations on the local and European scale by focusing on the diseases linked to rodents in forests and urban parks. Databases were created on rodents and associated zoonotic diseases in Europe. For some pathogenic agents, eco-epidemiological approaches show a dilution effect: the diversity of rodents leads to a decrease in the most capable hosts. Mathematical models helped evaluate the effects of rodent management on the risk of zoonotic diseases. For instance, some rat control strategies could paradoxically increase the circulation of zoonotic agents by reducing biodiversity among small mammals.

PROSPECTS

The results could help identify management strategies beneficial for biodiversity and health. This knowledge could be transposed to various environmental issues, such as population control for rats and environmental restoration.

EUROPEAN AND INTERNATIONAL RESEARCH

IMAGEUN

Macro-regions, a source for our imaginaries

Project
In the Mirror of the European Neighbourhood (Policy): Mapping Macro-Regional Imaginations – IMAGEUN

Programme
Franco-German call for proposals in social sciences and humanities (FRAL)

Edition
2019

ANR grant
€317,778

Project duration
36 months

Coordination
Claude Grasland, Antoine Laporte, Étienne Toureille

Coordinating institution
International College of Territorial Sciences – CIST, Université Paris-Cité

Partners
UMR Géographie-cités, UMR EVS, UMR IDEES, Goethe Universität Frankfurt, Friedrich Alexander Universität Erlangen, Kadir Has University, IRMC

Project reference
ANR-19-FRAL-0011

Larger than states, macro-regions represent geographic and semantic forms that structure the representations of both individuals and international and transnational actors. The IMAGEUN project revealed these geographic realities, which are more or less conscious, but decisive in decision-making processes.

The citizens of a country are also Earthlings. Between the two, they are Mediterranean, Asian, or nationals of a NATO or European Union member state. In a word, each individual is also the inhabitant of a macro-region. Bringing together researchers from Germany, France, Ireland, Turkey, and Tunisia, the IMAGEUN project explored the imaginaries associated with such regions. Whether based on 'natural' realities, historical and educational traditions, or institutional scope, as geographic and semantic forms macro-regions generate representations whose fundamental characteristics are variability and vagueness. To document them, the project explored the representations produced by geopolitical actors, university students, and daily newspapers. This led to interactive narrations (or 'stories') collected in an online atlas accessible at https://elinamx.github.io/ atlas-imageun/.

PROSPECTS

Research on the mental representations of global divisions will be pursued by conducting studies along a North-South transect stretching from Western Europe to West Africa. The discourse of newspapers from this area on the emergence of the Global South will also be explored.

FRANCE 2030

REIL

Making the Lorraine academic site a European hub for research and innovation

FRANCE 2030

Project
Reinforcing the European impact of the Lorraine academic site

Programme
ASDESR

Edition
2022

France 2030 grant
€6,120,367

Project duration
120 months

Coordination
Fabrice Lemoine

Coordinating institution
Université de Lorraine

Partners
CNRS, INRAE, INRIA, Inserm

Project duration
ProjetIA-22-ASDR-0034

Université de Lorraine and its academic partners have joined forces as part of the REIL project to make the Lorraine site an essential actor on the European stage. The project will establish a task force to develop a European dynamic, drawing on on-site scientists addressing interdisciplinary socioeconomic challenges, as well as the project engineering services of partners. Led by Université de Lorraine in partnership with the CNRS, INRAE, INRIA, and INSERM, the goal of the REIL project is to make the Lorraine site into a hub of excellence in Europe. To this end, the shared governance of the site will be reinforced, and staff will be recruited. In particular, a team of six European Policy Officers will be tasked with increasing the site's visibility, and will pursue an influential role on the European level. This will involve advancing recommendations for European programme-related policies and priorities, as well as promoting the forces of the Lorraine site among key actors. The team's scientific structuring will be aligned with European priorities and with the *Lorraine Université d'excellence I-SITE*. Six project engineers will be recruited to expand support for project leaders, and to better identify potential candidates for European programmes, with the goal of improving the quality and success rate of projects coordinated by the site. To this end, a skills map will be established, and training, communication, and dissemination actions will also be conducted.

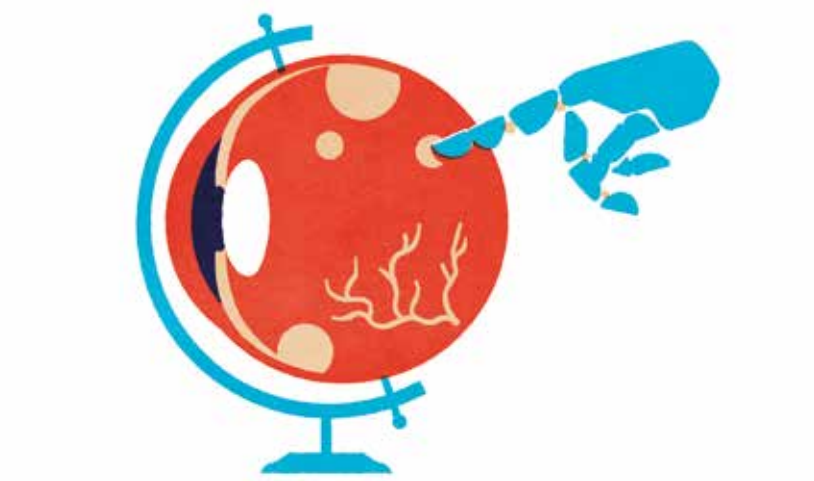
PROSPECTS

The site's European visibility and attractiveness will be reinforced by 2030, with the volume of European projects it leads more than doubling.

FRANCE 2030

EVIRED

Diabetic retinopathy viewed through artificial intelligence



FRANCE 2030

Project
Artificial intelligence-based prediction of diabetic retinopathy evolution

Programme
RHU series 4

Edition
2018

France 2030 grant
€9,016,888

Project duration
72 months

Coordination
Aude Couturier

Website
www.evired.org

Coordinating institution
APHP

Partners
ADvanced Concepts in Imaging Software, Evolucare Technologies, Carl Zeiss Meditec AG, Université de Bretagne-Occidentale-Brest, Université Paris-Cité

Project reference
ProjetIA-18-RHUS-0008

Among the complications associated with diabetes, diabetic retinopathy can lead to blindness. In order to fill gaps in the diagnosis and monitoring of this disorder, the EviRed project developed artificial intelligence algorithms to diagnose the disease's evolution based on imaging and patient medical data.

Diabetes is a silent disease with severe consequences. Among these, diabetic retinopathy affects the retina and can lead to blindness. Predicting it and monitoring its evolution are currently based on an obsolete classification—as well as images of the back of the eye that are not reliable—hence EviRed's goal of developing and validating an alternative based on modern imaging techniques and artificial intelligence (AI) algorithms. To this end, the medical data for a cohort of 3,182 patients was added to a computer platform. Over 14,000 retinographies and 2,500 images obtained via tomography and angiography (OCT/OCTA) were annotated to train various AI algorithms for predicting the disease's evolution.

PROSPECTS

The ultimate goal was to personalise the pace of monitoring and therapeutic choices. The unique nature of the EviRed cohort and the multimodal imagery that was used helped expand knowledge on the physiopathology of diabetic retinopathy.

FRANCE 2030

ATLASEA

A genomic database of 4,500 marine species from French coasts

Project
Atlas of marine genomes

Programme
Exploratory PEPR

Edition
2022

France 2030 grant
€41,229,728

Project duration
96 months

Coordination
Hugues Roest-Crollius (CNRS), Patrick Wincker (CEA)

Coordinating institution
CNRS

Partners
CEA, Ifremer, MNHN, Aix-Marseille Université, Université Paris Sciences et Lettres, Sorbonne Université

Project reference
ProjetIA-22-EXAT-0001

Marine diversity is a treasure to protect, as well as a mine of genetic information connected to a chemistry whose scientific and economic interest remains little-known. The ATLASea programme decodes and inventories the genome for 4,500 marine species from French coasts, and makes it available to the scientific community.

The tens of thousands of marine species identified to date along French coasts (metropolitan and overseas territories) represent a biodiversity treasure. To preserve it and also discover original avenues for chemical synthesis, the ATLASea programme proposes decoding and exploiting these genetic riches. The effort is structured into three targeted projects. DIVE-Sea will take samples along coastlines and during expeditions off the coast and in the depths, before their taxonomic identification. SEQ-Sea will then proceed with sequencing these samples with the Genoscope. The goal is to come up with genomes that will serve as a reference, which is to say that are complete and annotated. Finally, BYTE-Sea will process and store information in databases accessible to the international community. In 2024, ATLASea conducted five missions that collected 1,200 samples. Thirty reference genomes have been published.

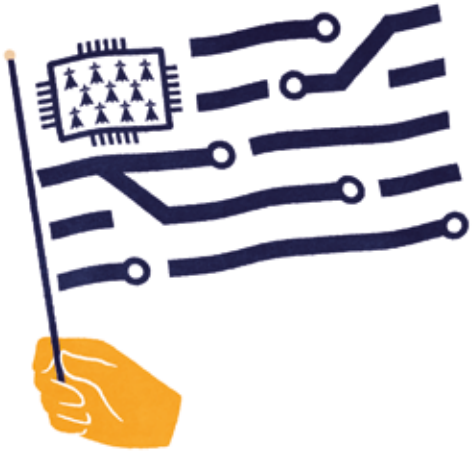
PROSPECTS

The exploitation of genomic data will help discover avenues for the synthesis of molecules, metabolites, and materials of scientific and economic interest. It will also study the dynamic of marine ecosystems, and in doing so propose biomonitoring solutions adapted to their preservation, especially in the face of exogenous species.

FRANCE 2030

AIR

Breton AI that is sovereign and environmentally-friendly



Project
Increasing interactions in Rennes

Programme `
DEMOES

Edition
2021

France 2030 grant
€7,750,000

Project duration
48 months

Coordination
Olivier Wong-Hee-kam

Coordinating institution
Université de Rennes

Partners
Université Rennes 2, INSA Rennes, Klaxoon, Artefacto

Project reference
ProjetIA-21-DMES-0001

The AIR project developed and experimented with various digital tools that facilitate the social, educational, and administrative interactions of the university community. Air innovated by proposing a 'trusted' generative artificial intelligence system that takes into consideration both security and the sovereignty of university data. The project also included environmental and budgetary considerations relating to the rise of technologies.

The digital world is an opportunity to expand interactions between actors at a single university site. To this end, AIR developed operational solutions that are both sober and inexpensive. Among recent experiments, RAGa-Renn was a conversational assistant developed by the Université de Rennes to address the needs of administrations, training programmes, and laboratories. Based on open source generative AI technologies, it offers a reliable alternative to commercial tools, notably ensuring security and data sovereignty. In addition, the Workadventure web platform, also open source, provides a model of the Rennes university campus, allowing 'visitors' to discover its sites and training programmes, all while dialoguing with other users. Additional tools propose teaching solutions in virtual reality, offer aids for digital note-taking, simulate job interviews, and simplify student and staff member access to university services.

PROSPECTS

Scientific analysis of the uses of these tools combined with research on the societal impact of digital technology and its environmental consequences will inform choices regarding the relevance of their perpetuation. The solutions identified could be openly shared in the academic community.

Our commitments

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Dialogue between science & society

Developing a shared scientific culture, contributing to democratic debate, shedding light on public policy... The interactions between science and society are essential to addressing contemporary challenges. The ANR is contributing through its call for proposals and partnerships with local and national events.

Continuation of the Science with and for Society (SAPS) programme

Since 2021, the ANR's SAPS programme has fostered the transfer of knowledge from researchers to citizens and decision makers. The year 2024 was marked by two specific calls for proposals in the programme's 'Research-action' component, supporting projects with a strong application component, including mediation, communication, and citizenship participation. This included a call dedicated to participatory research that led to the funding of 32 projects for a total of 3.16 million euros. As part of the programme's second component, 'Mobilisation of researchers for scientific, technical, and industrial culture (CSTI) and scientific mediation', 4.4 million euros in additional funding were disbursed to institutions supported by the AAPG in order to transfer their research to the general public. Illustration of the instrument: from 27 May to 2 June 2024, the first edition was held for the EXPLORE: Seeking out Research Festival, which was created by Aix-Marseille Université and the CNRS following an earlier SAPS call for proposals. This provided the general public an opportunity to discover research projects throughout the city of Marseille.

€9.7 million
allocated to the SAPS programme,
or **1.05%** of the call for proposals budget, in keeping with the goal of at least 1% pursuant to the Research Programming Law (LPR)

The EXPLORE Festival provided an opportunity for 4,000 inhabitants of Marseille to discuss with over 100 scientists.

PARTICIPATORY RESEARCH IN THE LIMELIGHT WITH THE TURFU FESTIVAL!

The Turfu Festival, the first dedicated to participatory science, research, and innovation, held its 8th edition from 8 to 13 April 2024 in Caen. The initiative is led by le Dôme, in co-production with Université de Caen-Normandie. The concept involves bringing citizens and scientists together to imagine, produce, and debate the present and possible futures. Over six days, 76 workshops included nearly 2,500 participants on topics as diverse as the preservation of natural resources, inclusivity, and artificial intelligence. This represents a key new partnership for the ANR, and an invaluable platform for the six projects selected for its SAPS programme.

LEARN MORE ABOUT THE PROJECTS PRESENTED

Opening of the And Now? Festival in the presence of Claire Giry, ANR President; Gilles Freissinier, Deputy to the Editorial Director at Arte France; Marie Beuzard, Director of the Festival; and Juliette Donnadieu, the Managing Director of the Gaîté Lyrique.

Spotlight on mental health

In 2024, the Agency continued its actions supporting the diffusion of scientific culture by taking part in two efforts to underscore the crucial topic of mental health. For the first time, the ANR participated, from 11-13 October at Ground Control in Paris, in the Pop & Psy Festival, which deconstructs the stereotypes surrounding psychological disorders / *see interview on following page* /. On 19 October, the ANR participated, for the 4th consecutive year, in its partnership with And Now?, an international Festival of ideas for the future organised by Arte, whose focus this year was mental health. Built around a questionnaire, a day of debates, and a literary prize, the event showcased the work of two Inserm researchers supported by the ANR, Maria Melchior and Fabienne El-Khoury, on the issues of health and social inequality.

OTHER GATHERINGS IN 2024

EXHIBITION

3-4 FEBRUARY / **Tomorrow, But Better!**
The ANR renewed its participation in this immersive exhibition specially dedicated to the sciences, in connection with the Yggdrasil Festival of imaginary worlds in Lyon. This was an opportunity to present six France 2030 research projects to the general public.

EVENT

8-10 JULY / **Research and Creation Meetings, 11th edition!**
The programme for the new edition organised by the ANR and the Avignon Festival included two days of reflections between artists and scientists on History(ies) in Movement, followed by a forum on cultural intelligence with Thalie Santé and the French National Office of Artistic Diffusion (ONDA), devoted to transformations of the creation ecosystem.

FESTIVAL

25 OCTOBER / **Carte blanche for the ANR at the Pariscience Festival**
Among the highlights of this 20th edition of the International Scientific Film Festival was the screening of the documentary *Irma: In the Eye of Science* on the hurricane that hit the French Antilles in September 2017, in the presence of the team from L'Esprit Sorcier, the ANR, and participating scientists.

// Such events tie in with the educational efforts we have been pursuing to bring science and the general public closer together. Beyond the projects presented, the goal is to show the scientific method and how knowledge is produced.

FABRICE IMPÉRIALI,
ANR Director of Information and Communication

INTERVIEW

PARTNERSHIP WITH THE POP & PSY FESTIVAL

'It is urgent that we speak differently about mental health'

DR JEAN-VICTOR BLANC Doctor and Psychiatrist at Saint-Antoine Hospital in Paris, founder of the Pop & Psy Festival

With over 12,000 participants, the Pop & Psy Festival has emerged as an original gathering for raising awareness regarding mental health and engaging in dialogue with the public. The ANR took part for the first time in 2024. Jean-Victor Blanc takes a look back at its impact and the Agency's contribution.

The Pop & Psy Festival is dedicated to mental health. Why does this subject deserve to be emphasised today, especially among youth?
Most major psychological illnesses often begin early: depression, schizophrenia, bipolar disorder, addiction… The majority appear between the ages of 15 and 25. They are major causes of suffering, and one of the leading causes of death among those under 25. Mental health nevertheless remains taboo, misunderstood, and stigmatised. It is urgent to speak differently, inform better, and break stereotypes.

How is the alliance between science and popular culture effective in changing views regarding mental health?
This project was born from my experience as a Hospital doctor confronted with the persistent stigmatisation of patients forced to hide their illnesses, including from their close relations. Today films, TV series, and social media have begun to speak of mental health through accounts from famous individuals. But these accounts are rarely connected to reliable knowledge! The idea of Pop & Psy was therefore to have artists, researchers, clinicians, and any concerned individuals engage in dialogue within an accessible, entertaining, and exacting framework. One can be rigorous without being austere. It is also a way to show a different image of psychiatry and those who practice it.

The ANR was a Festival partner for the first time in 2024. What is your assessment of this first collaboration?
Very positive! Firstly because the ANR shares our conviction: science should be accessible to all. Its participation enabled us to expand our programming with interventions from researchers supported by France 2030. We first raised different subjects: autism spectrum

> ***// The partnership with the ANR clearly improves our programming, allowing us to include researchers with specialised expertise, often little-known to the general public.***

disorders, migration and mental health, environment and town planning, psychedelics in psychiatry… There were roundtables on LGBTphobia, trauma in the film industry with the actress Judith Godrèche, schizophrenia, Hospitalisation in psychiatry, and the mental load of commitment. Each time, the suggestions of our speakers were extremely relevant, and all were very well received. This even allowed for invaluable meetings between scientists, medical staff, and the general public.

What feedback have you received, especially from the researchers involved?
Very good! However, in the beginning, multiple researchers who are ANR partners expressed a certain doubt, wondering whether they were out of place at an event such as Pop & Psy. Some said they were not clinicians, or not "famous" enough to intervene. But once there, they all found the environment inclusive, welcoming, and warm. They took pleasure in discussing with the public, and a number of them established ties with other professionals. With respect to the general public, the feedback was excellent: there were genuine expectations connected to these subjects.

A word on the next edition, and the impact of mental health being designated a the *Grande Cause Nationale* 2025 (2025 Great National Cause)?
It will be held from 10-12 October 2025, once again at Ground Control in Paris. This year the space will devote a full three months to mental health as part of the *Grande Cause Nationale* label. Pop & Psy will be the inaugural event. For the moment, the attribution of this label to mental health has helped us secure new support. It provides a certain visibility on the subject, but has not yet been followed by acts. We are impatiently awaiting concrete announcements from the government in this regard.

What is the role of research in this dynamic?
A fundamental one. Patients need research. The problem is that research on mental health remains underfunded in relation to other specialisations. However, what is fascinating, for example in psychiatry, is the diversity of the research, ranging from neurobiology to the humanities, making it a very lively but also demanding field. We therefore need more resources and recognition to continue creating bridges between science and society, as the ANR does.

POP & PSY ROUNDTABLES: RESEARCHERS CENTRAL TO MENTAL HEALTH ISSUES

Environment, Town Planning and Mental Health: The Power of the Three?, with Maria Melchior, coordinator of multiple projects including **TEMPO-COVID-19**.

Atypical? Inclusion and Autism Spectrum Disorders (TSA), with Josef Schovanec and Marie-Hélène Plumet, in connection with the **Atypie-Friendly** (France 2030) project.

Elementary: Mental Health, Culture and Migration, with Constantina Badea, coordinator of the **AFFIRMATIF** project.

Psychedelics in Psychiatry: Return to the Future, with Lucie Berkovitch, coordinator of the **PSILOTRAZ** project.

LEARN MORE ABOUT RESEARCHER INTERVENTIONS IN VIDEOS

Promoting gender equality in research

The ANR is pursuing its long-standing commitment to gender equality in research and within its teams. After securing the AFNOR Professional Equality label in 2023, the Agency launched a second gender equality action plan in 2024.

Between 2015 and 2023, more female coordinators in the AAPG

Since 2017, the ANR has analysed women's participation in the AAPG, its primary call for proposals. On 8 March 2024, it published the results of a study entitled 'Women and Men of Science in the AAPG', covering the 2015-2023 period. While the share of projects submitted by women generally remains one third—equivalent to staff in higher education and research (HER)—it rose from 29.3% in 2015 to 34.5% in 2023. There are inequalities across disciplines: in the digital sciences and mathematics, this share is just 17.6%, compared to 49.1% in the humanities and social sciences. With respect to the analysis of potential gender bias in project selection, women's success rate remains slightly lower than that of men for the period, but the gap continued to shrink, and reached equilibrium in 2022.

On the basis of these encouraging results, the ANR plans to reinforce its analytical efforts, notably by broadening them to include all of its calls for proposals. The goal is to ensure that no gender bias influences evaluation, to measure the evolution of practices, and to initiate corrective actions if necessary.

2024 AAPG:
36%
of projects selected are led by women

'GENDER IN RESEARCH – EVALUATION AND PRODUCTION OF KNOWLEDGE'

Published jointly with the launch of the ANR's 2024-2027 action plan, this report explores the impact of gender stereotypes and bias, which can not only interfere with the evaluation process, but also determine and orient scientific approaches. It follows on the Gender in Research conference co-organised in 2020 by the ANR and Cirad, partners in the Gender-SMART European project. Coordinated by Laurence Guyard, the ANR Gender Specialist, Magalie Lesueur-Jannoyer, the Cirad Regional Director, and Angela Zeller, the former Gender Officer at the ANR, it includes contributions from scientists and funding agencies seeking to address this issue and provide answers.

New gender equality action plan: the ANR consolidates its commitment

In keeping with its first Gender Equality Action Plan 2020-2023, the ANR committed to a new 2024-2027 plan, developed with the cooperation of a group of volunteers representative of all the Agency's departments and professions. It revol-

// It is essential to perpetuate the actions implemented as part of our first action plan. Gender inequality is a highly complex issue to approach, and enduring changes can only be planned over the long term.

LAURENCE GUYARD,
sociologist and ANR Gender Specialist

ves around two issues: enduringly establishing gender equality within the Agency, and inscribing this equality within the world of research. To combat gender stereotypes and their resulting bias, the ANR has emphasised training for both its staff and the evaluators of scientific projects. The formalisation of booklets and guides—such as the 2022 guide For Inclusive Communication without Gender Stereotypes—will provide greater awareness and support for various professions. Within the calls for proposals themselves, the instructions encourage applicants to be attentive to gender in their scientific approach.

Beyond this, the Agency plans to continue all of the instruments launched since 2017, including analysing project submission and selection data, a choice field of observation across all scientific fields, in addition to featuring women of science and projects exploring inequality coordinated by women.

Two female scientists were featured in 2024:

• **Virginie van Wassenhove, researcher in cognitive neuroscience,** on 11 February during the International Day of Women and Girls in Science. The ANR created a video profile of her as part of its Portraits of Women in Science collection. A Senior Researcher at the CEA and team leader at Inserm, she coordinates the Wild-Times ANR project dedicated to the brain's perception of time in situations of movement.

• **Valérie Boussard, sociologist and Director of the Institutions and Historical Dynamics of the Economy and Society Laboratory (IDHES),** on 8 March in connection with International Women's Day. A dedicated interview on the ANR website featured her project launched in 2024 with support from the ANR–Leading an Engerprise (17th-21st century): The Value of Gender (DIRIVA)–which analsyses the lack of credit given to woman leaders. In addition to these initiatives, the ANR continued its participation in working groups and the exchange of best practices with other funding agencies, notably on the European level as part of Science Europe.

LEARN MORE ABOUT THE ANR'S PORTRAITS OF WOMEN IN SCIENCE VIDEO COLLECTION

Sustainable development: the ANR springs into action

The Agency has supported research on sustainable development since its creation, and intends to contribute to the energy transition and sustainable development by changing its internal practices and commitment to scientific communities. The year 2024 was a key step in this transformation.

A structured approach

In 2021, the ANR inscribed two specific actions within its 2021-2025 Objectives and Performance Contract. It firstly established the obligation for all applicants to its calls for proposals to indicate whether their proposal contributes to one or more United Nations Sustainable Development Goals (SDG). Second, in 2023 it implemented a sustainable development action plan, which was later supplemented with an energy sobriety plan. The year 2024 opened a new chapter with the formalisation of the Roadmap for Sustainable Development and Societal and Environmental Responsibility (see text box) adopted by the Governing Board on 12 March 2025, as well as the co-signing on 24 January of a joint declaration alongside fifteen other national research and higher education organisations, committing the ANR to the goal of France's carbon neutrality by 2050.

77%
of the projects selected as part of the 2024 AAPG address at least one United Nations Sustainable Development Goal (SDG).

THE ANR LAUNCHES ITS SUSTAINABLE DEVELOPMENT AND ESR ROADMAP

The Agency, which has had an ESR Officer since 2023, committed to formalising an SD & ESR road map. Already recognised for its gender equality and disability policies */ see pages 64 and 72 /***, the ANR is also active with respect to the environment. This strategic road map is designed to amplify its internal action in the coming years. Among the planned actions are training for staff, internal theme-based workshops and conferences, and the creation of a greenhouse gas emission assessment (BEGES). The Agency will also pursue analysis efforts for the administrative regulation of its funding, with the goal of promoting responsible practices without burdening institutions. Research programming activity in this area will continue in partnership with the French Ministry of Higher Education and Research, along with the other actors involved in accordance with the current process.**

THE ANR IN THE SERVICE OF SUSTAINABILITY SCIENCE

Through its action plan as an operator of France 2030, the ANR supports and highlights research in the service of sustainable development. A look back at three key moments in 2024.

13 JUNE / **Endocrine Disruptors: New Research Challenges** scientific gathering co-organised with the French Agency for Food, Environmental, and Occupational Health & Safety (Anses) on the impact of endocrine disruptors on the health of ecosystems and biodiversity.

LEARN MORE ABOUT THE ACTIONS AND PROJECTS SUPPORTED BY THE ANR IN THIS AREA BETWEEN 2005 AND 2023

The directors of sixteen French research organisations co-signing a common declaration committing to the ecological transition, 22 January 2024 (ANR, BRGM, CEA, CIRAD, CNES, CNRS, IFREMER, IHEST, INED, INRAE, INRIA, INSERM, IRD, IRSN, MNHN, Universcience).

// The ANR is committed to integrating the principles of sustainability and societal responsibility in all of its activities. Through this road map, the goal is to provide a framework for our approach by using precise indicators and milestones consistent with the French government's Eco-responsible Public Services (SPE) Policy.

ANTONY LEBEAU, ANR ESR Officer

A commitment on the international scale

Beyond French territory, the ANR is involved in multiple initiatives to put research in the service of global transitions. It contributes to major European partnerships on sustainable water management (Water4All */ see page 23/*), the preservation and showcasing of biodiversity (Biodiversa+), and the transformation of cities towards sustainability (DUT, Driving Urban Transitions). It also plays an active role in the Belmont Forum, an international partnership dedicated to transdisciplinary research on global change and sustainability science, with Anne-Hélène Prieur-Richard, the Head of the ANRs' Environment, Ecosystems, and Biological Resources (EERB) Department serving as co-President. With the Future Earth international research network, in June 2024 it organised the 4th edition of the Sustainability Research & Innovation (SRI) Congress in Helsinki, the largest global event devoted to sustainability research and innovation. Another noteworthy moment was the ANR's signing, on 22 October 2024, the Heidelberg Agreement alongside other European funding agencies and organisations, in order to reinforce its action promoting sustainable practices in scientific research.

24 & 25 SEPTEMBER / **Challenges of the City in Transition: Reviews and Research Prospects** conference co-organised with the French Agency for Ecological Transition (ADEME) to address fifteen years of research since the launch of the first programme promoting research on the sustainable city in 2008.

LEARN MORE ABOUT THE ANR HANDBOOK PUBLISHED ON THIS OCCASION

12 DECEMBER / **Ecophyto Maturation Programme Assessment Day** co-organised with the co-managing ministries for this programme, which was launched in 2019 to operationalise research pursuing alternatives to phytopharmaceutical synthetic products.

Simplifying the work
of scientific communities

Simplifying administrative processes: that is the goal of the ANR, which endeavours, year after year, to make its offerings easier to read, and to optimise its procedures for submitting and monitoring projects, all while responding as closely as possible to the needs of its public users. A look back at its 2024 flagship actions.

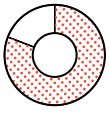
User surveys: listening to simplify better

As a complement to the regular exchanges with public users of the AAPG, the ANR conducts a satisfaction survey every two years to assess and improve the quality of its services. Of the 2,273 respondents to the 2024 survey, 58% indicated being satisfied or very satisfied with the ANR's services, with the primary reasons being the Agency's reactiveness, the clarity of the submission process, and the quality of exchanges and assessments.

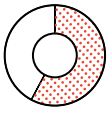
Other notable results: 60% of coordinators indicated being satisfied with the call for proposals process (+4 points since 2021), and 80% of respondents being satisfied with the conditions governing submission. The scope of support and a desire for greater interaction with the ANR during the application stage were nevertheless signalled.

At the same time, a biannual survey was sent in late 2024 to the beneficiaries of France 2030 calls. The feedback from 860 respondents was also positive: 90% indicated being satisfied or very satisfied with the ANR and the quality of exchanges with its teams, while 88% acknowledged the competence of its collaborators.

SURVEY OF WORK PROGRAMME USERS

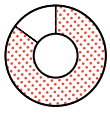


81% of respondents believe that the ANR is an **essential actor** in French research

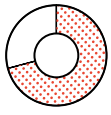


58% indicated being **satisfied or very satisfied with ANR services**

SURVEY OF FRANCE 2030 BENEFICIARIES



85% of respondents believe the ANR **useful and credible** in its role as operator of PIA/ France 2030



71% indicated being s**atisfied with the simplification efforts** implemented since 2022 in the management of France 2030

France 2030: processes lightened further

As part of the dynamic of simplifying administration, a priority goal for the French government, the ANR adopted new measures in 2024. The submission procedures for applications were lightened, with a simplified financial appendix, and the scientific document being reduced from 25 to 15 pages. Specifically with respect to France 2030 projects, the exhaustive list of publications will not be requested from project leaders, but instead directly collected via the HAL-ANR portal, and data management (PGD) plans will not be requested until six months after the start of the project and upon its ending, with no updates between the two. Other simplification measures were applied to France 2030 projects with an amount below or equal to 5 million euros: eliminating of the need to provide the consortium agreement for consortia without enterprises, and simplifying of the annual project advancement report for projects with a duration of less than six years.

The appelsprojetsrecherche.fr portal continues its roll-out

Inscribed in the Research Programming Law (LPR), this portal centralises the calls for proposals for the six primary actors in research funding in France (ANR, Anses, Inserm/ANRS MIE, ADEME, INCa), joined by a growing number of partners. This enables researchers to quickly find the offerings matching their topics, and to be informed in real time regarding new calls via alerts.

In 2024, efforts concentrated on developing a single submission space for projects and applications, in keeping with the Tell Us Once process. A researcher homepage will initially enable each scientist to gather information on their profile and productions in a single space, interfaced with ORCID and the HAL national archive. Other accomplishments include developing a collaborative space for preparing scientific proposals, continuing workshops harmonising practices and procedures between partner agencies, and a test campaign to validate the functionalities developed.

THE ANR INNOVATES WITH OASIS, A NEW SCIENTIFIC MONITORING TOOL

Rolled-out among the scientific leaders of AAPG projects, the OASIS tool facilitates the monitoring and development of final reports from funded projects. The primary advantages for scientific communities include:

- **the administrative data from the SIM information system and the productions linked to the projects registered in HAL are automatically pre-filled and updated;**
- **the progress and impact of scientific research can be provided as progress is made, and up to five years after the end of the project;**
- **the partners associated with the project are given access in order to provide their contribution;**
- **the content of project files can be exported at any time;**
- **at the end of the project, the scientific deliverable is submitted in a single click to the ANR for validation.**

THE APPELSPROJETSRECHERCHE.FR PORTAL

36 partners

503 calls published since the portal's launch in 2021

350 visits per day

Our teams

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76 Organisation and governance

Human resources: an agile and inclusive policy

Occupational health, gender equality, peer training... The ANR strives to ensure quality of life at work for each employee, all while adopting and gathering knowledge in the service of a single purpose: funding project-based research.

Gender equality and disability: an exemplary approach

By launching its second Gender Equality Action Plan /*see page 64*/, the ANR renewed its desire to enduringly anchor gender equality within its HR policy. Another essential component of its ESR approach, disability, was the subject of an important awareness campaign in 2024, with interventions during Information On Call meetings (monthly information meetings intended for all staff), e-learning modules, and internal testimonial videos. At the same time, the ANR continued its activities for disability accommodations and the recruitment of qualified disabled individuals, raising the rate of disabled persons in its teams to nearly 6% (the rate required by law). The partnership with the Association for the Professional and Human Integration and Reintegration of the Disabled (ANRH), which has been renewed for 10 years, was also expanded.

DISABILITY AWARNESS AT THE ANR: 4 HIGHLIGHTS IN 2024

CONFERENCE

21 MARCH / **Neurodevelopment disorders, learning disorders, and HIP in enterprises** by Olivier Revol, child psychiatrist.

INTERVENTION

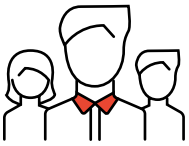
25 APRIL / **Support for qualified individuals with disability** by Valérie Oudenot from the PiDiem agency, on the occasion of an Information On Call meeting.

EXPERIENCE

21 NOVEMBER / **Duo Days during the European Week for the Employment of People with Disabilities.** An opportunity to welcome persons with disabilities for an immersion day, alongside employee volunteers.

CONFERENCE

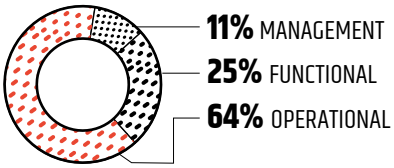
3 DECEMBER / **Account by Lucie Jarrige, multi-medal-winning Paralympic athlete and the holder of a PhD in organic research** at the International Day of Persons with Disabilities.



439 PEOPLE
WORK AT THE ANR, FOR 411.3 FULL-TIME EQUIVALENT

60% WOMEN **40%** MEN

DISTRIBUTION BY SECTOR



MOBILITY RATE
10%

TRAINING EFFORTS
4% OF PAYROLL

DISABILITY

Direct hiring rate
of workers with a disability:
5.6% in 2024

24 employees with Qualified Disabled Worker Status (RQTH) who have access to an adapted working station

Attention focused on quality of life at work

In early 2024, the ANR completed its fourth survey on quality of life at work and psychosocial risks. With a (rising) response rate of 69% and an average grade of 3.92 out of 5, the results are generally positive. The strong social support of colleagues, the organisation of work, and autonomy received overwhelming support among staff, while the meaning and quality of work also saw clear progression. The primary areas for improvement involved recognition and career prospects within the ANR. On the basis of these results, a dedicated working group submitted proposals to management. Most were taken into consideration in crafting a new action plan. The efforts will notably focus on developing opportunities for internal mobility, greater communication regarding career development support, and improvement in interdisciplinary relations between departments. At the same time, the dialogue pursued with social partners allowed, for the second consecutive year, a general measure to increase pay in the form of a uniform amount for all ANR staff, with a view to offsetting the effects of inflation.

Cultivating skills specific to the ANR

In 2024, the activity of the ANR's HR Development Service was marked by intensified internal training (see text box). The goal was to reinforce and permanently change the Agency's professional expertise in order to respond to current and future issues. At the same time, the managerial function was once again strengthened in response to a constant increase in the Agency's activities since 2020. In addition to the creation of five new positions, focus was placed on the full integration of middle management through training, ad hoc meetings with HR departments, and active participation in Executive Committee seminars, which have expanded since 2023.

// The ANR is characterised by a strong collaborative spirit. This is illustrated by training among peers, interdisciplinary working groups (particularly enjoyed by staff), and mobilisation during the Hcéres self-assessment.

PHILIPPE TERRAL,
ANR Human Resources Director

WHEN STAFF MEMBERS TRAIN THEIR PEERS, A DISTINCTIVE FEATURE OF THE ANR

/ The ANR has an internal network of trainers that grows each year. "In concrete terms, it is colleagues who make the effort to develop targeted training on subjects identified by the Human Resources Department, for which only the ANR, given the particularities of its core activity, can train its staff members," explains Philippe Terral, the ANR Human Resources Director. New topics were introduced in 2024, including the violation of personal data and control by CNIL; the management of European funding; and anti-corruption efforts.

Salvatore Costanzo, Transversal Mission Manager - Coordination of Regional Partnerships at the Scientific Operations Department (Rapporteur for Working Group 4: Activities and Results);
Cécile Schou, Chief of Staff, Institutional Relations Advisor at the time (head of the Self-assessment Mission project);
Émilie Habillon, Deputy Director at the Contracting and Funding Division (co-lead for Working Group 1: Positioning and Strategy).

Self-assessment: substantial mobilisation for a demanding exercise

In 2024, the ANR was evaluated by Hcéres, which was preceded by a structural self-assessment effort. From January to March, no less than 133 staff members took part in working groups to prepare the final report. This was a powerful bonding moment according to the three lead actors involved.

How did the self-assessment exercise proceed in the working groups?

ÉMILIE HABILLON To start, the accomplishments of recent years were highlighted, for an enormous amount of things have occurred at the ANR. We then adopted a critical view: Can we do better? If so, how? What are the priority areas? The goal is to proceed with SWOT (strength, weaknesses, opportunities, threats) analysis, with each group being independent in the choice of method, tools, and resource persons.

SALVATORE COSTANZO On our side, we opted for an ascending and global approach, so that no individuals are left out. We gathered all opinions and then processed them collectively. With my reporting colleagues, we then had to complete a major rationalisation effort to condense and eliminate repetition. All in all it required nearly 40 hours.

CÉCILE SCHOU It was indeed work. As the project manager for the mission, I was tasked with coordinating the drafting of the final report based on all of the information from the four workshops, making sure to convey what was said and what occurred. An intense undertaking!

Beyond the results, what were the contributions of this process?

E.H. One of the major points of the exercise is that it brought together all departments—which is rare—around a single subject, with no distinction between 'core' departments and 'support' departments. With the idea that we are all equal in our knowledge and point of view. This was also the strength of the approach.

S.C. We pursued a logic of continuum among occupations, which included and featured everyone. I had already participated in an assessment when I worked in the laboratory, and it was a simple consultation via email. We had no guarantee that the information would go through, which was the case here.

C.S. In short, it was an opportunity to bring us together around a common project. The general assembly at which each working group presented the results of its work was also an important moment for sharing, with questions, interactions, and even debates.

What was your personal experience?

S.C. It was enriching on both a professional and human level, as it gave me a more global view. For example, I did not necessarily know the issues encountered by the Contract and Funding Department. These interactions made me adapt my practices.

E.H. I had already participated in the 2019 self-assessment as a rapporteur, and I was fairly pleased to be asked to lead it, alongside members of the Executive Committee. Working on the strategy, a field far removed from my everyday activity, was also an enriching experience. It also created bonds on the human level.

C.S. I learned a tremendous amount of things about the Agency. I also met colleagues that I had only seen previously. It was a truly great collective moment. The final report, which was sent to all staff members, also sparked interest and curiosity, including among those who had not participated in the workshops.

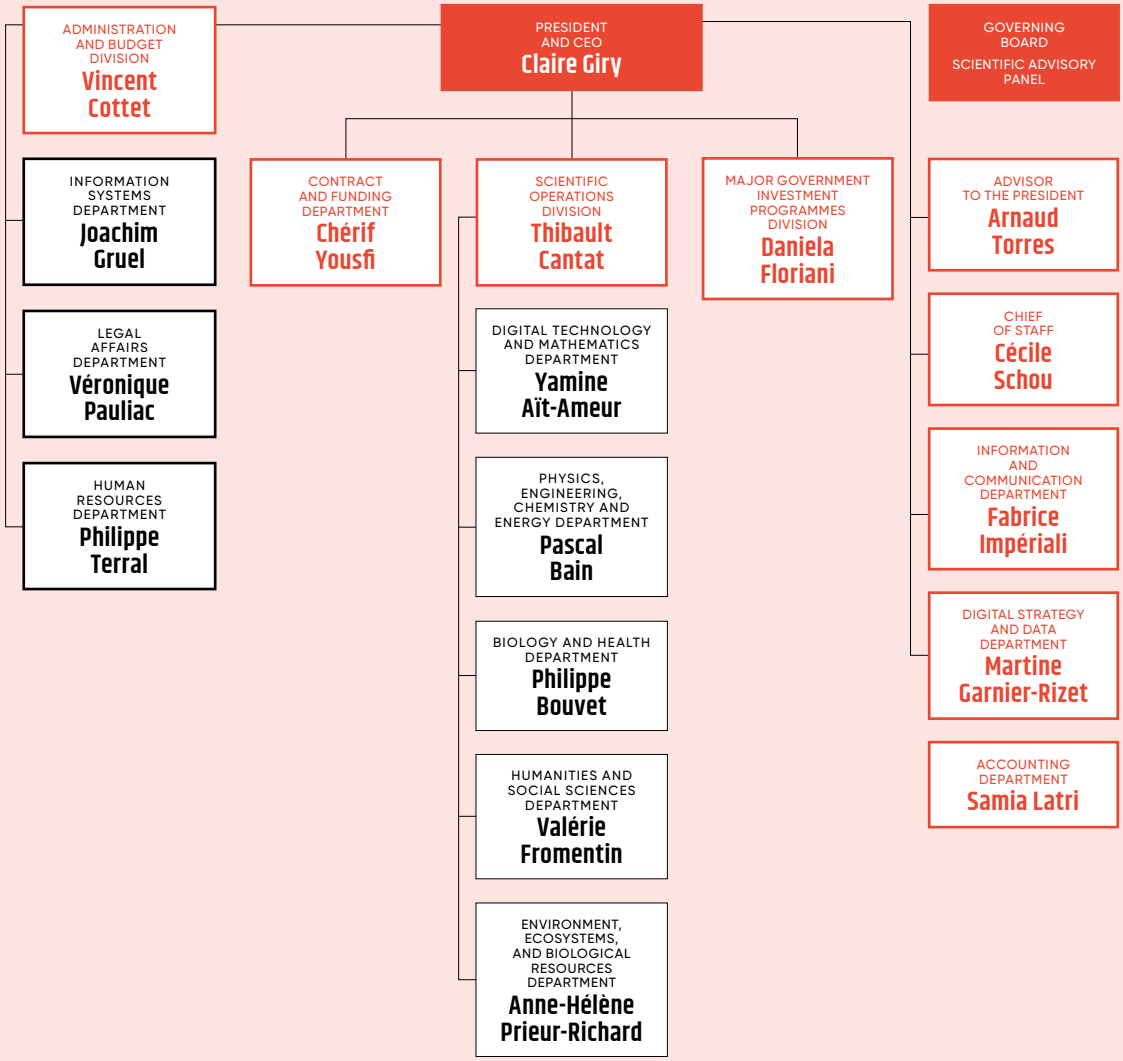
THE HCÉRES ASSESSMENT IN BRIEF

Every five years, the ANR is assessed by the High Council for the Evaluation of Research and Higher Education (Hcéres). The opinions that resulted notably enabled the ANR and its supervisory ministry to establish an Objectives and Performance Contract (COP) that will guide the Agency's activities over the next five years. The Hcéres process provides for an initial self-assessment phase based on a reference document established in connection with the ANR, spanning five fields and 14 sub-fields. Four working groups were established for four topics: Positioning a nd Strategy; Organisation and Governance; Strategy Implementation; and Activities and Results, with the fifth topic, Proposals for the Future, being addressed jointly by all working groups. For each group, the ANR appointed a three-person steering group (two members of the Executive Committee and a deputy, all from different departments) mobilised on a volunteer basis among staff members representative of the Agency's various professions.

Organisation and governance

as of 3 July 2025

Under the supervisory authority of the French Ministry of Higher Education and Research, the ANR is administered by a Governing Board and led by a President, who is assisted by two Deputy Directors General and a Scientific Advisory Panel.



The Governing Board

as of 3 July 2025

The members of the ANR's Governing Board are appointed by Decree of the French Minister of Higher Education and Research.

President:
Claire Giry

As representatives of the French Government:
- Mr. Jean-Luc Moullet and Ms. Marine Camiade, full members representing the Minister of Research
- Ms. Carine Bernard and Mr. Guilhem de Robillard, substitute members representing the Minister of Research
- Mr. Sébastien Chevalier, full member representing the Minister of Higher Education
- Ms. Caroline Ollivier-Yaniv, substitute member representing the Minister of Higher Education
- Ms. Oriane Chenain and Mr. Laurent de Mercey, full members representing the Minister of Industry
- Mr. Jérôme Gazzano and Mr. Emmanuel Clause, substitute members representing the Minister of Industry
- Ms. Alicia Saoudi, full member representing the Minister of the Budget
- Mr. Julien Tanneau, substitute member representing the Minister of the Budget.

As qualified representatives from major scientific fields, including at least one representative from the Conference of Directors of Higher Education Institutions:
- Ms. Carole Caranta, full member
- Ms. Hélène Boulanger, full member
- Mr. Jean-Frédéric Gerbeau, full member
- Mr. Antoine Petit, full member
- Ms. Laurence Piketty, full member
- Mr. Didier Samuel, full member
- Ms. Chantal Boulanger, substitute member
- Mr. Pierre-Franck Chevet, substitute member
- Ms. Marie Gaille, substitute member
- Mr. François Houillier, substitute member
- Ms. Hélène Jacquet, substitute member
- Mr. Dean Lewis, substitute member.

As qualified representatives from the business world:
- Mr. Jean-Luc Beylat
- Mr. Bruno Maquart
- Ms. Florence Lambert-Hognon
- Ms. Christine M'Rini-Puel.

Vice-President of the National Strategic Council for Research:
- Mr. Pascal Colombani

As staff representatives:
- Ms. Jessica Rohrbach ; Mr. Isidore Decostaire, substitute member
- Ms. Delphine Callu, full member ; Mr. Tristan Lescure, substitute member.

Attending the Board in an advisory capacity:
- The Chair of the Governing Board of the public institution BPI-Group or their representative
- The French Secretary General for Investment, or their representative
- The Deputy Director General for Administration & Budget
- The Deputy Director General for Science
- The Budget Controller
- The Accountancy Officer.

The Scientific Advisory Panel

as of 3 July 2025

As a deliberative body, the Scientific Advisory Panel assists the President of the ANR in the strategic management of the institution.

The President consults with the panel for:

- The preparation of the ANR's Work Programme and the report on its implementation;
- The pursuit of efforts to assess research provision and impact analysis;
- The creation or elimination of the Agency's scientific departments, their naming and scope;
- The appointment of the Heads of Scientific Departments and the renewal of their duties.

The Scientific Advisory Panel may also be consulted for its opinion by the Governing Board or the President. Its composition, the procedure for appointing its members, and its operating rules are set out by the Ministerial Order of 10 September 2015.

President:

Serge Abiteboul, Senior Researcher Emeritus at Inria, member of the French Academy of Science and the Academia Europeae.

Figures from outside the ANR, including foreign contributors selected for their scientific and technical expertise in the Agency's areas of activity:

- Brigitte Autran, President of the French Committee for Monitoring and Anticipating Health Risks (Covars)
- Yuko Harayama, Secretary General of the Tokyo Expert Support Centre for the Global Partnership on AI
- Christine Musselin, CNRS Senior Research at the Centre for the Sociology of Organisations (Sciences Po and CNRS)
- Mona Nemer, Chief Science Advisor of Canada
- Sophie Szopa, CEA Senior Researcher at the Climate and Environmental Sciences Laboratory, member of the IPPC.

Figures from the business world, selected for their knowledge about the operation and restraints of national funding agencies for research, development, and innovation:

- Armand Ajdari, Chief Technology Officer at Arkema
- Paul Friedel, Delegate General of the French Academy of Technologies
- Roseann O'Reilly Runte, university president, former President and CEO of the Canada Foundation for Innovation.

APPENDICES

Review of 2024 calls for proposals

	Projects selected
Component 1 **RESEARCH AND INNOVATION (AAPG)**	**1,713**
PRC - Collaborative research projects	**923**
PRME - Single-team research projects	**87**
JCJC - Young researchers	**396**
PRCE - Collaborative research projects involving enterprises	**121**
PRCI - International collaborative research projects	**186**
Component 2 **SPECIFIC ACTIONS EXCLUDING AAPG**	**52**
SAPS - Science with and for society	**32**
TSIA - Specific topics in artificial intelligence	**10**
RESO - Research on open science practices and issues	**10**
Component 3 **BUILDING THE EUROPEAN RESEARCH AREA (ERA) AND FRANCE'S INTERNATIONAL ATTRACTIVENESS**	**251**
Specific bilateral calls	**25**
Multilateral Europe calls	**135**
Other multilateral calls	**21**
PAPFE - National action plan to improve French participation in European Research and innovation funding schemes	**70**
Component 4 **ECONOMIC IMPACT OF RESEARCH AND COMPETITIVENESS**	**77**
Partnership-based actions (ASTRID & Ecophyto maturation)	**33**
LabComs	**34**
Industrial Chairs	**10**
TOTAL CALLS FOR PROPOSALS	**2,093**

Success rate compared to the number of eligible proposals	Average funding per project	AAP budget commitments	Share of commitment in AAPS total
24.4%	**€473 k**	**€810.7 m**	**88.17%**
24.5%	€562 k	€519.0 m	56.44%
22.7%	€387 k	€33.7 m	3.66%
25.0%	€300 k	€119.0 m	12.94%
25.1%	€604 k	€73.1 m	7.95%
23.2%	€355 k	€66.0 m	7.17%
27.5%	**€214 k**	**€11.1 m**	**1.21%**
25.8%	€99 k	€3.2 m	0.34%
35.7%	€577 k	€5.8 m	0.63%
27.0%	€217 k	€2.2 m	0.24%
20.6%	**€251 k**	**€63.1 m**	**6.86%**
21.2%	€416 k	€10.4 m	1.13%
19.6%	€298 k	€40.3 m	4.38%
14.5%	€375 k	€7.9 m	0.86%
26.4%	€65 k	€4.5 m	0.49%
33.8%	**€449 k**	**€34.6 m**	**3.76%**
32.7%	€449 k	€14.8 m	1.61%
30.6%	€360 k	€12.2 m	1.33%
62.5%	€752 k	€7.5 m	0.82%
24.2%	**€439 k**	**€919.5 m**	**100.00%**

Review of 2024 actions

CREDIT BREAKDOWN BY BENEFICIARY TYPE

	OVERALL TOTAL	CNRS	INSERM	INRIA	IRD	INRAE
Component 1 **RESEARCH AND INNOVATION (AAPG)**	**€810.7 m**	**€270.4 m** 33.4%	**€78.8 m** 9.7%	**€13.3 m** 1.6%	**€7.3 m** 0.9%	**€37.1 m** 4.6%
PRC – Collaborative research projects	**€519.0 m** 64.0%	**€187.7 m** 36.2%	**€55.1 m** 10.6%	**€5.7 m** 1.1%	**€4.9 m** 0.9%	**€21.7 m** 4.2%
PRME – Single-team research projects	**€33.7 m** 4.2%	**€11.5 m** 34.1%	**€4.1 m** 12.3%	**€0.3 m** 1.0%	-	**€1.6 m** 4.6%
JCJC – Young researchers	**€119.0 m** 14.7%	**€34.5 m** 29.0%	**€10.4 m** 8.7%	**€4.0 m** 3.3%	**€2.0 m** 1.7%	**€5.9 m** 5.0%
PRCE – Collaborative research projects involving enterprises	**€73.1 m** 9.0%	**€14.5 m** 19.9%	**€4.8 m** 6.6%	**€0.6 m** 0.9%	**€0.4 m** 0.6%	**€3.3 m** 4.6%
PRCI – International collaborative research projects	**€66.0 m** 8.1%	**€22.3 m** 33.8%	**€4.4 m** 6.7%	**€2.7 m** 4.1%	-	**€4.6 m** 6.9%
Component 2 **SPECIFIC ACTIONS EXCLUDING AAPG**	**€16.9 m**	**€3.3 m** 19.4%	**€0.8 m** 4.9%	**€1.3 m** 7.5%	**€0.1 m** 0.4%	**€0.2 m** 1.4%
Artificial intelligence	**€5.8 m** 34.2%	**€0.2 m** 3.2%	-	**€1.1 m** 19.9%	-	-
PAUSE-ANR Ukraine	**€1.4 m** 8.5%	**€0.6 m** 39.0%	**€0.1 m** 4.9%	-	-	**€0.1 m** 4.9%
Open science	**€2.2 m** 12.9%	**€0.3 m** 13.5%	**€0.5 m** 23.1%	-	-	-
Science with and for society	**€7.5 m** 44.5%	**€2.2 m** 29.7%	**€0.3 m** 3.4%	**€0.1 m** 1.5%	**€0.1 m** 0.8%	**€0.2 m** 2.2%

CEA	Other research bodies	**Subtotal research bodies**	Universities and Schools	Hospitals-Healthcare	Other public sectors	**Subtotal public sector excluding research bodies**	**Subtotal miscellaneous private**
€22.9 m 2.8%	**€22.8 m** 2.8%	**€452.6 m** 55.8%	**€292.0 m** 36.0%	**€8.0 m** 1.0%	**€1.2 m** 0.2%	**€301.3 m** 37.2%	**€56.8 m** 7.0%
€15.2 m 2.9%	**€13.7 m** 2.6%	**€303.9 m** 58.5%	**€179.5 m** 34.6%	**€5.9 m** 1.1%	**€0.6 m** 0.1%	**€186.0 m** 35.8%	**€29.1 m** 5.6%
€0.4 m 1.1%	**€1.5 m** 4.3%	**€19.3 m** 57.4%	**€11.6 m** 34.3%	-	-	**€11.6 m** 34.3%	**€2.8 m** 8.3%
€3.3 m 2.8%	**€2.2 m** 1.8%	**€62.2 m** 52.3%	**€50.1 m** 42.1%	**€0.9 m** 0.7%	-	**€51.0 m** 42.8%	**€5.8 m** 4.8%
€0.9 m 1.2%	**€3.3 m** 4.5%	**€27.9 m** 38.2%	**€28.0 m** 38.4%	**€0.8 m** 1.0%	**€0.6 m** 0.9%	**€29.4 m** 40.3%	**€15.8 m** 21.6%
€3.1 m 4.6%	**€2.2 m** 3.4%	**€39.3 m** 59.5%	**€22.8 m** 34.6%	**€0.5 m** 0.7%	-	**€23.3 m** 35.3%	**€3.4 m** 5.2%
-	**€0.3 m** 1.7%	**€5.9 m** 35.2%	**€8.4 m** 49.9%	**€0.1 m** 0.4%	**€0.1 m** 0.4%	**€8.5 m** 50.6%	**€2.4 m** 14.2%
-	-	**€1.3 m** 23.1%	**€3.4 m** 59.6%	-	-	**€3.4 m** 59.6%	**€1.0 m** 17.3%
-	**€0.1 m** 9.8%	**€0.8 m** 58.5%	**€0.6 m** 41.5%	-	-	**€0.6 m** 41.5%	-
-	-	**€0.8 m** 36.6%	**€1.1 m** 50.3%	-	-	**€1.1 m** 50.3%	**€0.3 m** 13.1%
-	**€0.2 m** 2.0%	**€3.0 m** 39.6%	**€3.3 m** 43.8%	**€0.1 m** 0.8%	**€0.1 m** 0.8%	**€3.4 m** 45.5%	**€1.1 m** 15.0%

Review of 2024 actions (continued)

CREDIT BREAKDOWN BY BENEFICIARY TYPE

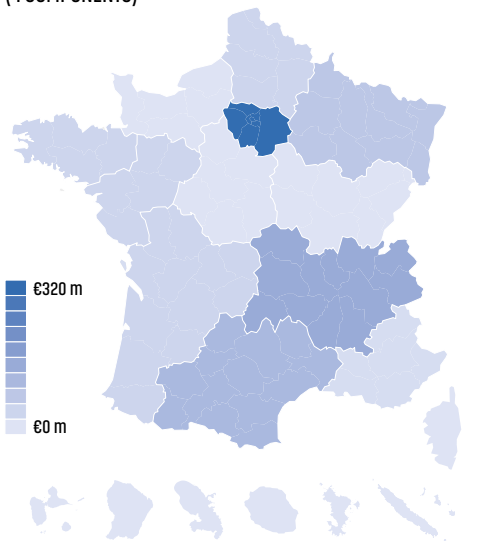
	OVERALL TOTAL	CNRS	INSERM	INRIA	IRD	INRAE
Component 3 **BUILDING THE ERA AND FRANCE'S INTERNATIONAL ATTRACTIVENESS**	**€65.6 m**	**€13.0 m** 19.8%	**€5.3 m** 8.1%	**€0.5 m** 0.7%	**€4.9 m** 7.4%	**€1.9 m** 2.8%
Specific bilateral calls	**€10.4 m** 15.9%	**€3.4 m** 32.3%	-	-	-	-
Multilateral European calls	**€40.3 m** 61.4%	**€6.1 m** 15.2%	**€5.1 m** 12.5%	**€0.3 m** 0.8%	**€2.1 m** 5.2%	**€1.5 m** 3.6%
Other multilateral calls	**€7.9 m** 12.0%	**€1.7 m** 21.4%	-	-	**€2.7 m** 34.7%	**€0.1 m** 1.5%
Access ERC calls	**€2.7 m** 4.1%	**€0.6 m** 23.4%	-	-	-	**€0.1 m** 5.5%
SRSEI – Support for European or International Scientific Networks	**€0.3 m** 0.4%	**€0.0 m** 17.5%	**€0.0 m** 5.5%	-	**€0.0 m** 6.1%	-
OPERAS Grant	**€0.3 m** 0.4%	-	-	-	-	-
MRSEI	**€1.8 m** 2.8%	**€0.5 m** 27.3%	**€0.0 m** 2.0%	**€0.0 m** 1.9%	**€0.0 m** 1.9%	**€0.1 m** 6.9%
TERC	**€2.0 m** 3.0%	**€0.6 m** 31.2%	**€0.2 m** 11.5%	**€0.1 m** 5.8%	-	-
Component 4 **ECONOMIC IMPACT OF RESEARCH AND COMPETITIVENESS**	**€150.6 m**	**€11.7 m** 7.8%	**€1.9 m** 1.3%	**€2.0 m** 1.3%	-	**€13.6 m** 9.0%
ASTRID	**€14.8 m** 9.8%	**€3.2 m** 21.7%	**€0.8 m** 5.4%	**€0.2 m** 1.1%	-	-
LabComs	**€12.2 m** 8.1%	**€1.8 m** 14.8%	**€1.1 m** 8.9%	-	-	**€1.1 m** 8.8%
Industrial chairs	**€7.5 m** 5.0%	**€1.5 m** 20.0%	-	-	-	-
Carnot	**€116.0 m** 77.0%	**€5.2 m** 4.4%	-	**€1.9 m** 1.6%	-	**€12.5 m** 10.8%
OTHER FUNDING EXLUDING THE 4 COMPONENTS	**€344.2 m**	**€38.9 m** 11.3%	**€13.2 m** 3.8%	**€4.4 m** 1.3%	**€2.2 m** 0.6%	**€10.3 m** 3.0%
RTB	**€3.8 m** 1.1%	**€2.1 m** 54.0%	-	-	-	-
Inca	**€68.0 m** 19.8%	-	-	-	-	-
Host and Site Preciput	**€272.4 m** 79.1%	**€36.9 m** 13.5%	**€13.2 m** 4.9%	**€4.4 m** 1.6%	**€2.2 m** 0.8%	**€10.3 m** 3.8%
Laboratory and Management Preciput (for information)	**€104.5 m**	**€34.4 m** 32.9%	**€10.3 m** 9.8%	**€1.8 m** 1.7%	**€1.1 m** 1.1%	**€4.8 m** 4.6%
OVERALL TOTAL	**€1,388.1 m**	**€337.2 m**	**€100.1 m**	**€21.4 m**	**€14.5 m**	**€63.1 m**

CEA	Other research bodies	Subtotal research bodies	Universities and Schools	Hospitals-Healthcare	Other public sectors	Subtotal public sector excluding research bodies	Subtotal miscellaneous private
€3.1 m 4.7%	**€2.1 m** 3.2%	**€30.7 m** 46.8%	**€23.0 m** 35.0%	**€2.3 m** 3.5%	**€0.3 m** 0.5%	**€25.6 m** 39.0%	**€9.3 m** 14.2%
€1.3 m 12.5%	**€0.2 m** 1.7%	**€4.8 m** 46.5%	**€4.6 m** 44.2%	-	**€0.3 m** 3.1%	**€4.9 m** 47.3%	**€0.6 m** 6.2%
€1.6 m 3.9%	**€1.5 m** 3.8%	**€18.1 m** 45.0%	**€13.5 m** 33.5%	**€2.2 m** 5.5%	-	**€15.7 m** 39.0%	**€6.4 m** 16.0%
-	-	**€4.5 m** 57.6%	**€1.9 m** 24.2%	-	-	**€1.9 m** 24.2%	**€1.4 m** 18.3%
-	**€0.2 m** 7.8%	**€1.0 m** 36.7%	**€1.5 m** 55.6%	-	-	**€1.5 m** 55.6%	**€0.2 m** 7.8%
€0.0 m 11.0%	**€0.0 m** 12.1%	**€0.1 m** 52.3%	**€0.1 m** 30.0%	-	-	**€0.1 m** 30.0%	**€0.0 m** 17.8%
-	-	-	-	-	-	-	**€0.3 m** 100.0%
€0.1 m 3.5%	**€0.1 m** 3.9%	**€0.9 m** 47.4%	**€0.7 m** 39.1%	**€0.1 m** 3.8%	-	**€0.8 m** 42.9%	**€0.2 m** 9.7%
€0.1 m 5.8%	**€0.1 m** 5.8%	**€1.2 m** 60.1%	**€0.7 m** 34.0%	-	-	**€0.7 m** 34.0%	**€0.1 m** 5.8%
€18.7 m 12.4%	**€7.4 m** 4.9%	**€55.3 m** 36.7%	**€41.7 m** 27.7%	**€7.2 m** 4.8%	-	**€49.0 m** 32.5%	**€46.3 m** 30.8%
€0.3 m 2.3%	**€0.8 m** 5.5%	**€5.3 m** 35.9%	**€5.8 m** 38.9%	**€0.1 m** 0.4%	**€0.0 m** 0.1%	**€5.8 m** 39.3%	**€3.7 m** 24.7%
-	**€0.7 m** 5.8%	**€4.7 m** 38.3%	**€7.5 m** 61.7%	-	-	**€7.5 m** 61.7%	-
-	-	**€1.5 m** 20.0%	**€6.0 m** 80.0%	-	-	**€6.0 m** 80.0%	-
€18.4 m 15.8%	**€5.9 m** 5.1%	**€43.8 m** 37.7%	**€22.4 m** 19.3%	**€7.1 m** 6.2%	-	**€29.6 m** 25.5%	**€42.7 m** 36.8%
€12.3 m 3.6%	**€8.6 m** 2.5%	**€90.0 m** 26.1%	**€166.4 m** 48.3%	**€3.6 m** 1.1%	**€69.0 m** 20.0%	**€239.0 m** 69.4%	**€15.2 m** 4.4%
€1.7 m 46.0%	-	**€3.8 m** 100.0%	-	-	-	-	-
-	-	-	-	-	**€68.0 m** 100.0%	**€68.0 m** 100.0%	-
€10.5 m 3.9%	**€8.6 m** 3.2%	**€86.2 m** 31.6%	**€166.4 m** 61.1%	**€3.6 m** 1.3%	**€1.0 m** 0.4%	**€171.0 m** 62.8%	**€15.2 m** 5.6%
€2.8 m 2.7%	**€2.7 m** 2.6%	**€57.9 m** 55.4%	**€39.9 m** 38.1%	**€1.2 m** 1.2%	**€0.2 m** 0.2%	**€41.3 m** 39.5%	**€5.3 m** 5.1%
€56.9 m	**€41.3 m**	**€634.5 m**	**€531.6 m**	**€21.2 m**	**€70.6 m**	**€623.4 m**	**€130.1 m**

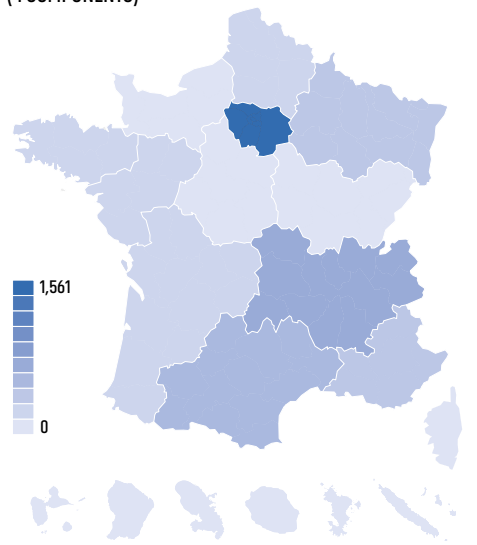
Review of 2024 actions

DISTRIBUTION BY REGION

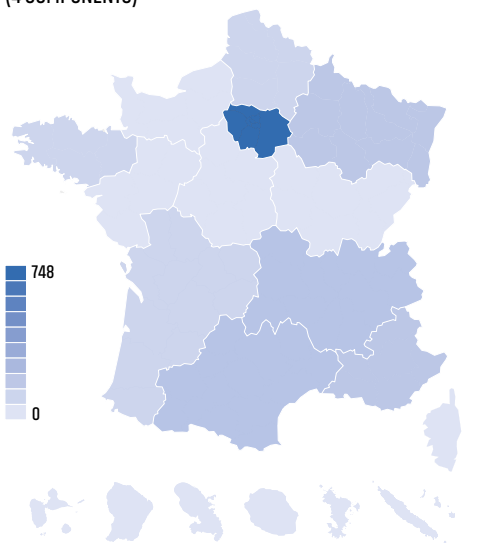
PARTNER FUNDING BY REGION
(4 COMPONENTS)



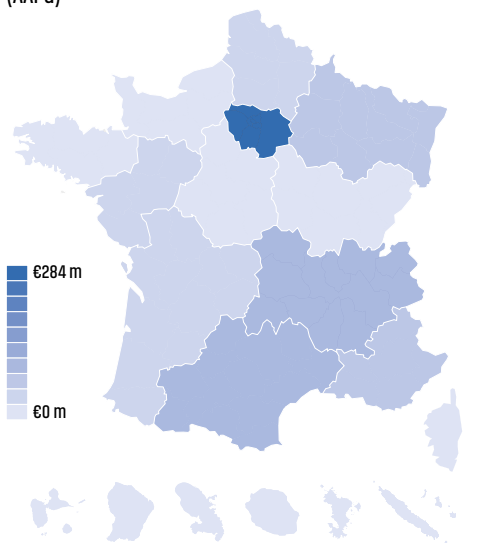
NUMBER OF PARTNERS BY REGION
(4 COMPONENTS)



NUMBER OF COORDINATORS BY REGION
(4 COMPONENTS)



PARTNER FUNDING BY REGION
(AAPG)



Review of France 2030 including Investments for the Future Programmes (PIA)

FINANCIAL ELEMENTS

TOTAL UNDER CONTRACT*	€30,986,787,564
DISBURSEMENTS	€24,984,724,488

Excluding PFE Campus.
*Including non-consumable grants for the 17 fully certified IdEx/I-SITEs.

DISTRIBUTION OF FUNDED PROJECTS BY REGION

MAIN REGION OF THE PROJECT	NUMBER OF PROJECTS	TOTAL UNDER CONTRACT*	DISBURSEMENTS
Auvergne-Rhône-Alpes	320	€4,358,884,873	€3,224,664,866
Bourgogne-Franche-Comté	40	€282,396,750	€195,339,935
Brittany	88	€765,533,687	€522,653,430
Centre-Val de Loire	33	€233,841,803	€104,266,809
DROM-COM	10	€55,431,974	€15,117,025
Grand Est	117	€2,204,496,938	€1,903,762,287
Hauts-de-France	79	€1,182,476,073	€1,029,282,739
Île-de-France	874	€14,801,892,453	€12,061,877,496
Normandy	31	€178,449,192	€114,687,506
Nouvelle-Aquitaine	135	€1,762,106,103	€1,499,244,198
Occitanie	199	€2,069,368,563	€1,679,033,542
Pays de la Loire	48	€729,353,422	€616,312,929
Provence-Alpes-Côte d'Azur	110	€2,360,190,272	€1,995,049,415
TOTAL	2,084	€30,984,422,104	€24,961,292,177

Excluding PFE Campus/excluding CVT.
*Including non-consumable grants for fully certified IdEx/I-SITEs.

DISTRIBUTION OF PROJECTS FUNDED BY PROGRAMME

PIA	PROGRAMME
INVESTMENTS FOR THE FUTURE PROGRAMME 1	Campus IA & Saclay
	Centre Excellence (IdEx, Idefi, LabEx, EquipEx)
	Energy, circular economy (Institutes of Excellence in Low-Carbon Energy, Nuclear Safety)
	Boarding schools of excellence and equality of opportunity
	Health and biotechnology
	Promotion of research (SATE, SATT, IRT, CVT, Carnot)
INVESTMENTS FOR THE FUTURE PROGRAMME 2	Ecosystems of excellence (IdEx, I-Site, EquipEx, RHU, Convergence Institutes, Dune)
INVESTMENTS FOR THE FUTURE PROGRAMME 3	Demonstrators and innovation territories of great ambition (the Nuclear technology of tomorrow)
	Graduate schools of research
	New university curricula
	Centres of excellence (IHU 2, Gure, Ides, Sfri, Esre, RHU 5)
	Priority Research Programmes
	Promotion of research (SATE, SATT, IRT, CVT, Carnot)
FRANCE 2030	Exploratory PEPR
	Live demonstration
	Research and innovation ecosystem
	Maturation, R&D and promotion
	Deployment support
	National strategy
	Health (Bioclusters, chairs of excellence in BS, IHU 3, RHU 6)
TOTAL	

Excluding PFE Campus/excluding CVT. *Including non-consumable grants for the 17 fully certified IdEx/I-SITEs, and the non-consumable grants of LabEx and IDEFI included within the scope of the 17 IdEx/I-SITEs.

NUMBER OF PROJETS	TOTAL UNDER CONTRACT	DISBURSEMENTS
108	€2,628,863,512	€2,588,521,207
324	€8,096,821,315	€7,849,753,116
35	€501,972,482	€418,559,690
1	€900,000	€900,000
90	€1,361,649,531	€1,287,300,264
91	€2,354,506,799	€2,129,764,550
72	€6,863,117,152	€6,726,956,866
1	€599,000,000	€599,000,000
53	€429,527,282	€251,997,495
51	€340,780,001	€206,945,105
165	€1,377,101,278	€727,432,861
124	€263,338,207	€172,573,910
6	€17,480,000	€15,732,000
228	€687,691,549	€129,029,360
41	€153,405,011	€102,493,347
97	€1,028,606,333	€254,751,974
88	€790,567,557	€291,864,005
128	€1,475,118,661	€619,392,198
304	€993,739,314	€321,539,299
83	€1,022,601,578	€290,217,241
2,090	€30,986,787,564	€24,984,724,488

DISBURSEMENT AND FUNDING OF PROJECTS BY FRANCE 2030 CONDITION FOR SUCCESS AND OBJECTIVE

CONDITIONS FOR SUCCESS
Condition for Success 1 Secure access to raw materials
Condition for Success 2 Secure access to strategic components, including electronic, robotics and smart machines
Condition for Success 3 Develop talent by creating the training programmes of tomorrow
Condition for Success 4 Master sovereign and secure digital technologies
Condition for Success 6 Excellence of our higher education, research, and innovation ecosystems

OBJECTIVES
Objective 1 Encourage the development of small modular reactors (SMR) in France by 2035, and support breakthrough innovations in the sector
Objective 2 Become the leader in green hydrogen and renewable energy in 2030
Objective 3 Decarbonise our industry to fulfil our commitment to reduce, between 2015 and 2030, our greenhouse gas emissions by 35% in this sector
Objective 4 Manufacture around 2 million electric and hybrid vehicles each year in France by 2030
Objective 5 Manufacture the first low-carbon airplane in France by 2030
Objective 6 Invest in healthy, sustainable and traceable food to speed up the agricultural revolution, where France is a leading country
Objective 7 Manufacture at least 20 biopharmaceuticals in France, particularly for cancers and chronic diseases, including age-related diseases, and produce the medical devices of tomorrow
Objective 8 Make France a leader once again in the production of cultural and creative content and immersive technologies
Objective 10 Invest in seabeds
TOTAL

NUMBER OF PROJECTS	TOTAL UNDER CONTRACT	DISBURSEMENTS
65	€259,736,514	€66,839,572
50	€578,555,944	€294,976,650
107	€561,049,074	€287,329,994
100	€1,048,463,939	€335,411,256
317	€1,650,835,882	€372,544,192

NUMBER OF PROJECTS	TOTAL UNDER CONTRACT	DISBURSEMENTS
2	€59,000,000	€53,700,000
42	€146,739,318	€62,580,711
19	€60,444,989	€19,345,813
25	€90,757,667	€29,198,404
1	€4,600,000	€2,045,598
70	€223,463,306	€67,383,013
156	€1,356,419,800	€381,948,427
9	€19,974,397	€2,979,442
6	€91,689,173	€33,004,352
969	€6,151,730,004	€2,009,287,425

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Editorial Director
Fabrice Impériali

Coordination
Nathalie Mamosa

Editorial design, graphic design
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Mathieu Grousson

Translation
Arby Gharibian

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FRANCE 2030

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86 rue Regnault 75013 PARIS