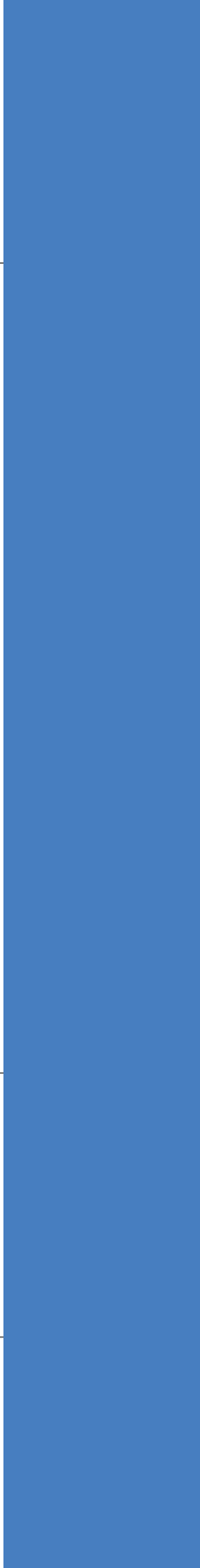

The ANR funds research in its diversity



2022 Annual Report



ANR
2022
Annual
Report



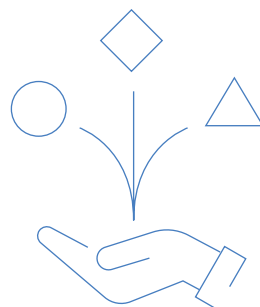
Summary

4 Editorial

“We honoured our commitments in 2022”, by Thierry Damerval

6 2022 highlights

- 8 Funding budget
- 10 France 2030: Bringing the future forward
- 14 The Generic Call for Proposals
- 16 Specific Programmes and Calls
- 18 European and international research
- 20 **Spotlight:** Supporting the Ukrainian scientific community
- 22 Public-private partnership-based research
- 24 2022 in review
- 32 **Interview:** *“The Research and Creation Meetings have created an unrivalled setting”*, with Olivier Py
- 34 **Interview:** *“Supporting the excellence of research conducted on a regional basis”*, with Christelle Morançais

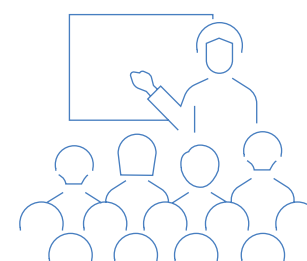


36 20 scientific projects

- 38 Generic Call for Proposals
- 58 European and international research
- 64 Public-private partnership-based research
- 70 France 2030

78 A year of commitments

- 80 Encouraging dialogue between science and society
- 82 **Interview:** *“Scientific mediation is moving forward”*, with Éric Duchêne
- 84 Promoting a culture of gender equality
- 87 **Interview:** *“Teleworking contributes to widening gender disparities”* with Marion Fortin
- 88 Making Open Science the default principle



90 Inside the ANR

- 92 Simplifying the work of the scientific community
- 93 **Focus:** First France 2030 satisfaction survey
- 94 Diversity, well-being, equality: the ANR's social goals
- 96 **Reportage:** The ANR changes offices: mission accomplished
- 102 **Interview:** *“Our new offices changed how we work”*, with Charlotte Vilatte and Pascal Desprez
- 104 Management: meeting research challenges
- 106 Organisation chart and governance
- 110 **Interview:** *“The Scientific Advisory Panel thinks, supports, and advises”*, with Pierre Corvol

112 Appendices

- 114 Review of 2022 calls for proposals
- 116 Review of 2022 actions
- 121 Review of France 2030

EDITORIAL

"We honoured our commitments in 2022"

By **Thierry Damerval**,
President and CEO of the ANR



In 2022, the ANR continued to implement provisions of the Research Programming Law (LPR), in line with its budgetary development. The Agency successfully met the commitments identified in the law, in addition to the new tasks entrusted to it, especially in connection with the ramping-up of France 2030.

The Agency's expanded activities and larger workforce directly led to our move to new offices—more modern, user-friendly and spacious—thereby providing better quality of life at work. This move represents a fresh start for the Agency, whose responsibilities have considerably increased in recent years.

The LPR's effects are being felt

The LPR's effects are reflected in the ANR's research budget (excluding France 2030), which rose from €750 million in 2020 to €1.1 billion in 2022. The success rate for the Agency's overall Work Programme reached 24% in 2022, and the Generic Call for Proposals (AAPG), its main call, funded half of the proposals that reached the second selection stage. The preciput—the aid paid to institutions

above and beyond the funds allocated for research projects—increased from 19% and €100 million in 2020 to 28.5% and almost €200 million in 2022. As a symbol of our support for public-private partnership-based research, the contribution to the Carnot Programme increased by €30 million over the same period, reaching €92 million in 2022. The ANR pursued its efforts to promote dialogue between science and society by rolling out the Science with and for Society programme, as well as by providing greater support for the dissemination of scientific, technical, and



24%
overall success rate
for the 2022 Work
Programme

industrial culture (CSTI), which under the law will progressively represent at least 1% of the funding budget by 2027.

France 2030: one year already

The year 2022 also saw the first anniversary of the French government's France 2030 investment programme launched in 2021, with the ANR being entrusted with its implementation in the fields of higher education and research. From the launch of the Investments for the Future Programmes (PIA) in 2010 to late 2022, 1,149 projects were funded by the Agency, for a global commitment of over €22 billion. These projects resulted in over 60,000 scientific publications.

Strengthened international action

We increased our support for European and international cooperation. In addition to successful MRSEI and SRSEI programmes supporting the creation and development of research networks—and the Tremplin-ERC programme promoting European Research Council calls among scientists in 2022—the ANR issued a pilot call for young researchers in the social sciences and humanities, entitled Access ERC. The year 2022 also saw the launch of new European partnerships under the Horizon Europe programme.

In response to the Russo-Ukrainian war, the Agency committed to accommodating Ukrainian scientists and helping them pursue their research in France.

Our priorities for 2023

In 2023, the ANR will continue to bolster its activity. We will hold the course set out in our three-year Work Programme 2022-2024:

success rate for our calls for proposals, preciput rate, support for public-private partnership-based research, and the promotion of dialogue between science and society. At the same time, the Agency will take part in several major projects, including assessing the first actions conducted under the LPR, assessing the implementation of France 2030, and contributing to the Mission on the National Research and Innovation Ecosystem entrusted to Philippe Gillet by the French Ministry of Higher Education and Research, whose implementation is expected in September 2023.

Our commitments reaffirmed

The Agency will reaffirm its values and commitments, from ethics and scientific integrity to gender equality. To this end, we are proud to have been awarded the AFNOR gender equality label. This label, which was created in 2004, assesses professional diversity and gender equality in the private sector and civil service.

Our commitments were also reflected in the continued international implementation of the actions initiated by Coalition S, which was founded by the ANR, as well as the launch of the CoARA coalition designed to remodel research assessment, and the launch—by the ANR, Coalition S, Science Europe, and the European OPERAS infrastructure—of the Action Plan for Diamond Open Access, now adopted by over 150 scientific institutions worldwide. To mobilise scientists around these challenges, we will continue to promote the United Nations Sustainable Development Goals (SDGs), which the ANR has included in all of the themes of its AAPG since 2020. We aim to go further by extending this scheme to all calls for proposals involving the ANR. ●

2022 highlights

As the first year of implementation for the new three-year ANR Work Programme, 2022 saw the selection of more than 2,000 research projects, with a budget of €1.1 billion. For the first time since 2014, the overall success rate for the Agency's action plan reached 24%. Additionally, by year end the Agency funded over 1,100 projects under France 2030.



Funding budget

In accordance with the Research Programming Law (LPR), which provided for an initial increase in activity in 2021 followed by further growth from 2024 onwards, the ANR's research funding budget rose to €1.1 billion.

↳ A larger budget

Following increased activity in 2021, the ANR's funding budget—which covers the commitment authorisations allocated to beneficiaries—amounted to €1.1 billion in 2022, or €337.1 million more than in 2020.

This development is in line with the provisions set out in the LPR adopted in 2020 for the 2021–2030 period. The law provided the ANR with significant additional resources to fund more research projects, increase the success rates of the Agency's various calls for proposals, intensify its partnership-based research support, increase the preciput paid to institutions, and fund research projects. In accordance with the law, the increased funding for the 172 Programme and the France Relance Recovery Plan (measure to "Strengthen" the ANR in the amount of €142 million in 2022) helped to establish in 2021 and 2022 the budget initially set for 2023. The grant allocated to the ANR by the French Ministry of Higher Education and Research (MESR), its supervisory ministry, amounted to €1.0956 billion.

↳ A rising preciput rate

Each year the ANR makes an additional contribution to public research institutions

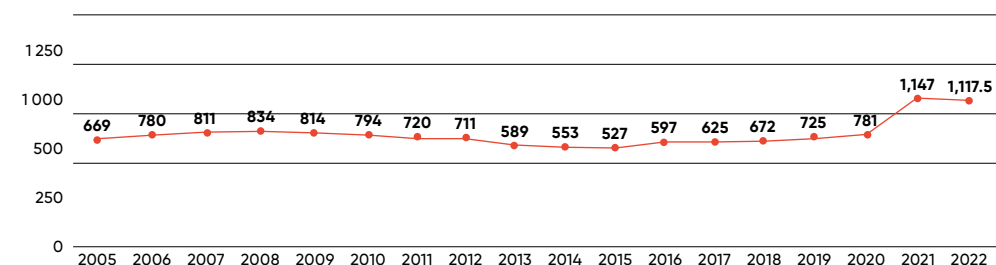
and laboratories whose research project was selected under a call for proposals managed by the Agency. This preciput rate continued to increase, rising from 19% in 2020 to 28.5% in 2022. The year also saw the introduction of a new share in the preciput, namely a "site" share allocated to host institutions as a contribution to their site's scientific strategy. The preciput henceforth includes four shares: the management share covering the project's overhead costs; the hosting share contributing to the cost and quality of accommodations for research teams; the laboratory share supporting the scientific strategy and research unit; and the "site" share.

↳ France Relance: the ANR expands its support

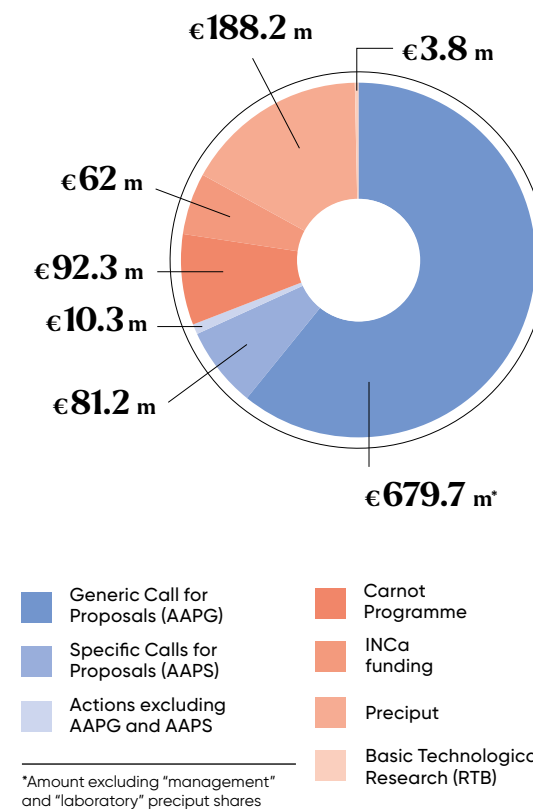
In addition to the funding budget, since 2021 the ANR has supported the R&D Job Preservation measure from France Relance, via funding from MESR. This measure supports and preserves the research and development (R&D) capacities of enterprises, and also supports young graduates and PhDs as part of partnership-based research with enterprises. In 2022, 1,378 staff members were eligible for the measure, with a total amount under contract of €123.3 million, and 1,141 agreements signed by enterprises. ●

€ 1.1 bn committed in 2022

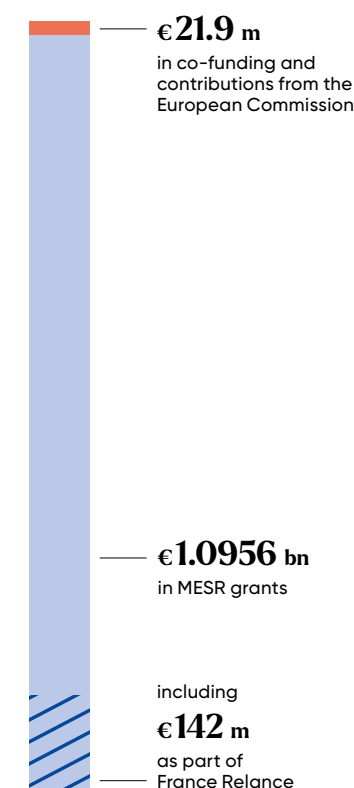
Evolution of the funding budget (budget in € m)



Breakdown of the funding budget



Source of the funding budget



France 2030: Bringing the future forward



The year 2022 saw the continuation and completion of structuring actions for the higher education and research ecosystem as part of the Investments for the Future Programmes (PIA), as well as the roll-out of new signature tools under the France 2030 plan launched in October 2021, with the ANR serving as operator in the fields of higher education and research. With respect to higher education, the plan focuses on the talent of both the present and the future in order to achieve its goals.

IdEx/I-SITE: 8 labels confirmed in early 2022

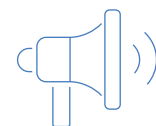
Created in 2010 and 2015, the Initiatives of Excellence (IdEx) and Initiative Science-Innovation-Territory-Economy (I-SITE) labels are granted to higher education institutions with recognized scientific expertise and impact across wide fields of knowledge. They serve as markers of a country's international competitiveness. The ANR organised the selection of IdEx and I-SITE-labelled projects.

The year 2022 saw the assessment of the final eight initiatives coming to the end of their trial period. This assessment, which was conducted by an international panel, formally confirmed the label for projects coordinated by Paris-Cité University (IdEx UP), University of Clermont Auvergne (I-SITE

CAP2025), CY Cergy Paris University (I-SITE CYI), University of Pau and the Pays de l'Adour (I-SITE E2S), Gustave Eiffel University (I-SITE FUTURE), University of Montpellier (I-SITE MUSE), University of Nantes (I-SITE NExT), and University of Lille (I-SITE ULNE). The results were announced during a visit to Gustave Eiffel University in March by Jean Castex, the Prime Minister, Frédérique Vidal, the Minister of Higher Education, Research and Innovation, Bruno Bonnell, the Secretary General for Investment, and Thierry Damerval, the President and CEO of the ANR.

Prior assessments were conducted in 2016, 2018, and 2021. The assessment of initiatives involved on-site visits, in addition to presentations by the coordinators and research institutions conducting the projects. In all, 17 initiatives have been IdEx and I-SITE certified since 2016. These projects, located

FRANCE 2030 KEY FIGURES*



102
Number of calls for proposals launched



1,149
Number of projects funded



over
60,000
Publications



€22.701 bn
Amount committed

€18.775 bn
Amount disbursed

* From the start of PIAs in 2010 to year-end 2022.

throughout the country, are one of the most illustrative results of PIAs, and are now in line with the objectives of France 2030. They will receive more than €300 million a year.

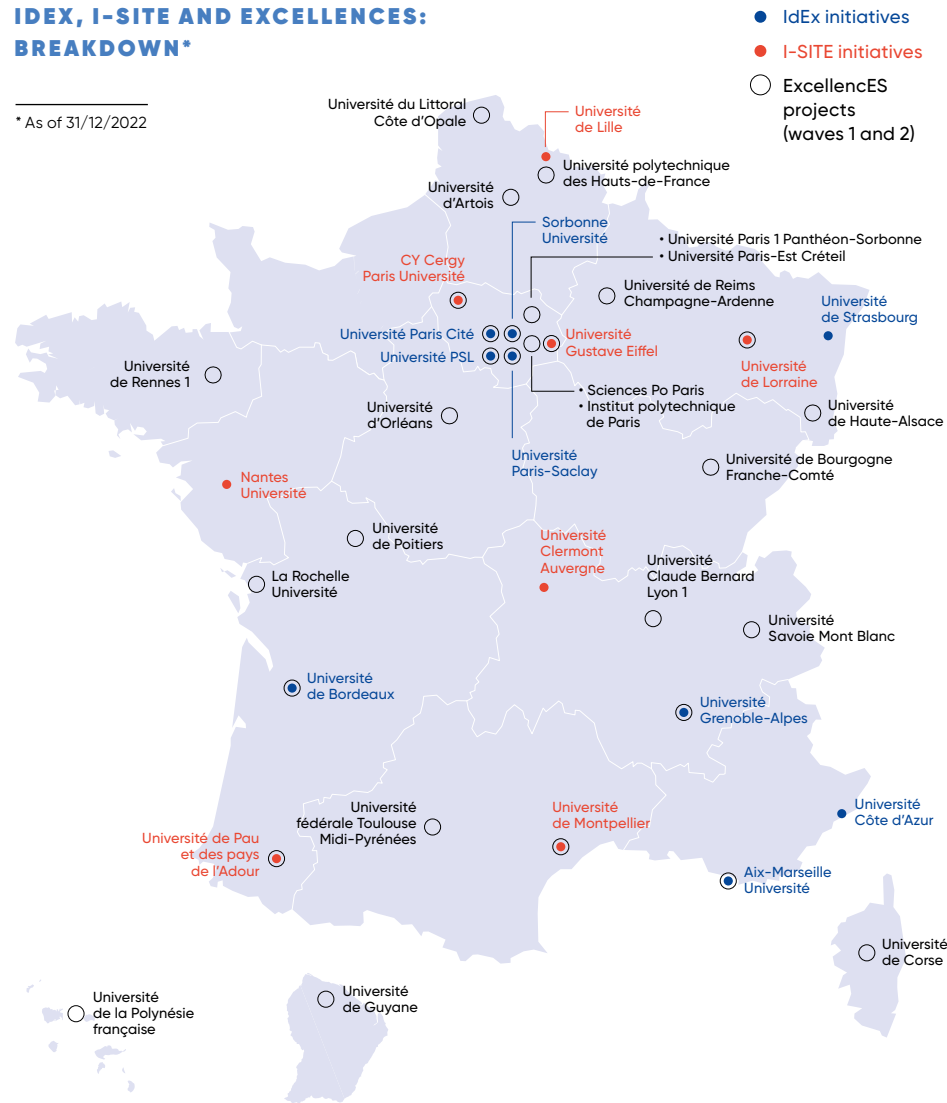
At the end of the trial period, IdEx and I-SITE initiatives reached most of their objectives, and also enjoyed many successes: increased exposure in international rankings, with Paris Saclay placing 13th in the 2021 Shanghai Ranking; selections as part of the European Union's European Universities pilot call; and recognised contributions to the development of higher education, research, and innovation in France.

ExcellencES in all its forms: supporting the transformation of higher education and research institutions

The year 2022 also saw the September launch of a third and final selection wave, as part of the ExcellencES In All Its Forms call for proposals. This call, which is managed as a continuation of the actions set out in PIAs, supports higher education and research institutions coordinating ambitious transformation projects for their site, developed in connection with their territorial dynamism and specific needs: research, training, actions on the territorial, European, and international level, wider economic and societal impact, human resources, student life, culture, etc. The aim is also to support their differentiation and reinforcement both nationally and internationally by helping to develop their

IDEX, I-SITE AND EXCELLENCES: BREAKDOWN*

* As of 31/12/2022



areas of excellence. Applications must satisfy at least one of the following three criteria: reflect a genuine global institutional policy for the site, deeply transform the institution, and pursue excellence within the institution's field(s) of expertise and practice.

This third wave was closed in January 2023. Its results will be published in the coming months. The previous waves, launched in March and November 2021, led to 15 project selections in November 2021, and 17 additional ones in February 2022. These

32 initiatives, located across all mainland and overseas territories, received a total of €621 million aid. The projects supported include ambitious transformation endeavours: ecological and energy transition, innovation in teaching, development of European alliances, global health, university social responsibility, etc.

With an €800 million budget, ExcellencES under all its Forms provides a minimum grant of €5 million per application over a six to ten year period. Approximately half of the budget is for projects coordinated by institutions that are not involved in an IdEx or I-SITE labelled initiative. The other half will support projects submitted by IdEx or I-SITE coordinators.

Several factors have contributed to the success of this action: good management and assessment, a pertinent analysis of positioning on the part of applicant institutions, a focus on the connection between national anchoring and international influence, a focus on the relationship between science and society, and an interdisciplinary approach.

Emerging skills and professions: targeting the education of the future

Another 2022 highlight in the pursuit of France 2030 objectives was the Future Skills and Professions call for expressions of interest. This call, designed to support emerging talent and to quickly adapt training to the skills needed in new sectors and professions of the future, stands out by the magnitude of the funds allocated—€2.5 billion—as well as by the diversity of its targeted sectors and its cross-functional role within France 2030. It is jointly operated by the Caisse des dépôts – Banque des territoires and

the ANR. Two types of responses can be submitted under this call: applicants can identify and propose analyses of the current situation and needs for new skills; or they can design, develop, and adapt training programmes—both initial and continuing—for professions of the future. To be eligible, proposals must focus on at least one of the 28 national acceleration strategies, including green hydrogen and renewable energies, decarbonising industry, food and agriculture, health, digital technologies, space, and even cultural and creative content. These training projects, with funding ranging from €1 million to €19 million over five years, are intended to be sustained over time.

In 2022, the ANR coordinated three selection waves under this call for proposals between December 2021 and November 2022. The first two waves closed in February and July 2022 respectively, and resulted in 136 projects being selected—66 in wave 1 and 70 in wave 2—for a total amount of €480 million. These 136 recipients include one or more France 2030 priorities. Digital health (16 recipients), artificial intelligence (14 recipients), solutions for sustainable living and innovative building (14 recipients), healthy and sustainable food (13 recipients), creative and cultural industries (13 recipients), and education and digital technology (12 recipients) were the best represented. Among the recipients, 77 schemes will help train, by 2027, over 210,000 graduates and 800,000 title, certification, or qualification holders, with some coming as early as September 2023. The third wave of applications closed in November 2022, with 75 applications being submitted. The final selection is expected to be published in the spring of 2023. The call for proposals will now continue until the entire allocated budget has been used, doing so in a two-stage process, with an initial letter of intent submitted for approval, followed by a full application. ●

The Generic Call for Proposals

In 2022, the ANR supported over 1,700 research proposals through the Generic Call for Proposals (AAPG), its main source of funding. Open to all scientific communities, this call helps fund research in all scientific disciplines.

↘ A rising success rate

Among 7,171 eligible pre-proposals, 1,718 projects were selected under the 2022 AAPG. The success rate for this call for proposals continues to rise, reaching 24%, compared to 22.7% in 2021. The average aid allocated per project reached €441,000, or 2.5% more than in 2021. As part of this call, a total of €758.2 million (including "management" and "laboratory" preciput) was allocated to the projects selected. This budget is a continuation of last year's budget, which already saw a significant increase of 53% compared to 2020.

↘ Covid-19: 29 new projects funded

As in 2021, the ANR made Covid-19 a 2022 AAPG priority. Through the allocation of €12.9 million, long-term research was funded to develop a more thorough understanding of the pandemic, in addition to its health and socio-economic impacts. Support was provided for 29 research projects (of the 98 eligible), which will explore the topic over a period of three to four years by adopting basic and translational approaches. The ANR will continue funding upstream research projects on emerging and re-emerging infectious diseases, in conjunction with the actions specifically dedicated and implemented by the ANRS | Emerging Infectious Diseases (MIE).

The AAPG and Sustainable Development Goals

In 2022, 1,213 projects selected as part of the AAPG indicated that they respond to at least one of the seventeen United Nations Sustainable Development Goals (SDGs). These projects represent an investment of approximately €553 million. The ANR Work Programme has included the SDGs in all of the AAPG's research focuses since 2020.

€758.2 m allocated to the projects selected in 2022



1,718
projects
selected

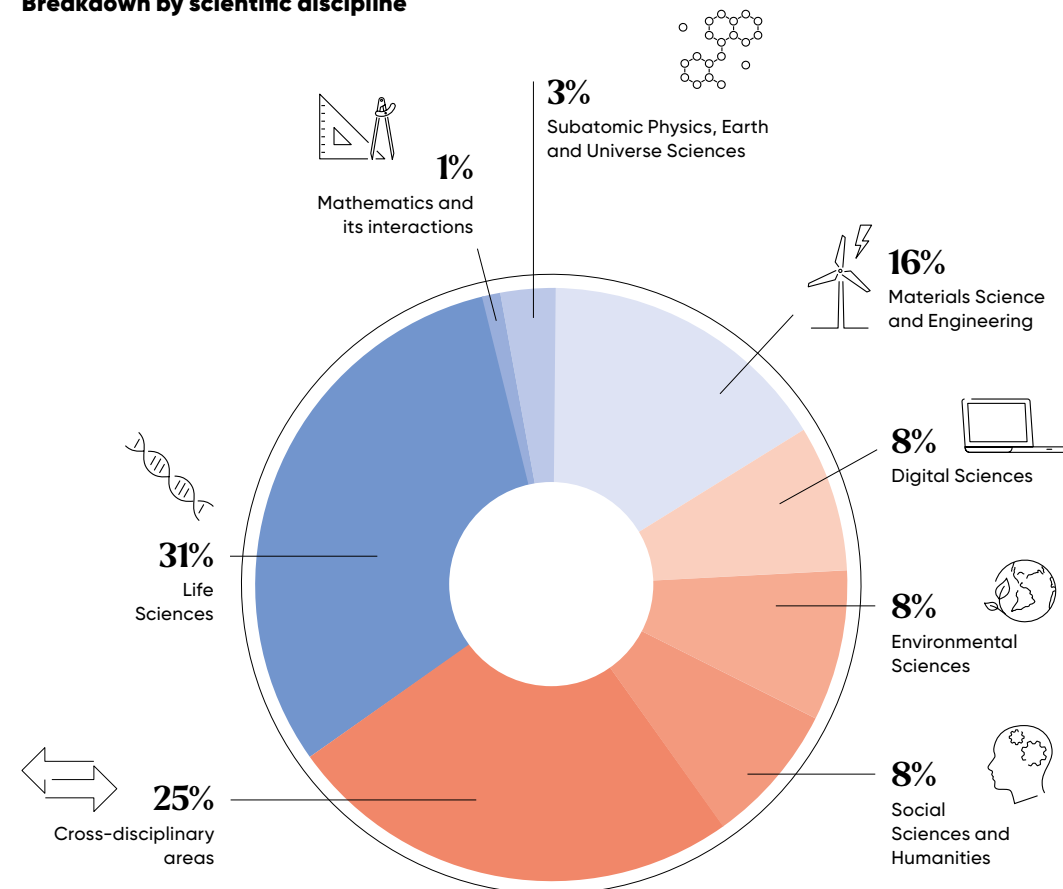


24%
success
rate



€441 k
average funding
per project

Breakdown by scientific discipline



Specific Programmes and Calls

In addition to the AAPG, the ANR conducts specific calls for proposals. They help address new priorities set by the French government, scientific issues proposed by external funding bodies, as well as the needs and expectations expressed by scientific communities within the Agency's Programming Advisory Panels.

Chlordecone pollution: mobilising research

Following a joint call between the ANR, the Guadeloupe region, and local authorities in Martinique, six research projects were selected in December 2022, with the objective of supporting researchers studying the massive chlordecone pollution of the water and soil in the French West Indies. This pesticide was used in the banana plantations of both islands in the 1990s, resulting in long-term adverse effects to the health of local populations.

The selected projects seek to improve prevention and resilience in the face of this persistent pollution, while strengthening dialogue between science and society around the issue. For instance, the KARU-FERTIL project combines epidemiological and sociological approaches in order to study the links between exposure to the pesticide—a proven endocrine disruptor—and female infertility. Simultaneously, the DéMETer project is exploring a new soil treatment method (remediation) that would help reduce the population's current and future exposure to chlordecone and its degradation products.

Developing large research infrastructures

France has invested significant budgets to develop and establish large research infrastructures. However, unlike other countries, it has not provided specific support for the scientific exploration of the data generated by the use of these infrastructures. To address this deficiency, in May 2022 the ANR launched a pilot call for proposals specifically dedicated

“Six projects were selected to use the observation and measurement data generated by two outstanding research infrastructures: the French Oceanographic Fleet (FOF) and CERN's Large Hadron Collider (HC).”

SPECIFIC PROGRAMMES AND CALLS IN 2022



12
projects
selected



46.2%
success
rate



€611k
average funding
per project

to the Scientific Exploration of Data from Research Infrastructures (ESDIR).

Six projects were selected to use the observation and measurement data generated by two outstanding research infrastructures: the French Oceanographic Fleet (FOF) and CERN's Large Hadron Collider (HC). For example, the three LHC projects will contribute to precision measurements of basic parameters, as well as a better understanding of the physics relating to the Higgs boson. Regarding the FOF, the ALBANE0 project proposes using data from the 2021 ALBACORE oceanographic campaign—gathered along an emerging tectonic plate in the Mediterranean—to gain a better understanding of how the intercontinental fault system works over time, and to improve seismic risk assessment. This experiment will continue in 2023 with a second ESDIR call.

AI to protect marine biodiversity

To help remove major scientific and technological obstacles, the ANR funds projects combining complementary disciplinary

and technical approaches as part of the Instrument Challenge. The most recent example is the IA-Biodiv Challenge launched by the Agency in 2021, which led to the selection of three research teams, with a start date in February 2022. The projects selected are at the crossroads between three key contemporary research areas: artificial intelligence (AI), marine ecology, and oceanography. The stated objective of these projects is to mobilise AI to improve biodiversity indicators, as well as to develop new models for predicting the development of marine populations. ●

European and international research

One of the Agency's missions is to strengthen European and global scientific cooperation. It supports French teams in their cooperation efforts with their foreign counterparts, with a view to providing coordinated responses to global challenges, sharing knowledge, and pooling resources and technologies with strategic partners.

↘ A French-German research ecosystem for AI

In June 2022, a new call for proposals promoting French-German cooperation in artificial intelligence (AI) research was launched by the ANR and the German Federal Ministry for Education and Research. Six months later, eleven projects were selected for applications in sectors such as transport, renewable energy, and the environment.

TETRA is one of the projects selected. It proposes new river monitoring and water management systems using artificial intelligence. Scientists are testing their methods and technology on the Rhine, and intend to create an "AI" toolbox—open and available to all—in order to maintain resilient and healthy rivers.

“In 2022, the ANR opened a pilot call designed for young researchers in the social sciences and humanities (SSH): Access ERC.”

↘ Strengthening SSH within European programmes

In September 2022, the ANR opened a pilot call designed for young researchers in the social sciences and humanities (SSH): Access ERC. It promotes their career and academic integration, and increases the submission and success rate for the European Research Council's ERC Starting Grants call for proposals. In practical terms, Access ERC helps them enhance their CV and prepare their application under optimum conditions. Each recipient will be assigned a two-year post-doctoral contract, and will be hosted in a French laboratory, with access to suitable working conditions and the guidance of a supervisor.

This call is part of the schemes set up by the ANR in recent years—under the National Action Plan to Improve French Participation in European Research and Innovation Funding Schemes (PAPFE)—to support top-level partnership dynamics and build French team leadership in European and international programmes. These schemes also include

EUROPEAN AND INTERNATIONAL RESEARCH IN 2022



230
projects
selected



19.9%
success
rate



€251 k
average funding
per project

MRSEI and SRSEI instruments, which support the creation and development of scientific networks, as well as Tremplin-ERC, which promotes the ERC's calls among scientists.

↘ Fifteen years of French-Taiwanese cooperation

In 2022, the ANR and the National Science and Technology Council (NSTC), the Taiwanese funding agency, celebrated fifteen years of partnership. Since 2007, approximately

300 scientists have taken advantage of a funding agreement for one of the 87 bilateral research projects concluded between the two agencies. The PHOTOMOC and NIRTRONIC projects attest to this successful cooperation. They have been managed for approximately ten years by Olivier Soppera, Senior Research at the French National Centre for Scientific Research (CNRS), and Hsiao-Wen Zan, Professor at NYCU University, around the development of efficient and inexpensive biosensors. Their research was recognised in February 2022 by the Franco-Taiwanese Scientific Grand Prize. ●



Horizon Europe: new partnerships

In connection with the Horizon Europe programme, the European Commission has recast its funding instruments, launching the new "European partnerships." For the ANR, this initiative notably involved the implementation of the first European partnership call for proposals on biodiversity, Biodiversa+, which supports the protection of biodiversity as well as terrestrial and marine ecosystems. In 2022, 17 projects were funded by the Agency in the amount of €4 million, including €1.5 million in European co-funding.

SPOTLIGHT

Supporting the Ukrainian scientific community

In response to the Russo-Ukrainian war, the ANR committed, along with the entire French scientific community, to hosting Ukrainian scientists and helping them pursue their research in France.

The attack carried out by the Russian army on Ukrainian soil beginning on 24 February 2022 forced millions of people to flee combat zones and the country. Many of them are scientists, forced to put their research activities on hold.

To help accommodate these researchers, France launched the PAUSE – Solidarity with Ukraine emergency fund in the early weeks

of the conflict. Managed by the Collège de France, the fund is used to host scientists for three months. It falls within the framework of the PAUSE programme established in 2017 to support scientists and artists forced into exile, namely by facilitating their hosting in higher education, research, and cultural institutions in France.

Russian and Belarusian partnerships suspended

In accordance with France's diplomatic and defensive position, the ANR decided to suspend all of the scientific cooperation it had supported between French research institutions and their Russian or Belarusian counterparts. This decision resulted in the termination, from the beginning of the conflict, of the partnership with the Russian Science Foundation established under the AAPG's International Collaborative Research Project programme (PRCI). The ANR also chose to no longer take part in or fund any actions involving institutions or laboratories affiliated with one of these two countries until the conflict is resolved.



In coordination with PAUSE – Solidarity with Ukraine, the ANR set up an additional programme to help host Ukrainian scientists in French institutions.

Hosting, funding and post-conflict planning

In coordination with PAUSE – Solidarity with Ukraine, the ANR set up an additional programme to help host Ukrainian scientists in French institutions for longer durations: PAUSE – ANR Ukraine. This programme provides researchers with the opportunity to join, for a period of six to twelve months that is renewable, a research project already underway and funded by the ANR. The purpose is not only to help them resume their scientific activities on hold due to the war, but to also anticipate their continuation after the resolution of the conflict. The ANR and the National Research Foundation of Ukraine (NRFU) plan to pursue collaborations to help reconstruct research capacities in Ukraine.

More than €3 million were deployed to fund this programme. These funds were mainly from the French Ministry of Higher Education and Research (€2.1 million) and the ANR (€1.4 million). In 2022 this significant budget helped accommodate 70 Ukrainian scientists, nearly three-quarters of them women. The various schemes have been maintained for 2023. ●



70 Ukrainian scientists were hosted in 2022 under PAUSE – ANR Ukraine.

Public-private partnership-based research

Joint Laboratories, Industrial Chairs, Carnot Programme...The ANR encourages partnerships between public research and the private sector through many schemes. In 2022, the Agency expanded this process by increasing its support for collaboration between laboratories and companies.

↘ The LabComs approach continues

Joint Laboratories (LabComs) promote and structure bilateral partnerships between public research stakeholders and an SME or intermediate-sized enterprise. The ANR funded 20 such projects in 2022, for an average amount of €360,000 per project.

One of these projects was FESTIN, which is jointly coordinated by the French Centre for Nanoscience and Nanotechnology (C2N) of Paris-Saclay University and the company MISTIC SAS. Both partners aim to jointly extend and sustain the Île-de-France region's global leadership in titanium microsystems for implantable medical devices.

In the Hérault department, two other stakeholders have joined forces under the LabCom OxyBley-MARI-2. The objective of the Synthesis of Bioactive Lipids team (Max Mousseron

Institute of Biomolecules) and the Microphyt biotechnology company is to identify and exploit active biomolecules from microalgae for applications in nutrition, health, and cosmetics.

↘ New industrial chairs

This public-private collaborative effort is also the focus of the ANR's Industrial Chairs funding programme. The goal is to enhance cooperation between public research institutions and companies around a training programme and scientific research in strategic areas for the industry.

Among the initiatives selected for 2022, COLIBRI, a chair shared between Oril Industrie and the Cobra laboratory of the University of Rouen, is dedicated to accelerating research and training in sustainable molecular chemistry. The ultimate goal of this partnership is

PUBLIC-PRIVATE PARTNERSHIP-BASED RESEARCH IN 2022



79
projects
selected



53%
success
rate



€379 k
average funding
per project

CARNOT PROGRAMME

39
Carnot Institutes
supported

€92 m
in contributions

€3.568 bn
consolidated
budget



to ensure French R&D sovereignty in drug production.

In the field of solar hydrogen, Engie and five laboratories from the French Alternative Energies and Atomic Energy Commission (CEA) joined forces as part of the PROSPER-H2 research chair. Together they aim to design two new and efficient prototypes for photo-electrochemical water splitting, a sustainable technique for producing hydrogen from solar energy and water.

↘ First assessment for Écophyto-Maturation

In line with the Écophyto II plan—committed to reducing the use of plant protection products in France—on 4 October 2022 the ANR presented the first results of the

Écophyto-Maturation partnership-based research programme, co-funded by the French Biodiversity Agency. This presentation helped identify and discuss new avenues for protecting crops without pesticides. In December, the Agency launched the third edition of the programme. The projects selected will bring together manufacturers and laboratories around the fields of biocontrol, green chemistry ecology, and decision-making support to reduce the use of plant protection products. ●

“On October 2022 the ANR presented the first results of the Écophyto-Maturation partnership-based research programme, co-funded by the French Biodiversity Agency.”

2022 in review

The year 2022 featured a number of key moments: The Paris Open Science European Conference, the anniversary of the Franco-German FRAL call for proposals, the partnership with the Guadeloupe region and local authorities in Martinique on chlordecone pollution research, and the inauguration of the Agency's new offices, among others.

CATEGORIES

- Conferences and symposiums
- Calls for proposals
- Community and governance
- Partnerships
- Science and society
- French Presidency of the European Union

25-26 JANUARY

4-5 FEBRUARY

11 FEBRUARY

2022 Interdisciplinary workshop on global security

For this new online edition, 350 participants met to discuss three main topics: cryptography, terrorism, and Covid-19.

Putting the spotlight on collaborative and participatory Open Science

The Paris Open Science European Conference (OSEC), coordinated by major higher education and research stakeholders in France, was organised as part of the French Presidency of the Council of the European Union. Through roundtables, workshops, and conferences, participants took part in debates focusing on transparency, new forms of collaboration, software, and the future of scientific publishing. This international event resulted in the publication of the Paris Call on Research Assessment, a position paper in favour of reforming the research assessment system across Europe.

→ See pages 88-89

Women in Science: the ANR is committed

In its report published on the International Day of Women and Girls in Science, the ANR saw a steady increase of the number of female project coordinators, from 28.2% in 2015 to 33.1% in 2021.

→ See pages 84-87

14-15 JUNE

11-12 JULY



Fifteen years of French-German partnership in SSH

The creation of the FRAL call for proposals in 2007 was a decisive turning-point in the history of French-German cooperation in the social sciences and humanities (SSH). The conference marking its anniversary highlighted fifteen years of cooperation between the ANR and the German Research Foundation (DFG), its first international partner, with over €50 million invested in 232 projects coordinated by scientists on both sides of the Rhine. The event helped to strengthen the relationships between both agencies, celebrate their joint successes, and raise FRAL's profile within the SSH research community.

Research and Creation Meetings

For the past nine editions, this event has established dialogue between live performing arts and science at the Festival d'Avignon. This year, the programme is inspired by the theme "Tales, worlds and narratives."

→ See pages 32-33

18 JULY



13 exploratory PEPs in wave 2: encouraging ground-breaking research

Exploratory research programmes structure research nationally by developing French leadership in priority scientific fields.

28 JULY



Future skills and professions: 66 recipients in wave 1

The selected projects aim to create or adapt training to meet the needs of sectors of the future: renewable energy, food, health, digital technology, etc.

→ See pages 12-13

6 SEPTEMBER-3 OCTOBER

ANR Tour: meeting scientific communities



Explaining the Agency's annual Work Programme and funding instruments, supporting scientists in responding to a call for proposals, identifying the regulations in effect, establishing the new policy orientations regarding Open Science. As it does every year, the ANR proposed a month-long series of meetings and 28 webinars with scientists, implementation officers, and research institutions managers. The objective was to inform them about how the Agency works, as well as to provide the information required to receive funding, and support in this process.

28 SEPTEMBER

Towards a reform of the research assessment system

Along with fifty other signatories, including the CRNS and HCERES, the ANR is fostering a less quantitative approach to assessment, one that also gives weight to the impact and quality of research.

4 OCTOBER

Ecophyto-Maturation Day

A day to discover and discuss the research that can help reduce both the use and toxic effects of plant protection products in France.

→ See page 23

5-6 OCTOBER

Prelude to the future of medicine

The international ICPeMed conference, organised by the ANR, outlined the future of medicine. Driven by the rise of Big Data and biotechnologies, the goal is greater customisation and enhanced prevention.

6 OCTOBER

appelsprojets recherche.fr: already one year!

The primary research funding stakeholders in France—ADEME, the ANR, Inserm, ANRS | MIE, Anses and INCa—celebrated the first anniversary of their joint portal for the publication of calls for proposals.

→ See page 92

7-17 OCTOBER



The ANR celebrates Science

The ANR once again took part in the Festival of Science, a major traditional event bringing together the scientific community and general public, especially with the kick-off of this 31st edition. The participants who gathered at the National Museum of Natural History in Paris attended numerous events, including a series of programmes entitled Science en Direct (Science Live).

→ See pages 80-81

13 OCTOBER

Water for all

The Water4all European partnership was launched, with a view to securing access to high-quality water for all, amid a climate that is threatening this vital resource.



First anniversary of France 2030



Launched after the socio-economic upheaval following the Covid-19 pandemic, the France 2030 plan proposes to massively invest in the country's research, innovation, and industrial redevelopment. With approximately €8 billion disbursed over the first twelve months to the 1,752 projects selected, the scientific research ecosystem successfully initiated ambitious programmes and projects for accelerating the decarbonisation of the economy, enhancing the protection of our ecosystems and living organisms, mastering innovation in robotics and information technology, expanding support for food that is healthy, sustainable, and sovereign, and developing knowledge in the space industry.

→ See pages 10-13

19 OCTOBER

Gender-SMART: science and equality

After four years of cooperation, the seven Gender-SMART partners, including the ANR, reviewed the gender equality plans they developed within their institutions.

→ See page 86

21-22 OCTOBER



Et maintenant? A festival of ideas looking towards the future

Initiated by France culture and Arte, and supported by the ANR, the second edition of the Et maintenant? festival proposed ten meetings, debates, and workshops open to all, with a view to reflecting on the future. Approximately 2,500 people took part in the workshops and meetings in a highly participative spirit. Capitalising on its 125 scientific contributors, artists, and reporters, the festival initiated numerous debates around the theme "Living in uncertain times."

→ See pages 82-83

21 NOVEMBER

ISO 9001 certification renewed!

The renewal of this standard, which ensures efficient and high-quality management, recognized the ANR's efforts to enhance the efficiency of its actions.

21-22 NOVEMBER

Symposium for post-hurricane resilience

The efforts of four research projects, launched following the tragic hurricanes of 2017 in the French West Indies, were presented to the public.

22 NOVEMBER



Antibiotic resistance, a silent pandemic?

If no action is taken to prevent and control resistance to antibiotics, by 2050 over 10 million deaths could be attributed to this phenomenon each year. The Agency responded to this sense of urgency with the publication of a new *Cahier* (Report), as well as the organisation of a symposium on the subject, which will emphasise the numerous research projects combating this understated scourge.

24 NOVEMBER

Ten years of research on rare diseases

With over 500 supported projects on rare diseases, the ANR and ITMO GGB organised a symposium to assess the knowledge produced and recognise recent efforts in the field.

28 NOVEMBER



The ANR and the Normandy region renew their partnership

The ANR and the Normandy region signed a new partnership agreement for the 2022-2025 period. The agreement has three objectives: mobilising scientific communities to support the region in its areas of specialisation; encouraging actions on scientific, technical, and industrial culture (CSTI); and enhancing the quality of higher education and student success regionally through innovative and experimental teaching methods.

7 DECEMBER

New offices for the ANR



In response to its increasing staff and evolving missions, the ANR inaugurated its new offices in the 13th arrondissement of Paris.

→ See pages 96-103

8 DECEMBER



Resilience and remediation following chlordecone pollution

Chlordecone contamination in Martinique and Guadeloupe is massive and persistent. This pesticide, which was used in French West Indian banana plantations until 1993, has left a permanent mark on the soil and water, and affected the health of local populations. Six projects were selected following the collective call for proposals launched by the ANR, the Guadeloupe region, and local authorities in Martinique, with a view to developing solutions for biological remediation and resilience.

→ See page 16

6-7 DECEMBER



Make Our Planet Great Again : l'heure du bilan

Five years after the call launched for world-class scientists to initiate research projects on climate in France and Germany, a final conference was held in Berlin.

1-8 DECEMBER

Election of staff representatives

A key event in social dialogue, elections of union representatives were held for staff and ministerial representative bodies.



INTERVIEW

"The Research and Creation Meetings have established an unrivalled setting"

With **Olivier Py**, Director of the Festival d'Avignon from 2013 to 2022, and Director of the Théâtre du Châtelet since 2023.

Since 2014, the Research and Creation Meetings*, created by the Festival d'Avignon and the ANR, have brought together artists and scientists specialising in the social sciences and humanities or cognitive science. An interview with Olivier Py, Director of the Festival from 2013 to 2022.

What impressions do you have of the unprecedented dialogue between artists and scientists across all nine editions of these meetings?

These meetings tried to provide an answer, through vastly different themes, to a single question: how does a scientist explore, and how does a creator explore? Though some form of authority exists in the scientific world, the artist's approach is more on the order of concern. While they use different theoretical tools, both approaches are similar in some ways. Year after year, I have seen artists grow more confident in their remarks regarding the research world.

The Research and Creation Meetings have created an unrivalled setting, an invented space that exists because there are questions and public reactions, all within a climate free of polemics, opinions, and position taking. This involves rediscovering the joy of joint research and listening, in a society where dialogue is undermined by new media practices.

How can scientific and artistic thinking enrich each other?

These meetings are scheduled with the utmost sensitivity. They require scientific rigour and a capacity to connect various disciplinary approaches while avoiding opposition, confrontation, and paraphrasing. The objective is to build bridges with the men and women who may not be aware that their research can be promoted. I could list some unexpected connections, such as socio-historical changes in masculinity with Richard III, or primatological research on the gestural aspect of the emergence

INTERVIEW

of human language through dance. These exchanges also worked because we collectively agreed on the need to ensure a new and shared discourse. The Research and Creation Meetings are characterised by broad freedom of thought and time: they occur during the Festival d'Avignon, during this special moment when roaming about becomes possible.

Following a debate, I have often heard a creator say: "If only I'd had this discussion before I started working on my show!" I have been thinking about it myself: through the work of Janet Beizer, I learned many things about the social aspects of Harlequin, which could have inspired me when I wrote my play, *My Exalted Youth*. Perhaps scientists feel they master their work a little more, while artists look to let go. Finally, I would say that the interdisciplinary approach—which today is a sign of productivity for both art and research—has served as a banner of sorts under which these meetings unfolded.

"The objective is to build bridges between the men and women who may not be aware that their research can be promoted."

How can contemporary art and research reflect the state of the world today?

There is a shared desire to give voice to the present, to society and reality. Concerns, whether they be environmental, political, environmental, or connected to rights and freedoms, are often mentioned in these debates. Nowadays, we no longer look at history with hope, but rather with concern. Scientific hope has taken a different form. Simultaneously, an artist's concern has become an anxiety shared by his or her peers, a reflection of the collective. But the responsiveness we have experienced during these meetings and the public's passion for theatre and science are profound reasons for hope. ●

In 2022, the Research and Creation Meetings explored "tales, worlds and narratives" with Patrick Boucheron, Olivier Py, and Tiphaine Karsenti.





INTERVIEW

"Supporting the excellence of research conducted on a regional basis"

With **Christelle Morançais**,
President of the Pays de la Loire region

The Pays de la Loire region was one of the first French regions to enter into a partnership with the ANR, in October 2020. The objective was to strengthen research conducted there. Christelle Morançais, the Region's president, revisits the first two years of the partnership.

How would you assess the partnership between your region and the ANR?

First of all, I would like to say that I am incredibly pleased with this pioneering partnership, which raises the profile of the Pays de la Loire region.

Allow me to quote Thierry Damerval's remarks from the ANR Tour session held in the Region's assembly hall on 23 September 2022. The first stage of our ANR partnership, which led to a Framework Convention in 2020 and a Work Programme in 2020, has been outstanding. This partnership builds synergies between our two research funding agencies to support the excellence of research carried out regionally. It provides calls for proposals with better exposure for the ANR, the region, and researchers.

"The partnership between the ANR and the Pays de la Loire region provides calls for proposals with better exposure for the ANR, the Region, and researchers."

In this respect, regional schemes should soon appear on the national call for proposals portal appelsprojetsrecherche.fr.

Backing projects submitted regionally with ANR expertise leads to improved assessment, and helps our region's researchers pursue a pathway to excellence.

How is the ANR supporting you in forging your regional research strategy?

It is a "win-win" situation, as the ANR and the region are both partners, they share the respective knowledge of their ecosystems.

The ANR mobilises its pool of expertise and provides its national research outlook to help research in the Loire region identify pathways to excellence and conceive more effective ways of working between the local and national level. The ANR helps the region to work in a subsidiary and complementary manner with its tools. Another stage could lead to designing common tools to meet the more specific needs of the territory. The region provides the ANR with knowledge of the local community, and its experience

in the field. For example, as a pioneer in the implementation of strategies to strengthen dialogue between science and society, the region, which recently renewed its framework document for the 2023-2028 period, is sharing its experience on this key subject with the ANR.

What are the objectives of your research and innovation strategy?

It can be summed up in three "Ts": territories, trajectories, and transitions. Our regional policy, which was renewed for the 2021-2027 period, supports ambitions to develop the research and innovation potential of our region, including nurturing pathways to excellence, creating conditions of attractiveness—especially by funding research infrastructure—and developing and expanding scientific employment opportunities. More generally, research and innovation are the basic foundation for increasing the region's individual and collective agility, creating economic value, and successfully completing ongoing societal changes.

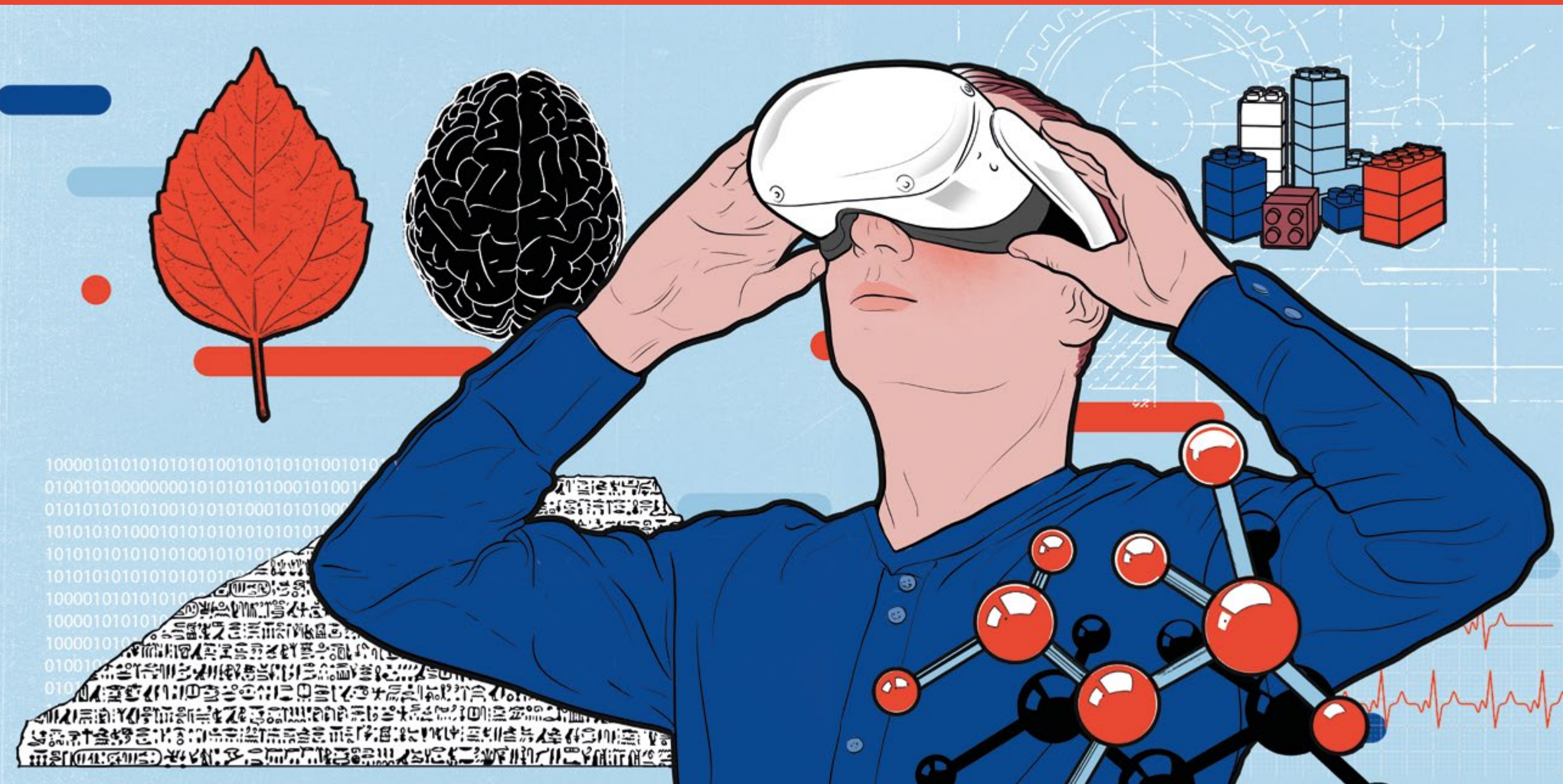
The region is especially counting on the ANR partnership to further pursue the mobilisation of research and innovation stakeholders, thereby addressing its multiple challenges, whether they be demographic, economic, energy-related, food-related, or environmental in nature. ●



Christelle Morançais and Thierry Damerval, President and CEO of the ANR, during the 2023 ANR Tour in Nantes.

20 scientific projects

ANR-supported projects cover all scientific disciplines and address key global research areas. A spotlight on twenty projects that capture this wealth and that were funded under the main components of the Agency's plan of action—the Generic Call for Proposals (AAPG), European and international research, and public-private partnership-based research—as well as the French government's investment programme, France 2030.



SINREP

Treating obsessive compulsive disorders at their roots

Through an innovative approach combining neuroscience and genetics, the SINREP project successfully identified promising neuronal targets to treat patients with obsessive compulsive disorders. The aim is to stimulate the striatum, a part of the brain that is essential to regulating these disorders.



Obsessive compulsive disorder (OCD) is an incapacitating mental illness affecting 2 to 3% of the population. It is characterised by the development of intrusive and obsessive ideas, with repetitive compulsive behaviours. The team adopted a translational approach to study the neuronal mechanisms of the disorder, by simultaneously assessing OCD patients and mouse models with compulsive disorders.

The SINREP project demonstrated similar behavioural deficiencies in patients and the model—especially a lack of behavioural flexibility when it comes to adapting to new rules. In addition, scientists proved that specific neurons known as “interneurons”—located in the striatum—play an important part in regulating compulsive behaviours. For instance, they established that these compulsive behaviours can be suppressed in the mouse model simply by stimulating these interneurons using optogenetics (genetic neuron photosensitisation).

PROSPECTS

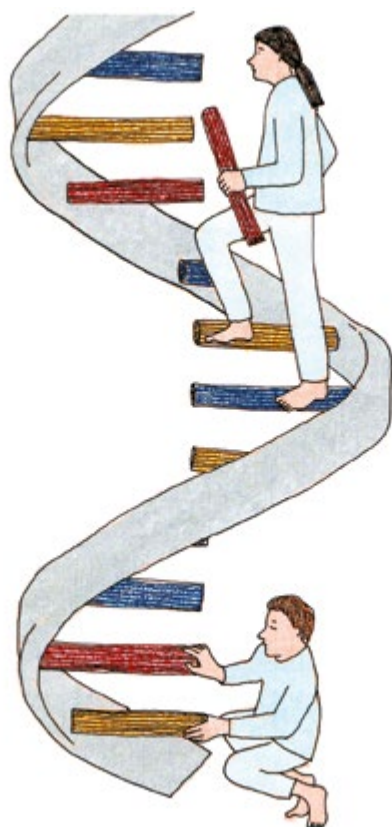
The results achieved in the mouse model will help the team test innovative therapeutic approaches, with a view to adjusting the activity of these striatal interneurons in patients with OCD.

Project	Role of striatal interneurons in controlling repetitive behaviours
Programme	AAPG – JCJC
Edition	2016
ANR grant	€240,226
Duration of the project	63 months
Coordination	Éric Burguière
Website	nerb.team
Coordinating institution	NERB Lab, Paris Brain Institute / Inserm
Project region	Île-de-France

Main publication	Benzina N., N'Diaye K., Pelissolo A. <i>et al.</i> 2021. A cross-species assessment of behavioral flexibility in compulsive disorders. <i>Communications Biology</i> 4:96.
Project reference	ANR-16-CE37-0019

RiboOPMD

The key to a promising therapy for a rare neuromuscular disorder is in RNA



RNAs, molecules related to DNA, play a crucial role in gene expression and protein synthesis: any disruption may result in cascading consequences, spreading as far as muscle and nerve cells. The RiboOPMD project took an interest in such disruptions in the hopes of treating a rare disorder: oculopharyngeal muscular dystrophy.

The riboOPMD project sought to understand the role played by two types of RNA—ribosomal RNA and non-coding RNA—in oculopharyngeal muscular dystrophy (OPMD), a rare disorder characterised by the progressive weakening of specific muscles.

The research helped identify new molecular mechanisms that develop this pathology. These mechanisms include major failures in ribosomal RNA maturation and monitoring, various cellular stresses (oxidative stress and endoplasmic reticulum stress), as well as an

increase in protein degradation leading to muscular atrophy.

It is also significant that the project helped identify several molecules of therapeutic interest. Their analyses will be continued on a collaborative basis, with a view to identifying possible treatments for OPMD and other related neurodegenerative diseases.

PROSPECTS

The team is using a genetic approach to continue analysing the role played by RNAs in OPMD. It is also pursuing the identification of new promising therapeutic molecules through collaborations with clinicians.

Project	Ribosomal and small non-coding RNAs in oculopharyngeal muscular dystrophy	Partners	Monash Biomedicine Discovery Institute (Australia)
Programme	AAPG - PRC	Main publication	Ribot C., Soler C., Chartier A. <i>et al.</i> 2022. Activation of the ubiquitin-proteasome system contributes to oculopharyngeal muscular dystrophy through muscle atrophy. <i>PLoS Genetics</i> 18.
Edition	2017	Project reference	ANR-17-CE12-0011
ANR grant	€ 352,916		
Duration of the project	48 months		
Coordination	Martine Simonelig		
Coordinating institution	Institute of Human Genetics - IGH CNRS / University of Montpellier		
Project region	Occitanie		

RISCOPE

A territory-based system for early warning of coastal flooding

The consequences of global warming and melting ice are affecting coastlines across the globe. In the face of threats to ecosystems and populations, the RISCOPE project is developing an ambitious forecasting system, which can be customised based on each territory.



Most early warning systems for coastal flooding rely on forecasts of hydrodynamic conditions off coasts. Recent scientific breakthroughs now provide for the accurate modelling of coastal flooding, although computation time takes too long for their use in one, two, or three-day forecasting systems.

The RISCOPE project developed a method based on the needs of local stakeholders. By including this custom data within its research, the team developed meta-models, in other words mathematical functions that provide the same responses as the initial digital model, but with negligible computational costs on the order of a few minutes. The method was developed for the Gâvres Peninsula (Morbihan), where a demonstrator was set up.

PROSPECTS

The meta-modelling approaches developed under the RISCOPE project are the foundation for the new ORACLES project, which has been funded by the ANR since 2022. The objective is to incorporate uncertainties relating to the forecasting of atmospheric conditions (overall forecasting) within forecasts for coastal flooding, and to predict their consequences on territories. The innovative approach developed by RISCOPE may also be applied to other fields, such as water resources.

Project	Risk-based system for coastal flooding early warning
Programme	AAPG - PRCE
Edition	2016
ANR grant	€546,916
Duration of the project	48 months
Coordination	Déborah Idier
Website	perso.math.univ-toulouse.fr/riscope
Coordinating institution	BRGM
Project region	Brittany

Partners	<ul style="list-style-type: none"> • Institute of Mathematics of Toulouse - IMT • Antea-GeoHyd
Main publication	Idier D., Aurouet A., Bachoc F. <i>et al.</i> 2021. A user-oriented local coastal flooding early warning system using meta-modelling techniques. <i>Journal of Marine Science and Engineering</i> 9:11.
Project reference	ANR-16-CE04-0011

RAVEX

Improving the prevention and management of volcanic risks in Martinique



The RAVEX project addresses the geological, ecological, and socio-economic impacts of a potential major volcanic eruption in Martinique, as well as the chain reactions it would set in motion, from ash plumes to tsunami risks. The objective is to develop suitable predictive models and risk management plans.

The RAVEX project uses an integrated approach to assess the hazards associated with explosive volcanism. By using the island of Martinique as a case study, it seeks to better understand the volcanic phenomena that can occur in succession, and how risk representation influences the approaches taken by local stakeholders during a crisis.

A typical succession of hazards includes eruptive plumes collapsing to form pyroclastic flows, whose entry into the sea may then trigger tsunamis.

Theoretical and laboratory studies are used to develop models that simulate eruptions on the island and foresee their impacts. The integrative aspect is defined by combining various approaches, from the upstream study of past eruptions to analysis of the measures taken by local stakeholders involved in downstream risk management.

PROSPECTS

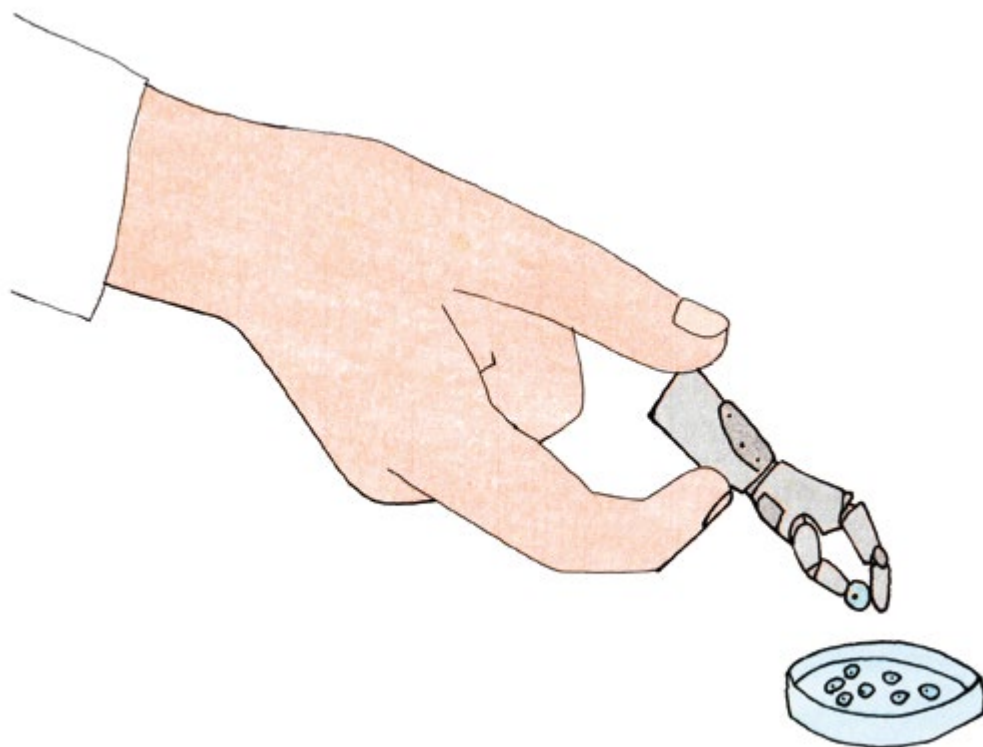
This research will now focus on better understanding the basic mechanisms of turbulent volcanic flows, in order to refine predictive models and explore options for managing volcanic crises in other situations.

Project	Development of an integrated approach to reduce the risks associated with explosive volcanism, from hazards research to crisis management tools: Martinique case study	Partners	<ul style="list-style-type: none"> Laboratory for Applied Sciences in Mechanics and Electrical Engineering - SIAME Centre for International Studies and Research - CERI Integration and Cooperation in the European Area - ICEE Blaise Pascal Mathematics Laboratory - LMBP Paris Institute of Planetary Physics - IPGP
Programme	AAPG - PRC	Main publication	Michaud-Dubuy A., Carazzo G., Kaminski E. 2021. Volcanic hazard assessment for tephra fallout in Martinique. <i>Journal of Applied Volcanology</i> 10:8.
Edition	2016	Project reference	ANR-16-CE03-0002
ANR grant	€619,003	Coordination	Olivier Roche
Duration of the project	48 months	Coordinating institution	Magmas and Volcanoes Laboratory, University of Clermont Auvergne / IRD / CNRS
Project region	Martinique		

IOTA

Interactive micro-robots to manipulate cells

The IOTA project aims to conceive a novel scientific instrument for biomedical applications: interactive optical tweezers with tactile feedback. This tool will help researchers interact—directly and via intuition—with living cells and biological samples in a Petri dish.



The IOTA project developed a system combining laser manipulation techniques (optical tweezers) with a tactile force feedback user interface. The latter allows the operator to directly control biochemical samples, ranging from large molecules and cells to tissue.

This system addresses the needs of fields such as biology, chemistry, and the medical sciences. Its design hides the complexity of the robotic parts from the operator, and provides an easy-to-use, intuitive, and familiar interface using a touchscreen, augmented with extremely precise tactile feedback.

PROSPECTS

The IOTA project developed an interactive robotic system whose effectiveness has been demonstrated through the manipulation of red blood cells. The next step will consist in using this in mechanobiology, especially to measure the adhesion of T-cells produced in bone marrow on tumours.

Project	Interactive optical tweezers with tactile feedback
Programme	AAPG – PRC
Edition	2016
ANR grant	€287,787
Duration of the project	36 months
Coordination	Sinan Haliyo
Website	iota.isir.upmc.fr
Coordinating institution	Institute for Intelligent Systems and Robotics – ISIR, Sorbonne University / CNRS
Project region	Île-de-France

Partner	Etienne-Jules Marey Institute of Movement Sciences – ISM
Main publication	Gerena E., Régnier S., Haliyo, S. 2019. High-Bandwidth 3-D Multitrap Actuation Technique for 6-DoF Real-Time Control of Optical Robots. IEEE Robotics and Automation Letters. vol. 4, no. 2, pp. 647-654.
Project reference	ANR-16-CE33-0002

SKYLOGIC

Revolutionising electronic memory by controlling a magnetic quasiparticle: skyrmions



Skyrmions were theorised in 1989, but only observed in 2009. The SKYLOGIC project aims to stabilise and manipulate these "magnetic bubbles" at the nano-scale in order to develop powerful and energy-efficient electronic memory systems.

Skyrmions are nano-scale magnetic textures consisting of basic nanomagnets that wrap around to form a stable spiral structure. Skyrmions can be manipulated by currents, thus paving the way for their use as an information medium in computer devices.

In this project, scientists proposed using these quasiparticles as basic components for innovative and energy-efficient "memory calculation" technology. A number of major results were achieved, starting with the stabilisation of skyrmions measuring less than 30 nanometres, at room temperature and in

the absence of a magnetic field. They then demonstrated their ultra-fast movement (greater than 1 kilometre per second) with the help of an electric current, and helped demonstrate their creation using an electric current and ultra-fast laser pulses. Finally, logical operations based on interaction between skyrmions were identified.

PROSPECTS

These results pave the way for using magnetic skyrmions in devices combining memory and computing functions, both conventional (computing) and "neuromorphic," such as synapses or artificial neurons.

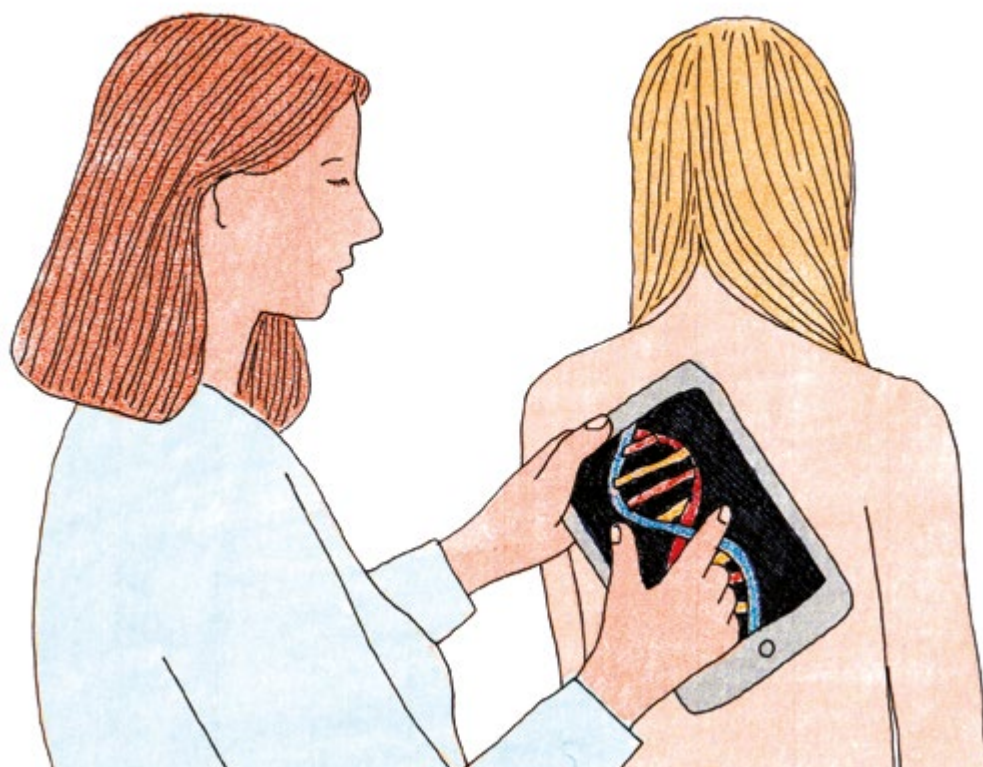
Project	Manipulation of magnetic skyrmions for logic-in-memory applications
Programme	AAPG - JCJC
Edition	2017
ANR grant	€255,108
Duration of the project	36 months
Coordination	Olivier Boulle
Website	spintec.fr
Coordinating institution	SPINtronic and Technology of Components, CEA / CNRS / Grenoble Alpes University / Grenoble INP
Project region	Auvergne-Rhône-Alpes

Main publication	Juge R., Kaushik Bairagi K., Gaurav Rana K., et al. 2021. Helium Ions Put Magnetic Skyrmions on the Track. <i>Nano Letters</i> 21 (7), 2989-2996.
Project reference	ANR-17-CE24-0045

OPT

Advancing personalised treatment

The OPT project uses recent statistical methods to establish personalised profiles for patients responding to a treatment. The ultimate goal is to provide personalised medicine, and to transform prevention and care by establishing individualised rules for treatment.



Personalised medicine seeks to determine the best therapeutic decision for a particular patient at a given moment. One of the ways this can be done is to identify the demographic, clinical, biological, genetic, and metabolic characteristics of the person associated with a response to treatment. It is then possible to deduce an individualised treatment rule adapted to individual characteristics, leading to the best therapeutic outcome.

The OPT project involves both basic and translational research, and has enabled both the development of statistical methods and their application to real medical situations. The team proposed new statistical and machine learning approaches to develop individualised treatment rules and assess the impact of their implementation. Individualised treatment rules were also developed for several therapeutic conditions, such as optimising the start of dialysis for patients in intensive care with acute kidney failure.

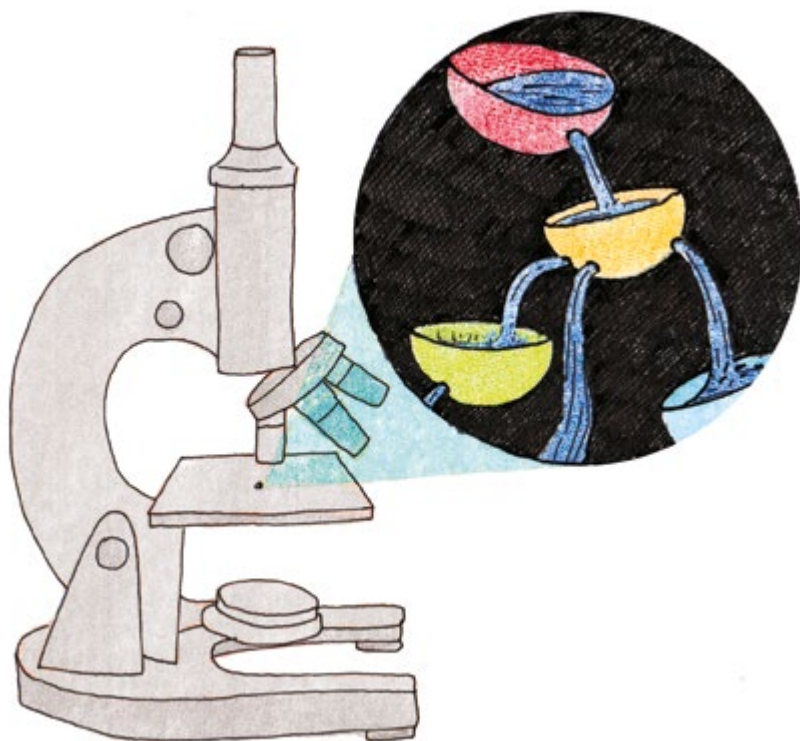
PROSPECTS

The OPT project gave rise to four other collaborative projects, thereby enabling the team to pursue and expand its work on individualised treatment rules and dynamic treatment regimes.

Project	Optimisation of personalised treatments	Partner	UMR 8001 Probability, Statistics, and Modelling Laboratory - LPSM
Programme	AAPG - PRC	Main publication	Du Q., Biau G., Petit F., et al. 2021. Wasserstein random forests and applications in heterogeneous treatment effects. in Banerjee A., Fukumizu K. (eds), <i>Proceedings of Machine Learning Research</i> 130.
Edition	2019	Project reference	ANR-18-CE36-0010
ANR grant	€290,304		
Duration of the project	24 months		
Coordination	Raphaël Porcher		
Coordinating institution	Centre of Research in Epidemiology and Statistics - CRESS, Sorbonne Paris Cité / Inserm		
Project region	Île-de-France		

NEPTUNE

Nanoscale fluid mechanics



The NEPTUNE project studied fluid mechanics in channels so narrow that only nano-sized objects could flow through them. The properties of these "ultra-confined" fluids offer unexpected prospects, from treatment and water transportation to the development of artificial neurons.

The world of the "infinitely small" in fluidics is where continuum fluid mechanics meets the atomic—and even quantum—nature of matter. The NEPTUNE project adopted an experimental, theoretical, and digital approach in order to develop a better understanding of the non-conventional transport of water and ions through nano-sized channels.

Their efforts opened a "cabinet of curiosities" with new properties: subtle electrification processes at the molecular level, quantum friction in carbon nanotubes, emerging memory effects in 2D nanochannels capable of artificially reproducing basic neuromorphic functions of neuronal assemblies, etc. These breakthroughs offer promising avenues: nanofluidics is a field where the distance between basic science and breakthrough innovation is quite small indeed.

PROSPECTS

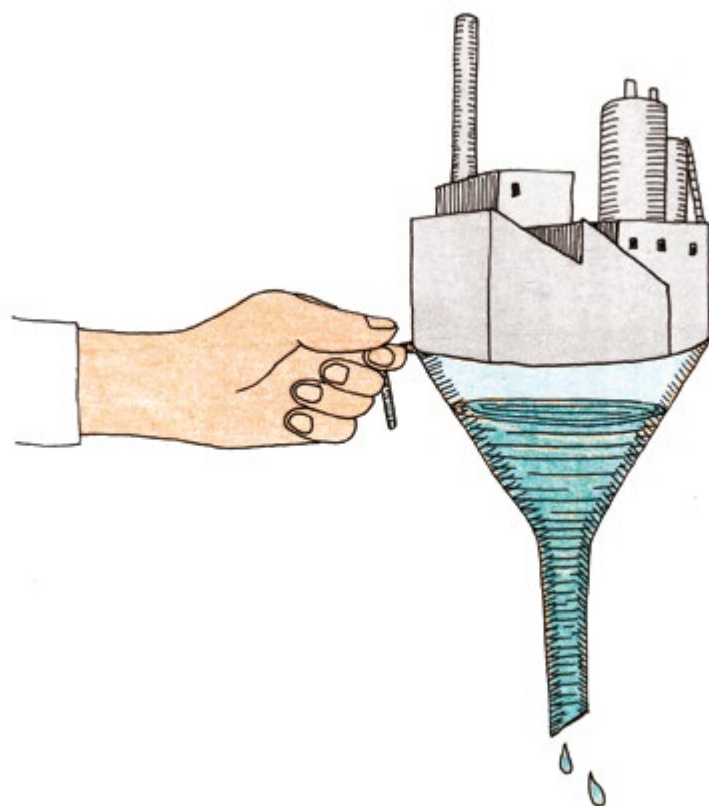
This makes possible quantum engineering for water transport. A second possibility is iontronics in artificial channels, with a view to creating ionic calculators. These are some of the advantages of future water technologies.

Project	From weak to strong non-equilibrium transport of fluids at the nanoscales	Partners	<ul style="list-style-type: none"> • Pasteur Laboratory • Phenix Laboratory • Department of Physics, Free University of Berlin (Germany)
Programme	AAPG – PRCI	Main publication	Kavokine N., Bocquet M.-L., Bocquet L. 2022. Fluctuation-induced quantum friction in nanoscale water flows. <i>Nature</i> 602.
Edition	2017	Project reference	ANR-17-CE09-0046
ANR grant	€621,710		
Duration of the project	36 months		
Coordination	Lyderic Bocquet		
Website	hummlink.com		
Coordinating institution	Statistical Physics Laboratory, ENS/CNRS		
Project region	Île-de-France		

MINIMEAU

Hydraulic sobriety: eco-designing the agro-food industry

The scarcity of water resources requires all socio-economic stakeholders to reduce their consumption and consider new ways of sharing. As part of this effort, the MINIMEAU project developed optimisation tools for the agro-food industry that help save up to 30% of resources, and redesign water systems at lower cost.



Quality and affordable water is a must for the agro-food industry, which still consumes up to 10 litres per kilogramme of end product.

Under the MINIMEAU project, decision-support tools were developed to help these industries reduce their water consumption by redesigning their systems using water pinch analysis. For instance the scenarios generated by these tools integrate short cycles for direct re-use, or the recycling of effluents after treatment.

Teams simulated the treatment of effluents using a membrane-based process. They also checked the eco-design of scenarios based on environmental criteria (water life cycle assessment and footprint). These tools were then used in this case study focusing on four sectors within the agro-food industry: fats, milk processing, wine processing, and canned vegetables.

PROSPECTS

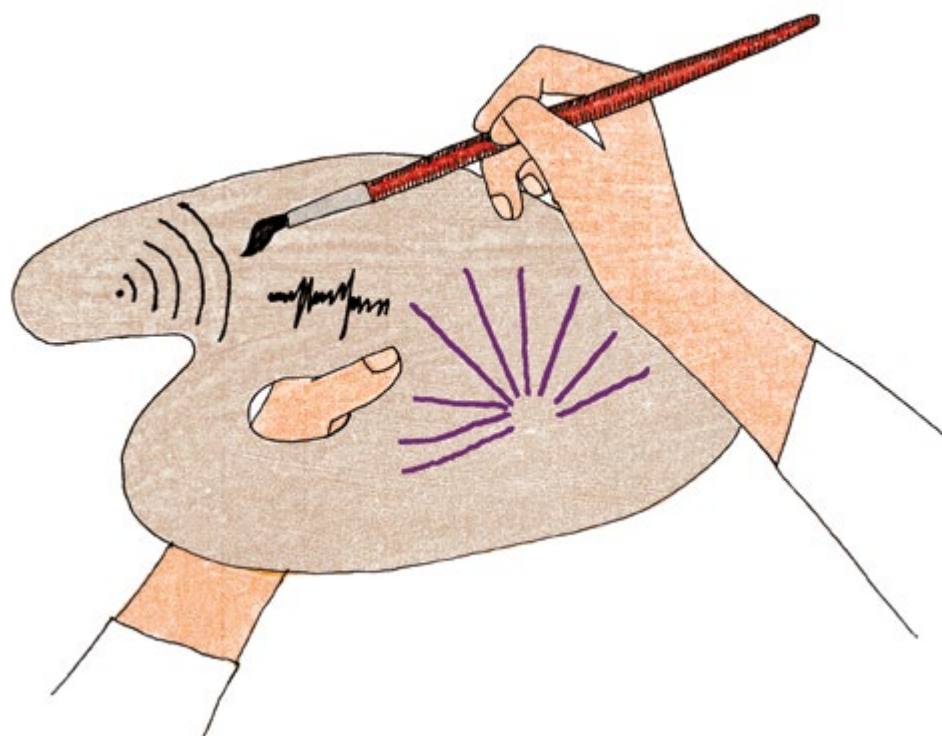
The water savings generated by the project can be as high as 30%. The proposed solutions are not particularly expensive in light of the water saved and pollution avoided. The project resulted in a toolbox, most of which is in open access.

Project	Minimisation of water consumption in agro-food industries by developing a combined approach integrating Water Footprint and Pinch methods
Programme	AAPG - PRCE
Edition	2017
ANR grant	€884,372
Duration of the project	54 months
Coordination	Claire Fargues
Website	minimeau.fr
Coordinating institution	UMR SayFood, AgroParisTech/INRAE/Paris-Saclay University
Project region	Île-de-France

Partners	<ul style="list-style-type: none"> • UMR ITAP - Technologies and Methods for the Agriculture of Tomorrow • ACTALIA • CRITT agroalimentaires Sud • CTCPA • French Wine and Vine Institute - IFV • Institute of Fats & Related Products - ITERG • ProSim SA
Main publication	Nemati-Amirkolaii K., Romdhana H., Lameloise M.-L. 2021. A novel user-friendly tool for minimizing water use in processing industry. <i>Cleaner Engineering and Technology</i> 4.
Project reference	ANR-17-CE10-0015

SonoPhotoChem

Combining ultrasound and ultraviolet in a new technique to synthesize molecules



The SonoPhotoChem project demonstrated the value of combining the power of ultrasound and ultraviolet in order to reduce the environmental impact of traditional processes for synthesizing molecules—including those used for plastic production.

The project developed innovative, competitive, and eco-efficient processes combining sonochemistry (ultrasounds) and photocatalysis (ultraviolet) to demonstrate synergistic effects. The team explored several experimental parameters involving sonochemistry and photocatalysis—first separately and then jointly—in order to characterise reaction mechanisms. It subsequently improved efficiency, selectivity, and reaction times for several molecules of interest.

The design of a unique, scalable, multi-frequency, and multi-wavelength sonophotochemical prototype helped conduct experiments in various conditions between 200 millilitres and 5 litres. It also optimised the transition from a “batch” industrial process (processing in batches) to a continuous process. The project also helped create a sonochemical platform made available to laboratories and enterprises to test new developments and applications.

PROSPECTS

The cooperation initiated during the project will continue both internationally and with the EDYTEM laboratory. Several enterprises are also starting ultrasound-based projects. The objective now is to successfully scale-up the highly promising results achieved in the laboratory.

Project	How to control and scale-up the selective oxidation under sono/photochemical activation?	Main publication	Chatel G. 2021. <i>La sonochimie, un domaine d'innovation sous-exploité ? Annales des Mines, Responsabilité et Environnement 103.</i>
Programme	AAPG - JCJC	Project reference	ANR-17-CE07-0055
Edition	2018		
ANR grant	€199,746		
Duration of the project	36 months		
Coordination	Grégory Chatel		
Coordinating institution	EDYTEM Laboratory – Mountain Environments, Dynamics, and Territories, University of Savoie Mont Blanc/CNRS		
Project region	Auvergne-Rhône-Alpes		

Cardio-oncology

Preventing the heart diseases associated with specific chemotherapies

Some therapeutic agents used for chemotherapy may present a risk of cardiac toxicity. To address this problem, which is unfamiliar to the general public, the Cardio-oncology project is developing innovative agents, and emphasising a personalised dosage regimen.



The Cardio-oncology project helped stress the toxic effects of certain drugs used in chemotherapy on heart function. Through efforts on cellular and mouse models, the teams successfully identified new signalling pathways involved in this cardiotoxicity process.

The project developed new pharmacologic agents whose cardioprotective effects were validated *in vitro* and *in vivo*, via research conducted using tumour and mouse models previously exposed to chronic cardiotoxicity-induced treatments. Scientists also sought

to identify biomarkers for heart function in cancer patients, in order to determine a treatment window and prevent potential heart failure. The results from this study are being analysed, although potential biomarkers that can identify patients predisposed to developing cardiotoxicity have already been identified.

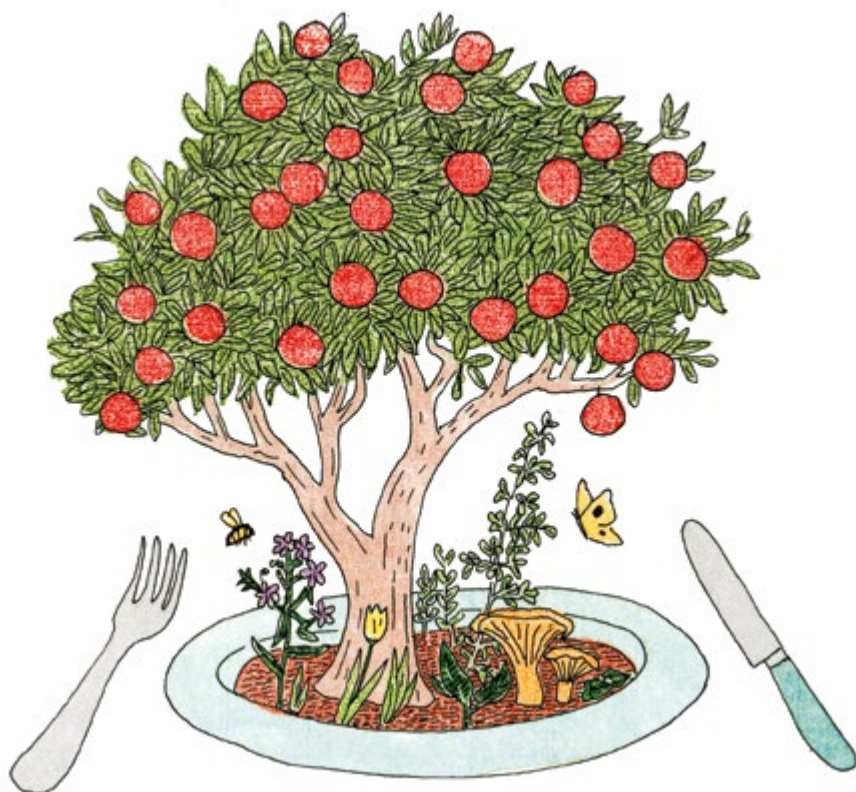
PROSPECTS

The project's next stage will develop and clinically assess an innovative drug candidate improving heart function in patients for whom anticancer drugs have adverse cardiac effects.

Project	Early Detection and Prevention of Cardiac Dysfunction and Heart Failure Induced by Cancer Chemotherapeutics	Partners	<ul style="list-style-type: none"> • European Institute of Oncology (Italy) • National Chung Cheng University (Taiwan) • ISB-HMGU (Germany) • Nobel Pharm Ulkar Holding A. S. (Turkey) • Mira Institute-University of Twente (Netherlands)
Programme	ERA-NET		
Edition	2016		
ANR grant	€244,607		
Duration of the project	36 months	Main publication	Hsu P. Y., Mammadova A., Benkirane-Jessel N., <i>et al.</i> 2021. "Updates on anticancer therapy-mediated vascular toxicity and new horizons in therapeutic strategies." <i>Frontiers in Cardiovascular Medicine</i> 8.
Coordination	Canan Nebigil	Project reference	ANR-16-ECVD-0005
Website	era-cvd-2017.u-strasbg.fr		
Coordinating institution	UMR 1260 Nano Regenerative Medicine - RNM, University of Strasbourg/ Inserm		
Project region	Grand Est		

DIVINFOOD

Uncovering the ecological and economic potential of short, plant-based agro-food chains



A European project bringing together scientists, farmers, manufacturers, and local authorities, DIVINFOOD contributes to the ecological transformation of the agro-food chain. It lays the foundations for a system that values local distribution networks, healthy and sustainable products, and more virtuous business models.

For scientists, building an ambitious European project involves taking a huge risk over a long period of time. The ANR's MRSEI instrument encourages and helps French researchers coordinate such projects. In particular, it helped implement the DIVINFOOD proposal, coordinated by an INRAE team and submitted for funding as part of a call for proposals under the European H2020 programme. The assessment of the proposal—of its scientific content and preliminary development—were highly valuable, as was the financial support that bolstered the initial project. The project,

bringing together twenty-six partners from seven countries, was funded in 2022 by the European Commission for a total of €6 million over a five-year period. It aims to develop food chains that value agrobiodiversity, and that meet the growing demands of consumers with respect to healthy and local products contributing to sustainable food systems.

PROSPECTS

The objective is to structure and stabilise sustainable regional networks to collectively manage agrobiodiversity. DIVINFOOD supports the development of an economy that values the services provided by underutilised species and varieties.

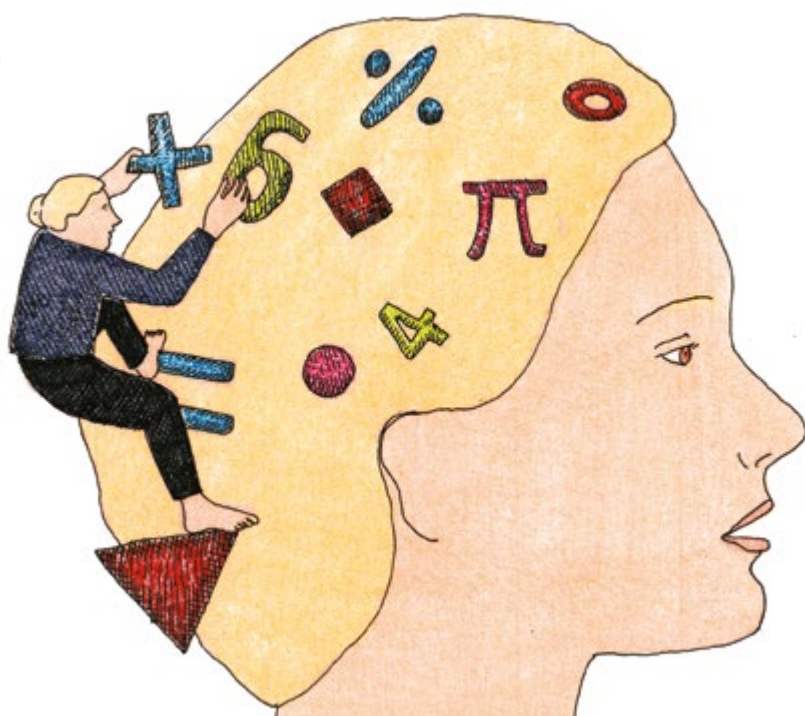
Project	Co-constructing interactive short food chains to value agrobiodiversity in healthy plant-based food
Programme	MRSEI
Edition	2020
ANR grant	€15,552
Duration of the project	24 months
Coordination	Yuna Chiffolleau
Website	divinfood.eu
Coordinating institution	UMR Innovation - Innovation and Development in Agriculture and Food, INRAE/Cirad/Montpellier Agro Institute

Project region	Occitanie
Main publication	Chiffolleau Y., Dourian T., Perényi S., et al. 2022. White Paper for Food Chains Actors for Using Agrobiodiversity, Listing Consumer Expectations and Aversions. EU DIVINFOOD project, report.
Project reference	ANR-20-MRS1-0010

FFIUM

Exploring the limits of mathematical formalism

Formal mathematics were created to provide a precise framework for reasoning, one that avoids paradoxes and logical flaws. The FFIUM project explores the limits of this universal foundation of mathematics.



Mathematical formalism denotes the universally shared language and semantics that frame mathematical statements and demonstrations. The central issue of the FFIUM project is to question this concept, and to understand how formalisation contributes to understanding mathematics.

How does formalisation transform informal mathematics into a form that clarifies the logical dependencies between the various declarations? How does it contribute to identifying models? What is the benefit of comparing a formal theory with its original informal theory? These issues were explored

through philosophical reflection, combined with a technical understanding of formalisation methods.

The results of these efforts contradict certain types of mathematical understanding. The project provided an in-depth assessment of the merits and limits of the epistemic value of axiomatic systems, mathematical thought experiments, and formalisation in computer science and mathematics. It also provided a study of the link between formalisation and structuralism, and more broadly of the usefulness of mathematics.

PROSPECTS

The understanding of mathematics itself is still elusive, and remains difficult to define. A particularly important challenge is the elusiveness of the notion of content with regard to a mathematical or logical theory.

Project	Formalism, Formalisation, Intuition and Understanding of Mathematics: from information practice to formal systems and back again	Partners	<ul style="list-style-type: none"> • Institute for the History and Philosophy of Science and Technology, IHPST • Munich Center of Mathematical Philosophy, MCMP • Institute Elie Cartan of Lorraine - IECL
Programme	FRAL	Main publication	Panza M., Arana A. 2022. <i>Précis de philosophie de la logique et des mathématiques. Volume 2: Philosophie des mathématiques.</i> Editions de la Sorbonne.
Edition	2018	Project reference	ANR-17-FRAL-0003
ANR grant	€187,160		
Duration of the project	36 months		
Coordination	Gerhard Heinzmann		
Website	sites.google.com/view/ffium		
Coordinating institution	Archives Henri-Poincaré - Laboratory for the History of Science and Philosophy, University of Lorraine / CNRS / University of Strasbourg		
Project regions	Grand Est Île-de-France		

DEEPLOMATICS

Using artificial intelligence to counter the threat of malicious drones



Espionage, flying over sensitive sites, Wi-Fi network hacking, armed attacks... In view of the growing illegal use of drones, the DEEPLOMATICS project implemented an innovative solution based on artificial intelligence. At the core of this detection strategy: acoustic and visual drone signatures.

The illegal or malicious use of drones is an emerging threat. The DEEPLOMATICS project developed a surveillance and warning system based on acoustic and video sensors backed by artificial intelligences based on deep learning. This process facilitates the live monitoring and automatic identification of a discrete moving aerial target, including in noisy and complex environments.

Special attention was given to robust processes, and compliance with the real-time operational constraints of the surveillance network's smart acoustic and optronics modules. The project led to the creation of a functioning demonstrator, which proves that the solution can be implemented realistically in a large number of scenarios. It provides a range of original scientific and technical solutions for the automatic recognition of acoustic signatures, combined with geolocated target monitoring.

PROSPECTS

A development strategy with a partner enterprise is underway to design consolidated versions of the prototypes created during the project. The resulting scientific breakthroughs will help address scenarios not covered by the project.

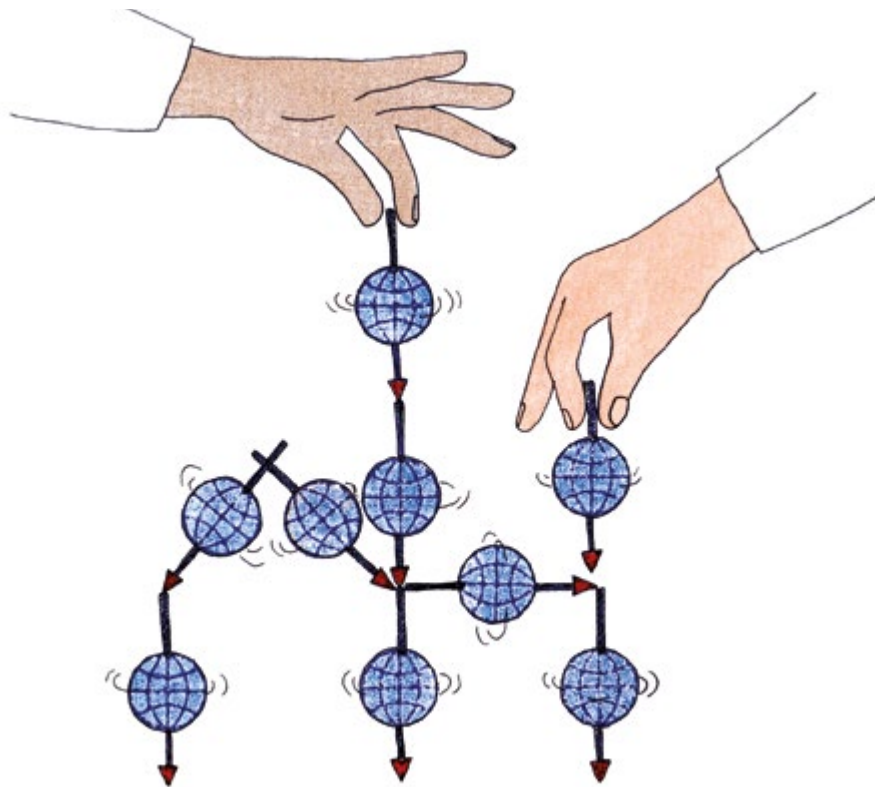
Project	Multimodal tracking and identification of low signature flying targets using deep learning
Programme	ASTRID
Edition	2018
ANR grant	€292,649
Duration of the project	36 months
Coordination	Éric Bavu
Website	deplomatics.gitlab.io
Coordinating institution	Structural Mechanics and Coupled Systems Laboratory - LMSSC, CNAM
Project region	Île-de-France

Partners	<ul style="list-style-type: none"> • Center for Studies and Research in Computer Science and Communication - CEDRIC • French-German Research Institute of Saint-Louis - ISL • ROBOOST SAS
Main publication	Pujol H., Bavu É., Garcia A. 2021. BeamLearning: an end-to-end deep learning approach for the angular localization of sound sources using raw multichannel acoustic pressure data. <i>Journal of the Acoustical Society of America</i> 149:6
Project reference	ANR-18-ASTR-0008

NASNIQ

Stabilised subatomic particles to create more powerful quantum computers

As the competition around the development and control of quantum technologies intensifies, the NASNIQ Industrial Chair has stabilised a key property of subatomic particles—spin. A crucial breakthrough in improving the encoding of quantum information units (qubits).



The NASNIQ Chair provided Atos, a French enterprise, with high-level scientific monitoring in quantum computing. It also sought to move beyond current research on quantum computers, which has struggled with developing qubits with a quantum coherence greater than that of current superconducting qubits. Its research focused on spins with high quantum coherence in order to achieve more robust qubits. The sensitivity of the paramagnetic resonance of electronic spins was first improved by five orders of magnitude, thereby

opening up new fields for this technique. The manipulation and measurement of a single electronic spin were then carried out using a unique, ultra-low-noise microwave photo detector developed by the team.

PROSPECTS

The development of quantum bits based on electronic and nuclear spin remains a vital stage in developing the IT of the future. Another central issue is the development of applications exploiting NASNIQ results.

Project	New architecture with nuclear spins for quantum information
Programme	Industrial Chair
Edition	2017
ANR grant	€600,000
Duration of the project	54 months
Coordination	Daniel Estève
Coordinating institution	Laboratory of Condensed Matter Physics, CEA / CNRS / Paris-Saclay University
Project region	Île-de-France

Partners	- Atos - Chimie ParisTech - Provence Institute of Materials Microelectronics Nanosciences - IM2NP - Aix-Marseille University
Main publication	Wang Z., Balembois L., Rančić M. <i>et al.</i> 2023. Single electron-spin-resonance detection by microwave photon counting. <i>Nature (preprint)</i> .
Project reference	ANR-17-CHIN-0001

P2R

Making radioactivity safer to use



Through close collaboration between scientists and industrial actors, the P2R joint laboratory (LabCom) is developing disruptive technologies in ionising radiation metrology and its use in non-destructive testing. A necessary development in view of the risk of radiation exposure, whether natural or human in origin.

In connection with the use of nuclear energy, demand for radiation protection techniques has received support, which will increase in the coming years. There are also significant needs in nuclear medicine and homeland security. To help meet these challenges, the Particle Physics for Radiation Protection LabCom (P2R), established in partnership with the French enterprise Carmelec, is relying on the industrialisation of innovative techniques growing out of research on ionising radiation detection.

With its network of clients and users, Carmelec identified emerging needs early. R&D studies were then jointly conducted between the CNRS and the enterprise in order to develop the innovations required to address these needs. Finally, when sufficient maturity level is attained, Carmelec handles the entire industrialisation process, from manufacturing to marketing. This global approach helps ensure the perfect match between user needs, the business model in place, and areas for technical development.

PROSPECTS

Following a first LabCom maturation stage, made possible through ANR funding (2017-2021), the partnership has been extended until 2024. An initial innovation has been brought to market, and know-how licenses and a patent are being submitted. New research areas are also being considered.

Project	Particle physics for radioprotection
Programme	LabCom
Edition	2017
ANR grant	€300,000
Duration of the project	36 months
Coordination	Cédric Cerna
Website	labcom-p2r.in2p3.fr
Coordinating institution	Dual Infinity Physics Laboratory - LP2i, CNRS/University of Bordeaux
Project region	Nouvelle-Aquitaine

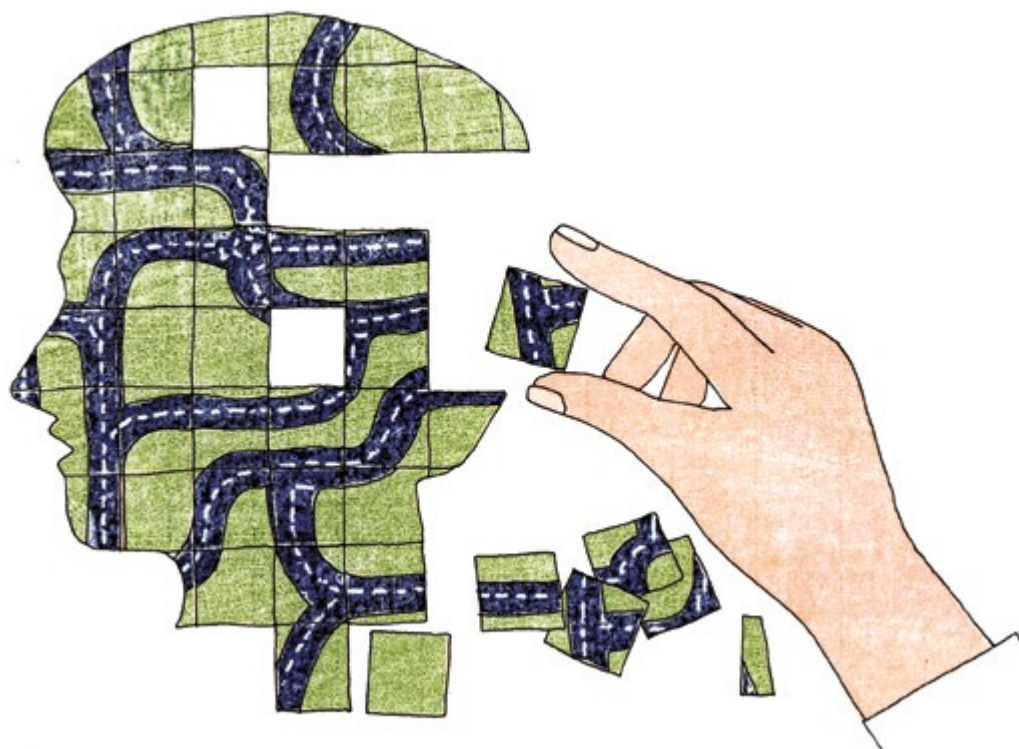
Partners	Carmelec SARL
Project reference	ANR-17-LCV1-0002

SHIVA

A step forward in preventing cognitive impairment and dementia



The SHIVA project focuses on cerebral small vessel diseases, a pathology often associated with age-related dementia. The project generated new preventive strategies for reducing the risks of cognitive impairment, a scourge affecting millions of people around the world each year.



Strokes and dementia are the most common causes of age-related neurological disability. After a stroke, cerebrovascular injuries greatly contribute to the appearance of dementia, but most often in the context of "hidden" cerebrovascular injuries, which can be detected by neuroimaging.

Their main cause is cerebral small vessel disease (CSVD). The SHIVA project seeks to expand our knowledge of the disease by using innovative imaging techniques, as well as a dual molecular and analytical approach. The final objective is to establish

innovative diagnostic and preventive strategies by identifying specific biomarkers and new therapeutic targets.

SHIVA reported several notable advances: a new cohort, the optimisation of a computer platform for analysing brain imaging data, the development of artificial intelligence-based algorithms to detect CSVDs in brain MRI, and the detection of 100 CSVD-associated genes.

PROSPECTS

SHIVA contributed to the first European recommendations issued for CSVD treatment, and revealed a new possible therapeutic target. The goal is to pursue customised prediction for the risk of CSVD complications, as well as their prevention.

Project	SHIVA
Programme	RHU
Grant	€8,211,379
Duration of the project	November 2019 - November 2024
Coordination	Stéphanie Debette
Website	rhu-shiva.com/fr/#
Coordinating institution	University of Bordeaux
Project region	Nouvelle-Aquitaine

Partners	<ul style="list-style-type: none"> • FEALINX • QYNAPSE • IMAGINE EYES • University Hospital of Bordeaux • Inserm • CNRS • Greater Paris University Hospitals – AP-HP • Quinze-Vingts National Ophthalmology Hospital
Main publication	Mishra A., Malik R., Hachiya T. <i>et al.</i> 2022. Stroke genetics informs drug discovery and risk prediction across ancestries. <i>Nature</i> 611(7934):115–123.
Project reference	ANR-18-RHUS-002

IDEALG

Algae, the green gold of biotechnologies



Drawing on its capacity to decipher the biological and genomic properties of algae, the IDEALG project and industrial actors developed a full-fledged valorisation sector for marine macroalgae. Its research has a wide range of applications, from food supplements to surfactants and immunotherapy.

The IDEALG project helped position France as a European leader in the development of new uses for macroalgae. The project relied on additional experts in genetics, biology, ecology, computer science, chemistry, economics, and the social sciences, and helped galvanise the French industrial base by mobilising over thirty enterprises.

In the context of integrated aquaculture, IDEALG developed new cultivation methods and selected new types of algae, in addition to making great progress in the gene sequencing of macroalgae, the understanding of their microbiota, and the characterisation of their metabolism. Over 450 macroalgae proteins were cloned and several dozen enzymes were produced, paving the way for a genuine "refinery" based on algae biomass, with applications in cosmetics and immunotherapy.

PROSPECTS

The project led to an exceptional increase in knowledge about macroalgae, and had a significant impact on the socio-economic fabric. It also contributed to the emergence of the European H2020 GENIALG project, and took part in international initiatives such as the Safe Seaweed Coalition.

Project	IDEALG
Programme	BTBR
Grant	€10,000,000
Duration of the project	August 2011 - June 2021
Coordination	Philippe Potin
Website	idealg.org
Coordinating institution	COMUE Brittany Loire University
Project region	Brittany

Partners	<ul style="list-style-type: none"> • CNRS • IFREMER • University of Western Brittany • Algae Technology & Innovation Centre - CEVA • University of Southern Brittany • University of Nantes • Rennes Graduate School of Chemistry - ENSCR • SCEA France Haliotis • INRAE • National Institute of Higher Education for Agriculture, Food and the Environment - Institut Agro
Main publication	<i>Développer la filière des macroalgues en France, 2011-2017 report.</i>
Project reference	10-BTBR-0004

IAOOS

The Arctic, a climate change observation post



The Arctic is warming four times faster than the rest of the world. To sound out changes in global glacial, oceanic, and atmospheric conditions, the IAOOS project deployed numerous monitoring platforms within this living lab for climate change.



The goal of the IAOOS project is to implement a network of drifting platforms equipped with instruments in order to simultaneously measure key parameters relating to the Arctic ocean, atmosphere, snow, and sea ice.

Innovative experimental developments began in 2011. After initial tests in 2013, global tests were conducted in the first half of 2014, and then as part of the N-ICE experiment during the winter of 2015 in Northern Svalbard, in partnership with the Norwegian Polar Institute. Deployments have continued each year, either from the North Pole (Russian station), or in

partnership with international oceanographic teams (Germany, Korea, Sweden, etc.).

The project acquired data providing new documentation regarding the development of the Arctic environment on small and medium scales. The results were the subject of numerous presentations at international conferences, in addition to publications.

PROSPECTS

Scientific activity has continued since the end of the EquipEx project in 2021, thanks to the support of Sorbonne University. The research is now focusing on ice and ocean observations.

Project	Arctic Ice, Atmosphere and Ocean Observing System
Programme	Equipex
Grant	€5,090,000
Duration of the project	February 2011 - December 2021
Coordination	Christine Provost
Coordinating institution	Sorbonne University
Project region	Brittany

Partners	<ul style="list-style-type: none"> • CNRS • French Polar Institute Paul-Émile Victor • French National Museum of Natural History - MNHN • IRD
Project reference	10-EQPX-0032

ASPIE Friendly

Access to university
for people with autism



Approximately 700,000 people in France have autism spectrum disorder. However, there are officially only 500 students with autism in higher education. The ASPIE Friendly project is developing integration and inclusion tools designed for people with autism, and for those who accommodate and support them at the university.

The ASPIE Friendly project aims to improve higher education access for people that have an autism spectrum disorder without intellectual impairment (known as "Asperger"). The central objective is to support their success, as well as their social and professional integration.

The project is implemented both before and after the transition to higher education, a particularly crucial stage for this category of young adults. ASPIE Friendly, which in 2022 was based on a consortium of twenty-five institutions, wielding significant influence

nationally, notably helping to establish a resource and support centre to disseminate results and good practices. A Scientific and Ethics Committee was also set up to advise the Steering Committee. For example, for students undergoing diagnosis, it recommended using the tools designed for autistic students, insofar as they have similar needs.

PROSPECTS

The project is helping the Interministerial Delegation for Autism develop its next national autism strategy. A charter was also approved by the Steering Committee in 2022, and should be signed by the network's institutions by the spring of 2023.

Project	ASPIE Friendly
Programme	NCUN
Grant	€5,068,000
Duration of the project	January 2018 - January 2028
Coordination	Bertrand Monthubert
Website	aspie-friendly.fr
Coordinating institution	University of Toulouse
Project region	Occitanie

Partners	<ul style="list-style-type: none"> • Paris-Est Créteil University - UPEC • University of Rouen Normandy - URN • University of Clermont Auvergne • Aix-Marseille University • University of Picardy Jules Verne • UPJV • CNAM • Grenoble Alpes University • CY Cergy Paris University • Paris-Saclay University • University of Nimes • University of Bordeaux • University of Poitiers • University of Montpellier • University of Toulouse III - Paul Sabatier • University of Lille • University of Toulouse Jean Jaurès • CRI
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Main publication	Majada M. et al. 2021. <i>La collaboration UNISCIEL-ASPIE-Friendly</i> (The UNISCIEL-ASPIE-Friendly cooperation).
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Project reference	17-NCUN-0017
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A year of commitments

In keeping with its 2022 Work Programme, the ANR continued to implement multiple long-term commitments: promoting dialogue between science and society, tackling gender inequality in selection processes, and taking part in the international push for Open Science, among others.



Encouraging dialogue between science and society

The ANR is committed to the informed dissemination of scientific knowledge, which it considers a vital tool for democratic citizenship. It encourages interdisciplinarity, improved sharing of research results, and the joint development of knowledge with citizens.

The Research Programming Law entrusted the ANR with a mission to disseminate scientific knowledge by devoting at least 1% of its support actions to research. Following extensive consultation with various stakeholders, a global Science with and for Society (SAPS) programme was set up, with the goals of supporting research focusing on these issues, fostering efforts to diffuse selected projects regardless of the scientific discipline, developing participatory research, and establishing media partnerships.

↳ Involving society in research

In July 2022, the ANR launched a call for proposals with a €5 million budget to promote collaborations between scientists and citizens—unprecedented support for participatory research, with 21 projects subsequently being selected. In addition to researchers, all of them involve civil society organisations (associations, NGOs, foundations, enterprises, sustainable and solidarity economy stakeholders, etc.) in the co-production of original

and substantial knowledge, across all scales and with a measurable impact on society.

One of the projects selected is the Coudrier project. Its goal is to reduce the risks of water shortage in the Bibracte - Morvan des Sommets Grand Site de France by developing the capacities of local populations. All stakeholders (inhabitants, users, local authorities, enterprises, etc.) are included in analysing the local water cycle with researchers, and exploring ways to sustainably manage this endangered resource.

By supporting participatory research, the ANR acknowledges that combining knowledge (scientific, action, use-related) and sharing experiences are essential to better understanding and solving many research issues.

↳ Disseminating science in all areas of society

In 2022, the ANR devoted €2.73 million to "mobilising researchers to promote scientific,

technical and industrial culture (CSTI)." This year, the scheme, which was already in place in 2021, targeted the projects selected in the 2020 Generic Call for Proposals. It involves managing institutions that implement—as part of their overall funding—communication and mediation actions bringing together project coordinators and local, regional, and national CSTI structures (university cultural departments, media, museums, cultural operators, associations). The initiatives of 52 institutions were promoted through conferences, newspaper articles, educational workshops, and audiovisual productions.

For instance, the Diagonale-Paris-Saclay University develops scientific mediation and communication tools, and brings together stakeholders engaged in science-society dialogue within the university (students, teachers and researchers), as well as regionally and nationally.

↳ Meeting with Society

The ANR also supports scientific culture initiatives in partnership with national media.

This support was particularly evident during the Festival of Science, which opened in October 2022 with the airing of a series of *Science en direct* (Science Live) programmes presented by L'Esprit Sorcier

TV. Valérie Fromentin, Head of the Social Sciences and Humanities Department, was the ANR ambassador for this event at the Paris National Museum of Natural History. Anne-Hélène Prieur-Richard, Head of the Environment, Ecosystems and Biological Resources Department, presented several research projects funded by the Agency that focus on climate change and the environmental transition.

The ANR also renewed its support for the Et Maintenant? festival, two days of meetings and debates organised in October in partnership with France Culture and Arte. Two mediation workshops, open to all, were led by the coordinators of projects selected in the ANR's SAPS call for proposals. Valérie Fromentin was part of the jury for the Prix de l'Essai (Essay Prize), awarded this year to Philippe Descola and Alessandro Pignocchi for *Ethnographies des mondes à venir* (Le Seuil, Paris, 2022). ●

NEXT STEPS

→ **As a continuation of its multi-annual SAPS calls for proposals (2021-2023), the ANR will launch four new thematic calls in 2023:** Participatory research (2nd edition), innovative ambitions, scientific expertise supporting public policies, innovative solutions for disseminating CSTI.

©

A European view of scientific culture

In July 2022, the ANR teamed up with 39 other European research funding agencies within the Science Europe consortium to publish a declaration of common principles to promote better communication of research knowledge. The ANR is pursuing its efforts for a scientific communication model that both informs citizens and involves them in research.



INTERVIEW

"Scientific mediation is moving forward"

With **Éric Duchêne**,
ANR Asmodée project coordinator

Éric Duchêne is a Professor of Computer Science at University Lyon 1. As a member of the Steering Committee of the House of Mathematics and Computer Science in Lyon, he makes knowledge mediation a priority, and is advocating for increased dialogue.



For the first time, recipients of the SAPS call for proposals were included in the Et maintenant? festival programme in 2022. Scientific mediation workshops were proposed at the House of Radio and Music.

In 2022, during the Et maintenant? festival, the ANR asked you to lead a workshop on "computer science without machines." What did this involve?

We are meeting more and more teachers calling for new mediations around digital technologies, particularly since the arrival of AI and the recent success of ChatGPT. Our conception of mediation is structured around what is known as "unplugged computing," which began in the late 1990s in New Zealand. This essentially explains the main concepts of computer science in a fun way using wooden trays, rubber bands, balls, etc.—with no machines or screens.

How is your Asmodée project part of this vision? What role did the ANR play in its achievement?

Asmodée seeks to clear the way, to "sort through" various mediation situations in computer science unplugged. This concept uses numerous techniques that call for perspective. We are therefore making

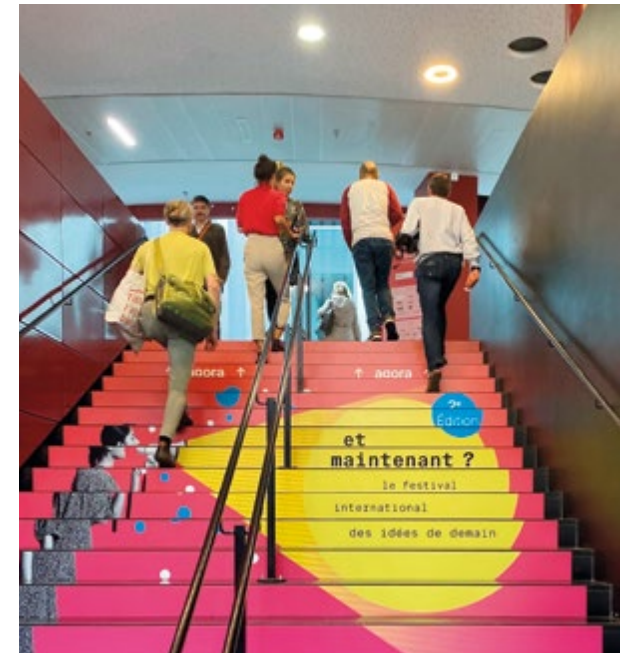
"This project was funded by the ANR in 2022, under the SAPS Scientific Mediation and Communication call. This is the first call for proposals of its kind, and is part of a growing trend of research into scientific mediation."

a list of these situations, analysing them, and ranking them according to didactic and epistemological criteria.

This project was funded by the ANR in 2022, under the SAPS Scientific Mediation and Communication call. This is the first call for proposals of its kind, and is part of a growing trend of research into scientific mediation. With this new scheme, we are moving away from an "imposed" mediation approach, funded in small steps, towards broader support for dialogue between science and society.

How can scientists strengthen their contribution to the dissemination and promotion of scientific culture?

Scientific mediation is moving forward, it's undeniable! Institutions are developing dedicated missions, and there are more and more public events; colleagues cannot help but notice this trend. I am sure that through conviction, incentives, and dedicated training—including with doctoral candidates—the scientific community will engage with this issue, and will be all the more willing to share its knowledge. ●



Thierry Damerval, President and CEO of the ANR, presenting the second France-Culture Arte Prix de l'Essai (Essay Prize) at the festival to Philippe Descola and Alessandro Pignocchi for their book, *Ethnographies des mondes à venir*.

Promoting a culture of gender equality

The ANR is continuing the implementation of its action plan for gender equality and gender mainstreaming adopted in 2020. It assesses and strives to reduce gender inequality in its own evaluation processes, and encourages the scientific community to consider gender in its research and practices.

Identifying gender inequality

On 11 February 2022, the International Day of Women and Girls in Science, the ANR updated its statistics on gender inequality in connection with the Generic Call for Proposals (AAPG). Though the results show an increasing number of projects submitted by women (approximately 33.9% in 2021, compared to 29.3% in 2015), they also reveal disparities from one research area to another: women coordinate approximately 50% of the social sciences and humanities projects selected during stage 2 of the AAPG, compared to approximately 17% in digital technology and mathematics. This assessment reflects the gender breakdown in French scientific communities, as women only represent 40% of public research staff, and hold just 31% of institute management positions.

The ANR has been assessing gender inequality as part of its selection processes since 2016. Its involvement in the European Gender-SMART project (see box page 86) has boosted its efforts in this area by stabilising its data and refining its statistical methods. The European Commission's support also

provided for the recruitment of a Gender Equality Officer to monitor this aspect on a daily basis.

Gender at the heart of research projects

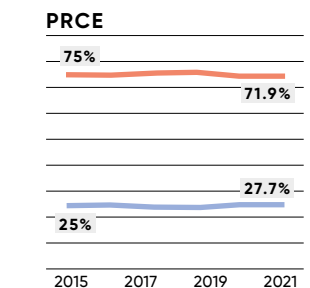
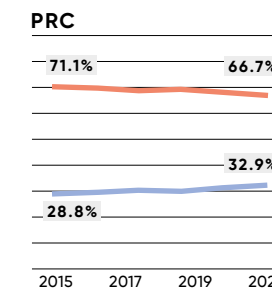
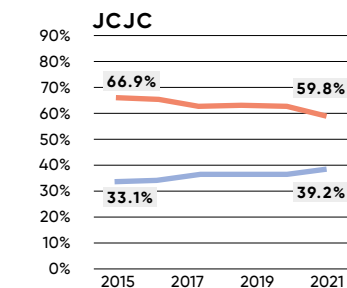
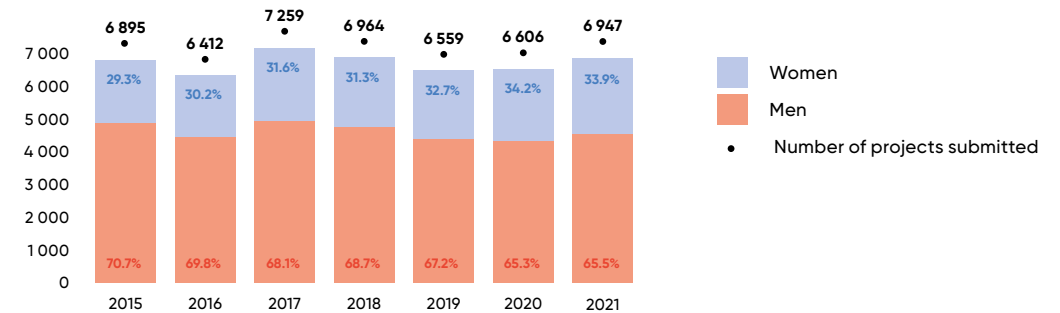
The inclusion of gender in research starts by supporting scientific projects with a direct interest in this subject. Since 2022, the ANR has funded, among others, the WomenSoFar project studying the overlooked role played by women in Neolithic agropastoral societies. The Agency also supports the CRESCENDO project, which explores the symptoms of endometriosis, in addition to their reduction through adapted physical activity.

In doing so, the ANR is also committed to fighting social constructs that continue to have a broad influence on the scientific method and decisions. "The example of biological research is a wonderful illustration," observes Laurence Guyard, the ANR Gender Equality Officer. "Much of the research is still being carried out on male humans, male animals, and even cells of

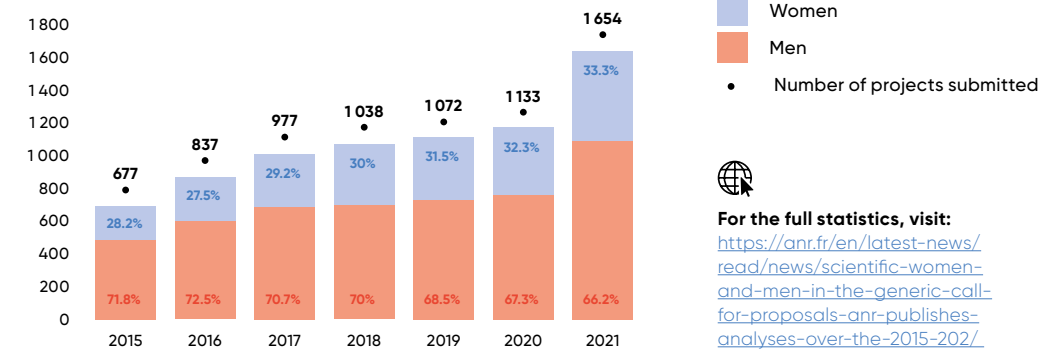
AAPG: what is the gender breakdown?

Each year, the ANR updates its statistics on gender inequality in connection with the Generic Call for Proposals (AAPG), its main call. The 2022 update shows that the share of women continues to grow in each stage of this call.

Breakdown of submitted projects by gender:



Breakdown of selected projects by gender:



For the full statistics, visit: <https://anr.fr/en/latest-news/read/news/scientific-women-and-men-in-the-generic-call-for-proposals-anr-publishes-analyses-over-the-2015-2021/>

male origin." Aware of the persistent nature of these inequalities, the Agency is acting to change its own practices, as well as to mobilise all scientific communities.

➤ Promoting a culture of equality

In 2022, the ANR continued implementing its series of actions to fight gender inequality in research. Training sessions were organised with the presidents of its Scientific Evaluation Panels, which are responsible for evaluating and selecting the research projects submitted to the ANR, in order to raise awareness of gender bias that may interfere in selection processes. Scientists were sent recommendations to include sex/gender in their research processes.

Communication is also a major lever for action. In March, the ANR issued an inclusive communication guide free of gender stereotypes, which proposes the adoption of ten principles of equality in written and oral communications. Simultaneously, several marketing campaigns were conducted in tandem with the International Day of Women and Girls in Science and International Women's Day (8 March). The

Agency's YouTube channel has expanded its series of Portraits of Women in Science with an interview of Marion Fortin, the coordinator of the Judy project focusing on women's experiences of justice and injustice in the workplace (see *interview opposite*). ●

NEXT STEPS

- **Assessing the impact of the Covid-19 crisis** on gender inequality in the AAPG's selection process.
- **Training on gender bias** for scientific evaluation panel members.
- **Further dissemination of the ANR's inclusive communication guide.**

Gender-SMART: research in the face of gender inequality

The Gender-SMART project, led by CIRAD from 2019 to 2022, encouraged lasting cultural and institutional changes towards gender equality. As part of this effort, nine European institutions, including the ANR, began including gender in all of their research and education practices, and also reviewed their recruitment, career development, and internal governance practices (see pages 94-95). In May 2022, two sociologists, who were also project partners, assessed the action plan for gender equality and gender mainstreaming adopted by the ANR, and praised its commitments.

INTERVIEW

"Teleworking contributes to widening gender disparities"

Marion Fortin is a Professor of Management at the Toulouse School of Management, and served as the ANR JUDY project coordinator (2018-2022). She recently conducted two studies on the professional injustices endured by pregnant women, as well as how gender inequality is being exacerbated by teleworking.

How is maternity or adoption leave a crucial period for gender equality in the workplace?

Most of the women we interviewed in our 2019 survey experienced an injustice, either during their pregnancy, maternity leave, or upon their return. For instance, during their pregnancy, some participants had to contend with meetings scheduled after legal working hours, or with teleworking agreements requiring weekly renewal and involving trade-offs, or with sexist remarks from their manager or colleagues.

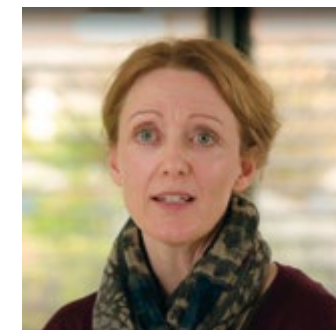
What are the consequences on women's professional aspirations?

Surprisingly, the experiences of injustice reported by the participants did not all lead to negative attitudes towards the manager, colleagues, or the organisation.

Participants even tried to minimise some injustices—for example justifying sexist remarks by the age of their colleagues, or a request for work received during a pregnancy-related sick leave by the exceptional situation in which the enterprise found itself, or by the stress experienced by the manager. However, for many participants who experienced several injustices, there were declining professional aspirations over time.

When it comes to teleworking, did you notice any differences between the fathers and mothers of young children?

In a second study conducted with parents who were teleworking during the first lockdown in France, we identified two interesting phenomena. When childcare interrupts work, this negatively impacts the perception surrounding the achievement



With **Marion Fortin**, ANR JUDY project coordinator

of professional objectives, for both women and men. However, when work interrupts childcare, the effects are different, as the everyday balance is perceived negatively only by women. This data suggest that the daily experiences of teleworkers continue to widen disparities between women and men, both in terms of career and well-being. ●



Read the full interview on the ANR website:

<https://anr.fr/fr/actualites-de-lanr/details/news/conge-de-maternite-parentalite-et-teletravail-analyse-des-experiences-de-justice-et-dinjustice-d/>

Visit the "Portraits of Women in Science" YouTube channel:

<https://youtu.be/tnbeI84mR4>

Making Open Science the default principle

Open Science goes beyond the unrestricted dissemination of research results. This comprehensive approach stresses cooperation and equity, as well as open access to scientific data, publications, and results considered as common goods. The ANR is taking part in this movement alongside its national, European, and international partners.

↳ "Diamond" journals, or the end of the paying reader

In the Spring of 2022, as part of its commitment to biodiversity and multiple avenues for publication, the ANR committed to supporting the Diamond scientific publishing model, which makes scientific literature available to everyone, with no costs for authors or readers.

In March, Science Europe, cOAlition S, OPERAS, and the ANR joined forces to develop an Action Plan for Diamond Open Access, with the goal of developing and promoting "a

'Diamond' scientific communication ecosystem that is sustainable and led by the scientific community." This action plan is now available in several languages. It seeks to unite stakeholders in the diamond community in order to address continuing inequalities in the current publishing system, which restricts access to scientific literature.

The ANR then joined other signatories of the action plan during the Diamond Open Access Conference, which it co-hosted in Zadar, Croatia in September. This event provided an opportunity to share best practices and identify practical means for implementing

Open Science Webinars

To fulfil their shared commitment to Open Science, ADEME, the ANR, Inserm/ANRS | MIE, Anses, and INCa—members of the Open Science network of French funding agencies—organised a series of webinars intended for their collaborators, in cooperation with the Skills and Training Working Group from the Committee for Open Science. Each of the five sessions, of which three were held in 2022, were attended by 70-100 people. It is an opportunity to better weigh and understand issues relating to open science, such as open access to publications, as well as the management and sharing of research data.

the action plan. At the conference, Thierry Damerval, President and CEO of the ANR, announced that the ANR would be co-funding the new edition of the Open Scientific Publishing and Editing call for proposals, as part of the "Diamond" component of the French National Fund for Open Science.



147 organisations signed the Action Plan for Diamond Open Access

↳ Encouraging the adoption of Open Science standards

The ANR has been a partner of cOAlition S since 2018, and applies "Plan S" principles to all of its calls for proposals. This plan, developed by cOAlition S, promotes full and immediate open access around ten principles. The objective is for all scientific publications from research funded by cOAlition S member institutions to be published in open and immediate access under the Creative Commons (CC-BY) license. In addition, the ANR is asking that all publications from projects funded by the Agency be deposited in the national HAL open archive—regardless of the publication method selected by the researcher.

↳ A practical guide for the scientific community

The ANR helped develop a practical guide to support researchers in the various stages of publication, and to protect their intellectual property rights. This document, entitled *Implementing the rights retention strategy for scientific publications*, was published in July 2022. It was developed by the Committee for Open Science of the French Ministry of Research, with ANR involvement.

The guide presents the scientific community with the practical aspects of applying for a CC-BY license for their manuscripts,

depositing their work on an open platform, and informing their publisher of this process. Available at ouvri.lascience.fr, the document is already available in French and English. The Retention Rights Strategy is an instrument for researchers to promote the rapid dissemination of knowledge, both within scientific communities and beyond. ●

NEXT STEPS

- **The Global Summit on Diamond Open Access** in October 2023.
- **The ANR's Open Science Monitor**, which measures the open access rate for publications emerging from projects funded by the Agency since 2015 (AAPG and France 2030).
- **Additional translations** of the Implementing the rights retention strategy for scientific publications guide and the Action Plan for Diamond Open Access.

Inside the ANR

As provided for by the Objectives and Performance Contract for 2021-2025, the year 2022 saw the continuation of fundamental projects to optimise the Agency's operations: adapting and simplifying procedures, extending the ISO 9001 certification to project monitoring, and gender equality, among others. It also saw the ANR inaugurate its new offices.



Simplifying the work of the scientific community

Meeting the needs of the scientists, managers, and institutions coordinating a project is a top priority for the ANR. The Agency is pursuing its efforts to adapt and simplify procedures, both internally and as part of partnership initiatives, in order to facilitate the work of research stakeholders.

➤ Simplified project management procedures

The ANR continues to simplify its procedures. Since 2022, the beneficiaries of funded projects can submit their expenditure statements online, using the dedicated SIM tool for project monitoring. This innovation provides a better overview of the project's budget breakdown, and facilitates the storage and monitoring of expenditure statements.

➤ New FAQs for administrative monitoring

In June 2022, the ANR released on its website an updated version of its frequently asked questions for administrative and financial matters. Organised thematically and with a keyword-based search engine, these FAQs provide concise and exhaustive answers to the most common questions asked by users and ANR staff.

➤ The appelsprojetsrecherche.fr platform celebrates its first anniversary

Created to facilitate access to calls for proposals associated with research, the appelsprojetsrecherche.fr platform celebrated its first anniversary in October 2022. The portal combines all of the calls for proposals proposed by its founding partners, major research funding stakeholders in France: the ANR, ADEME, Anses, INCa, Inserm, ANRS | MIE. In late 2022, nine new partners used it to publish their calls. Since its creation, over 200 calls for proposals have been published, and approximately 900 alerts have helped inform scientists of the publication of new calls. ●

NEXT STEPS

- **Further simplification** of project contracting and funding agreements.
- **Development of the appelsprojetsrecherche.fr portal** by integrating new partners and introducing new features.

FOCUS

First France 2030 satisfaction survey



From May to June 2022, the ANR conducted a satisfaction survey among applicants and beneficiaries of France 2030 and Investments for the Future Programme (PIA) calls in research and higher education. The results were positive.

Since 2017, the ANR has conducted satisfaction surveys among the recipients of its calls for proposals. In 2022, this consultation was dedicated to the overall management of France 2030: a survey was conducted among over 380 applicants and beneficiaries, including scientific and technical managers as well as administrative and financial managers. The goal was to evaluate their appraisal of the Agency's actions during the various stages of project assessment.

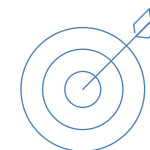
The results show a great deal of satisfaction: over 90% of the respondents expressed

satisfaction in their relations with the Agency's staff. However, some respondents pointed out that there is room for improvement regarding the management of administrative procedures.

In light of these results, and with a view to permanently improving our relations with project applicants and beneficiaries, the ANR intends to establish simplified France 2030-related procedures beginning in 2023. This simplification will focus on financial regulations and eligible France 2030 projects, as well as ANR-operated processes.



92%
of respondents
expressed
satisfaction



79%
found that
the ANR is
efficient



78%
found that it
complies with the
Code of Ethics

Diversity, well-being, equality: the ANR's social goals

The ANR is pursuing its efforts towards human resource policies that are more inclusive and egalitarian, and that foster better quality of life at work. Social dialogue is organised around the professional development of its staff, equality, better consideration of disability, and adapting to the rise of teleworking.

Preventing psychosocial risks

Since 2015, the ANR has conducted three surveys among its staff on the quality of life at work and psychosocial risks. The results led to action plans to ensure professional development and prevent risks of violence, discrimination, sexism, and harassment. The latest survey, conducted in 2022, shows substantial improvement in many indicators, including the sense of support from the Agency (increase), the meaning of work (distinct improvement), and accounts of sexist behaviour and sexual harassment in the workplace (decrease). This progress calls for pursuing and amplifying the process, especially to reduce the mental workload, and to improve prospects for career development.

Acknowledging and integrating disabled workers

Since 2020, the ANR has had a charter promoting the professional integration of staff with disabilities, in addition to their career development and working conditions. This commitment is paying off, with no less than 19 people with disabilities working within the Agency in 2022. This increases to 5.93% the share of ANR staff with the status of disabled worker (RQTH), a rate close to the one (6%) required by French Law. Such progress would not have been possible without the Agency's involvement in two Talents Handicap digital forums, in March and May 2022.

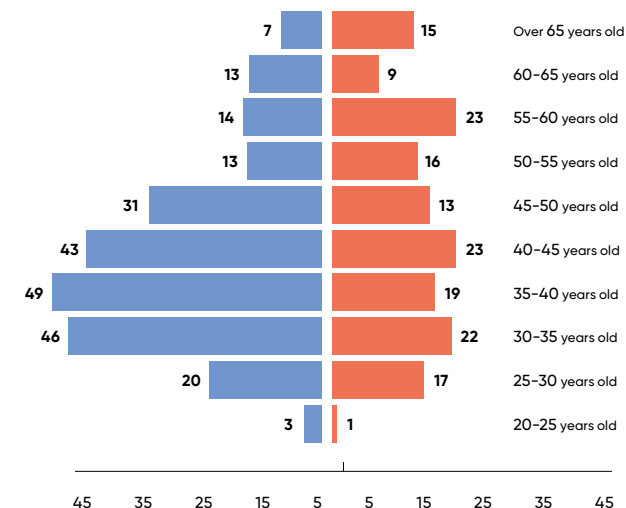
AGENCY STAFF



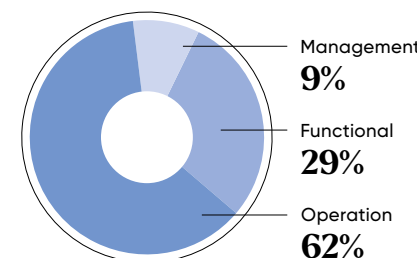
397 individuals,
374 full-time equivalent

Breakdown by age group

Women (60% of staff)
Men (40% of staff)



Breakdown by department



Reducing gender inequality

As part of its 2022-2023 action plan for gender equality, the Agency identified two internal areas for improvement. This firstly entails making gender an integral part of its organisation and professional culture, and ensuring that all staff adhere to the associated values. Training regarding the concept of gender was provided for all staff by Laurence Guyard, the ANR Gender Equality Officer. The second section of the plan focuses on human resources policy—from recruitment to compensation—by diversifying the networks for disseminating employment opportunities, and by ensuring equal pay for women and men.

Developing and providing a teleworking framework

The result of constructive social dialogue, a teleworking agreement was signed on 25 October 2022. It provides staff with the opportunity to carry out their tasks outside ANR offices up to three days a week. This organisation meets the expectations expressed by ANR staff in several surveys. Its implementation was facilitated by the acquisition of a new digital tool for planning working time. With a change of offices and the implementation of the flex office, this agreement puts into practice a global ANR goal of adapting to recent changes in work and employment. ●

The ANR changes offices: mission accomplished

After nine years in the 12th arrondissement of Paris, the ANR found new offices to meet its developing missions and growth, as well as the needs of its teams.

Collaboration was central to this major project (see joint interview on pages 102-103), which over the course of a year involved all stakeholders in the various design and implementation stages. Four working groups—on furnishings and signage, the equipping of common areas, micro-zoning, and developing a charter for living well together—were constituted with volunteer staff and representatives from the CHSCT (the Committee for Health, Safety, and Working Conditions), with a total of approximately 130 staff members being involved. They were also asked their opinion in the final vote to select the building.

Human resources departments considered survey results on the quality of life at work and psycho-social risks in order to propose an office layout that meets the needs expressed by staff. The issue is all the more important as the move also entailed the application of the teleworking agreement and the transition to flex office.

After diligent advance efforts with regard to information and appropriation, the involvement of all staff members paid off, as on 14 November 2022, all ANR staff moved to the Kadence Building in the 13th arrondissement of Paris. The new offices were inaugurated on 7 December 2022 by Sylvie Retailleau, the French Minister of Higher Education and Research, in the presence of Bruno Bonnell, the Secretary General for Investment.



The new ANR headquarters, located at 86 rue Regnault, includes almost 7,000 square metres of office space, along with a shared garden.

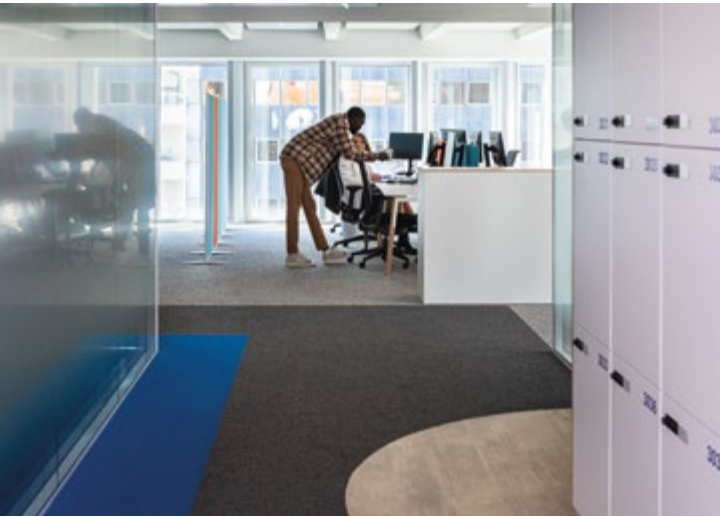




Staff meeting on 14 November in the entrance hall of the Kadence Building, where all staff members were given a welcome kit.



Inauguration of the offices by Sylvie Retailleau, the French Minister of Higher Education and Research, Thierry Damerval, the President and CEO of the ANR, and Bruno Bonnell, the Secretary General for Investment.



The office layout meets the needs expressed by teams: user-friendly common areas, workspaces with different configurations, and outdoor areas.

To improve the quality of life at work, a bike shed, shared gym, break room, and medical room are now available to staff.





INTERVIEW

"Our new offices changed how we work"

With **Charlotte Vilatte**, Internal Communication Officer, and **Pascal Desprez**, Deputy Director of Information Systems.

Charlotte Vilatte, Internal Communication Officer, and Pascal Desprez, Deputy Director of Information Systems, share their experience of relocating. They outline the challenges they faced, the actions undertaken to involve staff, and the impact of these new offices on working methods.

How did you handle preparations for the move, and what were the primary challenges connected to communication and information systems?

C. V. We began working on this move a year in advance. It was vital to work closely with the project group in order to plan the year with a series of actions: staff involvement through votes, internal information, installation of a showroom to select the furniture. The main issue was providing staff with regular progress

updates on the project, and above all to include them through workshops focusing on open space, flex office, designing the new Welcome Handbook, etc.

P. D. It was crucial to determine the building configuration beforehand, and accounting for its architecture in order to adapt our information system. We had to imagine several scenarios, depending on layout options and available budget. We had to anticipate risks relating to equipment deliveries and

the installation of network infrastructures, with a view to ensuring that everything was operational when we moved in.

The ANR decided to include its staff in the moving process. Through which channels did they participate in this project?

C. V. Team involvement was great from the start. There has been high interest in the move, as well as some reluctance. Staff followed newsletters closely, and actively took part in votes—including for the choice of location—as well as visits to the chosen location. Colliers, the firm in charge of the move, held a discussion with each division to present its new working space: it was a great way to take the staff's opinion into account.

P. D. Our team also took part in workshops to select the furniture, signage, etc. The staff was called upon as soon as the specifications were drawn up. Management emphasised collaboration, and drew on the ideas emerging from the workshops in order to refine the project.

What are the advantages of having new offices?

C. V. Our new offices give the ANR a more modern appearance. The move was an opportunity to establish signage that is consistent with our graphic identity: logos, fonts, colours, etc. The other significant impact is team cohesion. The new offices changed how we work, and improved how we communicate information.

P. D. It's true, we run into each other more than before. Regarding hardware, staff members now have more flexible workstations, and better equipped meeting rooms. You

can isolate yourself in "bubbles", which are small rooms equipped with a screen and a videoconference system.

What lessons have you learnt from this relocation project?

C. V. First, the move and set-up of the flex office raised a number of questions. Staff involvement and efforts to inform staff raised awareness regarding the benefits of the project. The ANR is in a phase of growth: moving to new offices has accelerated its modernisation.

P. D. From experience, I can attest that this project was well conducted, thanks to a reliable team and effective communication. Management was also willing to listen to the needs of its staff, and included them in the decision-making process. ●

"The new offices changed how we work, and improved how we communicate information."



Management: meeting research challenges

To better respond to the orientations of public research policy and the expectations of its beneficiaries, the ANR is striving to adapt and improve its internal processes. With expanded internal monitoring and quality controls, the Agency is strengthening its reliability, effectiveness, and resilience.

↳ Extending our quality controls

The ANR established a quality-based approach in order to harmonise its practices, strengthen the traceability of its operations, and capitalise on its knowledge. In doing so, its objective is to be ISO 9001-certified across all of its processes. The ANR reached another important milestone in 2022 by being certified for project monitoring, after receiving the certification for project selection in 2018-2019, public user relations management in 2020, and the publication of calls for proposals in 2021. The ISO 9001 certification, renewed by Afnor without any non-compliance, covers the entire process, from the drafting of calls for proposals to their closure. These certifications show the Agency's commitment to ensuring optimum quality in the management of its projects and the satisfaction of its beneficiaries.

↳ Financial data reliability approved by the certification of accounts

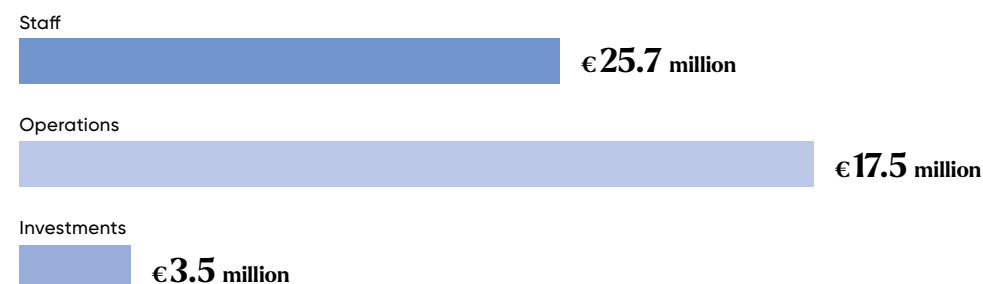
The certification of accounts is a crucial step toward the Agency's goal of ensuring the reliability of its budgetary, financial, and accounting information. To this end, the Mazars accounting firm—named as the statutory auditor for six financial years (2020-2025)—issued, for the third year in a row, an unqualified clean opinion on the accounts closed in 2022.

This success is in keeping with the ambitions of the Objectives and Performance Contract (COP), which aimed for an unqualified certification of accounts for 2024. This ensures the accuracy of the annual accounts and the reliability of its financial information, thereby increasing the Agency's credibility at a key moment of its development, which has been marked by a significant increase of its budget.

THE MANAGEMENT BUDGET

The ANR's management budget covers staff, operating, and investment expenditure. In 2022, it reached € 76.9 million in commitment authorisations and € 46.7 million in payment appropriations. It received funding of € 33.3 million via the public service grant, management fees collected from agencies providing co-funding, and from the French General Secretariat for Investment (SGPI), which is in charge of expenditure relating to the management of major French government investment programmes.

Payment appropriations breakdown:



↳ Internal controls help manage risks

The ANR is committed to identifying, analysing, and prioritising major risks, their causes, and their potential impact on all of its activities. The risk management approach is based on a "risk map" identifying internal and external risks. In 2020, the ANR established the Risk Management Committee (RMC) to enhance and structure this approach. This supervisory body, reporting to the Office of the President, works on the major risk map, and ensures that the agency's resources are

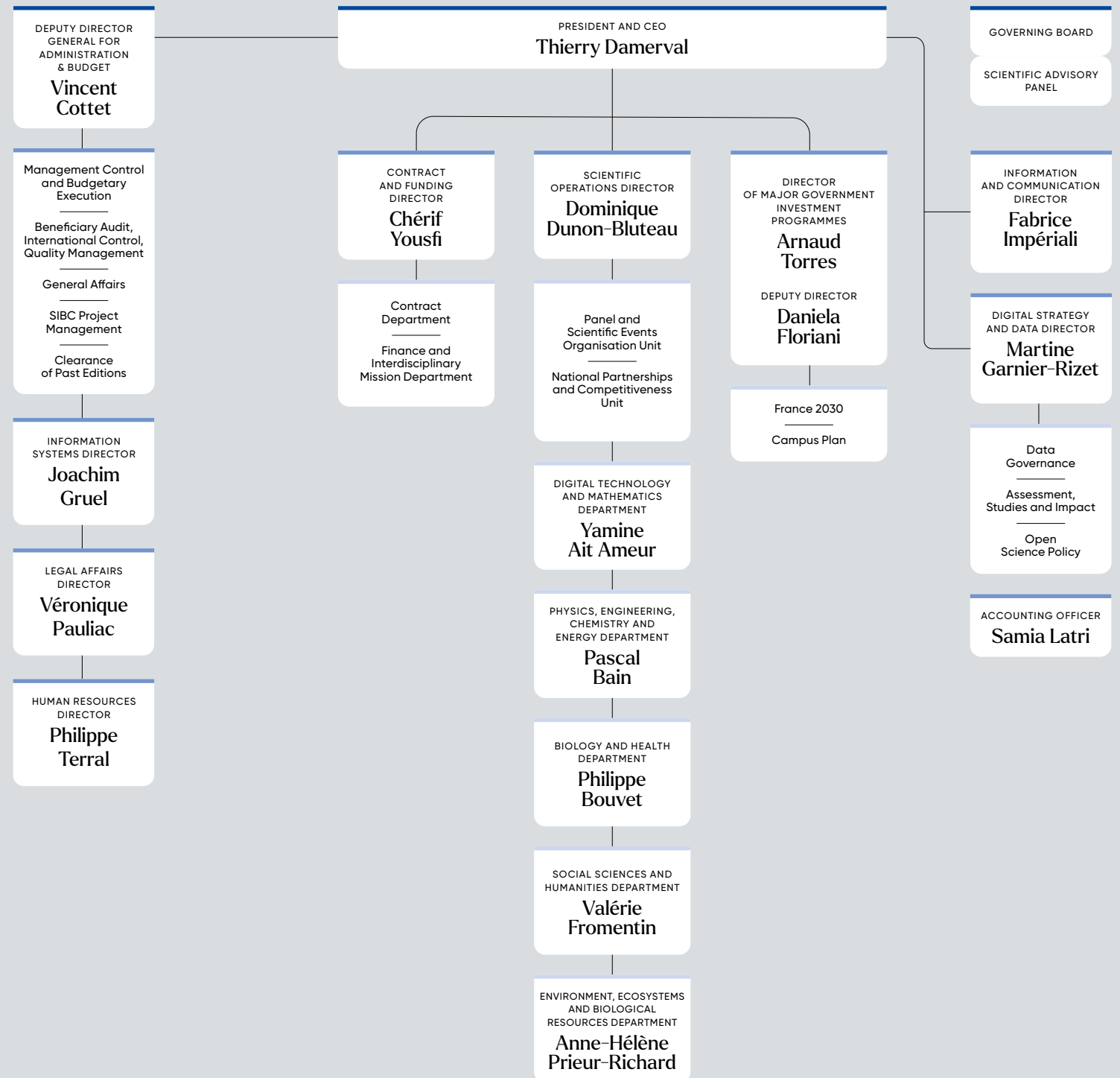
managed as effectively as possible. In 2022, the RMC initiated a Business Continuity Plan (BCP) to prepare for the Agency's move. This BCP was a proactive measure to ensure the continuity of critical services, and to minimise the move's impact on the ANR's activities.

NEXT STEPS

→ **Other thematic business continuity plans** for information systems, real property infrastructure management, and human resources are currently being developed.

Organisation chart and governance

Under the supervision of the Ministry of Higher Education and Research, the ANR is operated by a Governing Board and is led by a President and CEO. He is assisted by a Managing Director and a Scientific Advisory Panel.



The Governing Board

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

President:

Thierry DAMERVAL

As representatives of the French government:

- Mrs Claire GIRY and Mrs Marine CAMIADE, full members representing the Minister of Research;
- Mr Guilhem de ROBILLARD and Mrs Carine BERNARD, substitute members representing the Minister of Research;
- Mrs Anne-Sophie BARTHEZ, full member representing the Minister of Higher Education;
- Mrs Caroline OLLIVIER-YANIV, substitute member representing the Minister of Higher Education;
- Mr Benjamin DELOZIER and Mr Michel SCHMITT, full members representing the Minister of Industry;
- Mr Arnaud DELAUNAY and Mrs Nathalie HOMOONO, substitute members

representing the Minister of Industry;
→ Mr Alban HAUTIER, full member representing the Minister of the Budget;
→ Mrs Agathe ROLLAND, 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:

- Mr Mohammed BENLAHSEN, full member; Mrs Michèle ROUSSEAU, substitute member;
- Mr Gilles BLOCH, full member; Mrs Elsa CORTIJO, substitute member;
- Mrs Carole CARANTA, full member; Mr François HOULLIER, substitute member;
- Mrs Marie GAILLE, full member; Mr Alain SCHUHL, substitute member;
- Mrs Virginie DUPONT, full member; Mr Yassine LAKHNECH, substitute member;
- Mr Bruno SPORTISSE, full member; Mrs Bernadette DORIZZI, substitute member

As qualified representatives from the business world:

- Mr Bruno MAQUART
- Mrs Marie-Noëlle SEMERIA
- Mr Philippe TCHENG
- Mrs Catherine TRUFFERT

The Vice-President of the National Strategic Council for Research:

- Mr Pascal COLOMBANI

As staff representatives:

- Mr Jean-Michel LE ROUX, full member; Mrs Jannatul MIA, substitute member;
- Mrs Sophie GRELAT, full member; Mrs Delphine CALLU, 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 Budget Controller;
- The Accountancy Officer

The Scientific Advisory Panel

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

The President and CEO consults with the panel for:

- The preparation of the ANR's Work Programme and the report on its implementation;
- The implementation 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 asked

to express an opinion by the Agency's Governing Board or the President and CEO. Its composition, the procedure for appointing its members, and its operating rules are set out by the Ministerial Order of 10 September 2015.

President:

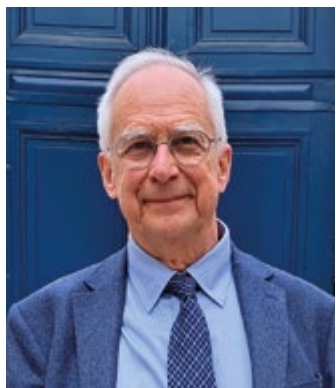
- Pierre Corvol, President of the French Academy of Sciences and Honorary Director of the Collège de France:

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

- Bruno Chaudret, Senior Researcher at the CNRS, member of the French Academy of Sciences;
- Yuko Harayama, former executive member of the Japanese Prime Minister's Science and Technology Council;
- Nathalie de Noblet-Ducoudré, Research Director at the CEA, member of the French Academy of Agriculture;

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

- Valérie Mazza, Director of Scientific Affairs and Innovation at Limagrain Group, member of the French Academy of Technology;
- Roseann O'Reilly Runte, President and CEO of the Canada Foundation for Innovation;
- Pascal Viginier, President of the French Academy of Technology, Advisor to the Chairman of Orange.



INTERVIEW

"The Scientific Advisory Panel thinks, supports, and advises"

With **Pierre Corvol**,
President of the ANR's Scientific Advisory Panel

As he begins his third term, Pierre Corvol revisits the vital role played by the ANR's Scientific Advisory Panel (CPS), the changes the Agency has undergone throughout his four years as President, and his view of the next challenges facing the ANR.

What are the role and missions of the Scientific Advisory Panel?

The CPS plays a key advisory role for the ANR and its President and CEO. Its mission is to think, support, and advise. The CPS, which is renewed every two years, meets three times a year, with agendas ranging from the approval of the agency's progress report to presentations of the new joint portal for calls for proposals, its annual report, and its international cooperation policy.

The CPS is also consulted during the appointment of Heads of Scientific Departments and the renewal of their duties. It also helps to define the scope of these departments, and works in close collaboration with them. This joint effort with scientific departments and the President and CEO has resulted in

greater support for projects in the social sciences and humanities, digital technology, and biology.

How has the ANR changed during your term? What role did the CPS play in these changes?

In my two terms as President of the CPS, the ANR has seen a significant increase of its budget, a major development that improved its funding instruments, and increased the technical and financial resources granted to researchers, especially through the Research Programming Law. The ANR now funds projects with greater scientific risk. The CPS was able to support these changes by issuing an opinion on the Agency's founding texts such as its Work Programme, which serves as a roadmap for the ANR. We also strove to develop important issues such as open science and scientific integrity. The ways in which citizens can be involved in research have also been discussed by the Panel, which is keen to support developments in scientific research, especially through the ANR's Science with and for Society programme.

"The ANR and the Scientific Advisory Panel must ensure that there is sufficient room for serendipitous research—discovery by accident"

In your opinion, what challenges lie ahead for the ANR?

The ANR plays a key role in implementing the France 2030 investment programme, which has an overall budget of €54 billion, of which €12 billion is managed by the Agency, thereby giving the latter immense responsibility. It mirrors the government's ambition to make France more competitive and innovative. More specifically, as the manager of Priority Research Programmes and Equipment (PEPR), the ANR is entrusted with the weighty task of evaluating and monitoring these programmes.

At the same time, the ANR and the Scientific Advisory Panel must ensure that there is sufficient room for serendipitous research—discovery "by accident"—as well as for high-risk exploratory research.



The Scientific Advisory Panel consists of 7 figures from outside ANR

The aim is to continue promoting the ANR's actions, programmes, and instruments—using initiatives such as the ANR Tour—in order to meet managers and collaborators at research institutions and universities. Finally, assessing the impact of the ANR and the research projects it supports remains a complex but extremely important issue: it requires indicators that are accurate, reliable, and replicable, and that show the overall impact of the amounts invested in French research through the Agency. ●



Members of the ANR's Scientific Advisory Panel on 16 May 2022.

Appendices

Review of 2022 calls for proposals

	PROJECTS SELECTED	SUCCESS RATE COMPARED TO THE NUMBER OF ELIGIBLE PROPOSALS	AVERAGE FUNDING PER PROJECT (€ k)	AAPS BUDGET COMMITMENTS (€ m)	SHARE OF COMMITMENT IN AAPS TOTAL
Component 1					
RESEARCH AND INNOVATION (AAPG)	1,718	24.0%	441	758.2	88.87%
PRC - COLLABORATIVE RESEARCH PROJECTS	973	23.9%	513	498.7	58.46%
PRME - SINGLE-TEAM RESEARCH PROJECTS	60	18.2%	325	19.5	2.29%
JCJC - YOUNG RESEARCHERS	381	26.5%	273	103.9	12.18%
PRCE - COLLABORATIVE RESEARCH PROJECTS INVOLVING ENTERPRISES	152	23.1%	583	88.6	10.39%
PRCI - INTERNATIONAL COLLABORATIVE RESEARCH PROJECTS	152	22.3%	312	47.5	5.56%
Component 2					
SPECIFIC ACTIONS, EXCLUDING AAPG	12	46.2%	611	7.3	0.86%
SCIENTIFIC EXPLORATION OF DATA FROM RESEARCH INFRASTRUCTURES CALL FOR PROPOSALS	6	50.0%	471	2.8	0.33%
CHLORDECONE POLLUTION IN FRENCH WEST INDIES CALL FOR PROPOSALS	6	42.9%	751	4.5	0.53%
Component 3					
BUILDING THE EUROPEAN RESEARCH AREA (ERA) AND FRANCE'S INTERNATIONAL ATTRACTIVENESS	230	19.9%	251	57.6	6.76%
SPECIFIC BILATERAL CALLS	24	16.6%	423	10.2	1.19%
EUROPEAN MULTILATERAL CALLS	154	19.1%	265	40.8	4.78%
OTHER MULTILATERAL CALLS	22	14.9%	266	5.9	0.69%
MRSEI	30	51.7%	27	0.8	0.10%
Component 4					
ECONOMIC IMPACT OF RESEARCH AND COMPETITIVENESS	79	53.0%	379	30.0	3.51%
ASTRID PROGRAMME	51	63.0%	306	15.6	1.83%
LABCOM	20	38.5%	363	7.3	0.85%
INDUSTRIAL CHAIRS	8	50.0%	889	7.1	0.83%
TOTAL CALLS FOR PROPOSALS	2,039	24.0%	418	853.1	100.00%

Review of 2022 actions

↳ Credit breakdown by beneficiary type 1/2

	OVERALL TOTAL	CNRS	INSERM	INRIA	IRD	INRAE	CEA	SUBTOTAL RESEARCH BODIES	UNIVERSITIES AND SCHOOLS	HOSPITALS HEALTHCARE	OTHER PUBLIC SECTORS	PUBLIC SECTOR SUBTOTAL EXCLUDING RESEARCH BODIES	SUBTOTAL MISCELLANEOUS PRIVATE
Component 1 RESEARCH AND INNOVATION (AAPG)	€ 758.2 m 68%	€ 257.8 m 34%	€ 80.3 m 11%	€ 10.7 m 1%	€ 7 m 1%	€ 28.5 m 4%	€ 26.4 m 3%	€ 410.7 m 54%	€ 246.3 m 32%	€ 6.1 m 1%	€ 26.9 m 4%	€ 279.3 m 37%	€ 68.2 m 9%
PRC - COLLABORATIVE RESEARCH PROJECTS	€ 498.8 m 66%	€ 182.6 m 37%	€ 59.9 m 12%	€ 5.4 m 1%	€ 4.5 m 1%	€ 18.7 m 4%	€ 18.1 m 4%	€ 289.1 m 58%	€ 153.2 m 31%	€ 4.3 m 1%	€ 18.9 m 4%	€ 176.4 m 35%	€ 33.2 m 7%
PRME - SINGLE-TEAM RESEARCH PROJECTS	€ 19.5 m 3%	€ 8.3 m 42%	€ 1.8 m 9%	€ 0.5 m 2%	-	€ 1.1 m 6%	€ 0.2 m 1%	€ 11.8 m 61%	€ 6.1 m 31%	-	€ 0.5 m 2%	€ 6.6 m 34%	€ 1.1 m 5%
JCJC - YOUNG RESEARCHERS	€ 103.9 m 14%	€ 34.2 m 33%	€ 10.3 m 10%	3 m 3%	€ 1.9 m 2%	€ 4 m 4%	€ 1.4 m 1%	€ 54.8 m 53%	€ 38 m 37%	€ 0.4 m 0.4%	€ 1.7 m 2%	€ 40.1 m 39%	€ 9 m 9%
PRCE - COLLABORATIVE RESEARCH PROJECTS INVOLVING ENTERPRISES	€ 88.5 m 12%	€ 17.3 m 19%	€ 3.7 m 4%	€ 1.7 m 2%	€ 0.4 m 0.5%	€ 3.6 m 4%	€ 3.8 m 4%	€ 30.5 m 34%	€ 31.8 m 36%	€ 1.4 m 2%	€ 4.2 m 5%	€ 37.5 m 42%	€ 20.5 m 23%
PRCI - INTERNATIONAL COLLABORATIVE RESEARCH PROJECTS	€ 47.5 m 6%	€ 15.6 m 33%	€ 4.5 m 9%	€ 0.2 m 0.4%	€ 0.2 m 0.4%	€ 1.1 m 2%	€ 2.8 m 6%	€ 24.5 m 52%	€ 17.1 m 36%	-	€ 1.6 m 3%	€ 18.6 m 39%	€ 4.4 m 9%
Component 2 SPECIFIC ACTIONS, EXCLUDING AAPG	€ 15.3 m 1%	€ 5.3 m 35%	€ 0.4 m 3%	€ 0.04 m 0.3%	€ 0.5 m 3%	€ 1 m 7%	€ 0.5 m 4%	€ 7.8 m 51%	€ 4.8 m 32%	-	€ 2.3 m 15%	€ 7.2 m 47%	€ 0.3 m 2%
CHALLENGE IA-BIODIV	€ 1.7 m 11%	-	-	-	-	-	-	-	-	-	€ 1.7 m 100%	€ 1.7 m 100%	-
CHLORDECONE	€ 4.5 m 29%	€ 0.8 m 19%	€ 0.2 m 4%	-	€ 0.5 m 10%	€ 0.8 m 17%	€ 0.3 m 8%	€ 2.6 m 57%	€ 1.2 m 27%	-	€ 0.5 m 11%	€ 1.7 m 38%	€ 0.2 m 4%
ESDIR 2022	€ 2.8 m 18%	€ 1.9 m 66%	-	-	-	-	€ 0.2 m 7%	€ 2.1 m 73%	€ 0.8 m 27%	-	-	€ 0.8 m 27%	-
FNSO	€ 0.9 m 6%	€ 0.9 m 100%	-	-	-	-	-	€ 0.9 m 100%	-	-	-	-	-
PAUSE-ANR UKRAINE	€ 2.7 m 18%	€ 0.9 m 32%	€ 0.1 m 5%	-	-	€ 0.2 m 9%	-	€ 1.3 m 47%	€ 1.3 m 48%	-	€ 0.1 m 5%	€ 1.4 m 53%	-
SAPS-CSTI-AAPG 2020	€ 2.7 m 18%	€ 0.9 m 33%	€ 0.1 m 3%	€ 0.04 m 1%	€ 0.01 m 0.4%	-	-	€ 1 m 38%	€ 1.6 m 58%	-	-	€ 1.6 m 58%	€ 0.1 m 4%

Review of 2022 actions

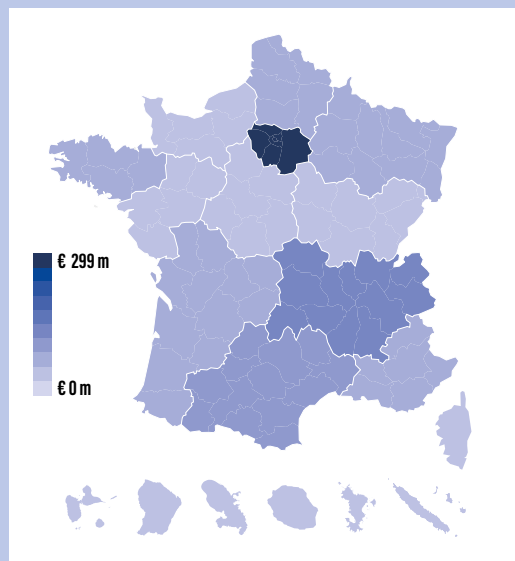
↳ Credit breakdown by beneficiary type 2/2

	OVERALL TOTAL	CNRS	INSERM	INRIA	IRD	INRAE	CEA	SUBTOTAL RESEARCH BODIES	UNIVERSITIES AND SCHOOLS	HOSPITALS HEALTHCARE	OTHER PUBLIC SECTORS	PUBLIC SECTOR SUBTOTAL EXCLUDING RESEARCH BODIES	SUBTOTAL MISCELLANEOUS PRIVATE
Component 3 BUILDING THE EUROPEAN RESEARCH AREA (ERA) AND FRANCE'S INTERNATIONAL ATTRACTIVENESS	€ 59.9 m 5%	€ 10.3 m 17%	€ 7.5 m 13%	€ 0.7 m 1%	€ 1.1 m 2%	€ 4.3 m 7%	€ 2.2 m 4%	€ 26.2 m 44%	€ 18.2 m 30%	€ 1.6 m 3%	€ 4.5 m 8%	€ 24.3 m 41%	€ 9.4 m 16%
SPECIFIC BILATERAL CALLS	€ 10.2 m 17%	€ 0.7 m 7%	€ 0.4 m 4%		€ 0.3 m 3%		€ 0.8 m 8%	€ 2.2 m 22%	€ 4.1 m 40%		€ 1.1 m 11%	€ 5.2 m 51%	€ 2.8 m 27%
EUROPEAN MULTILATERAL CALLS	€ 40.8 m 68%	€ 6.7 m 17%	€ 7.2 m 18%	€ 0.3 m 1%	€ 0.1 m 0%	€ 4.3 m 10%	€ 1.4 m 3%	€ 20.1 m 49%	€ 10.4 m 26%	€ 1.5 m 4%	€ 3.1 m 8%	€ 15.1 m 37%	€ 5.6 m 14%
OTHER MULTILATERAL CALLS	€ 5.9 m 10%	€ 1.8 m 31%			€ 0.7 m 11%			€ 2.5 m 42%	€ 2.2 m 37%		€ 0.3 m 6%	€ 2.5 m 43%	€ 0.8 m 14%
MRSEI	€ 0.8 m 1%	€ 0.2 m 26%	€ 0.1 m 11%				€ 0.03 m 4%	€ 0.3 m 40%	€ 0.4 m 51%	€ 0.03 m 4%	€ 0.03 m 4%	€ 0.5 m 58%	€ 0.02 m 2%
TERC	€ 2.3 m 4%	€ 0.8 m 36%	€ 0.2 m 8%					€ 1.0 m 44%	€ 1.1 m 47%	€ 0.03 m 1%		€ 1.1 m 48%	€ 0.2 m 7%
Component 4 ECONOMIC IMPACT OF RESEARCH AND COMPETITIVENESS	€ 122.3 m 11%	€ 9.5 m 8%	€ 0.9 m 1%	€ 2.3 m 2%	€ 0.2 m 0.2%	€ 10.9 m 9%	€ 19.5 m 16%	€ 43.5 m 36%	€ 32.2 m 26%	€ 9.6 m 8%	€ 15.8 m 13%	€ 57.5 m 47%	€ 21.2 m 17%
ASTRID PROGRAMME	€ 15.6 m 13%	€ 3.4 m 22%	€ 0.6 m 4%		€ 0.2 m 2%		€ 0.9 m 6%	€ 5.1 m 32%	€ 5.3 m 34%		€ 1.9 m 12%	€ 7.2 m 46%	€ 3.3 m 21%
LABCOMS	€ 7.3 m 6%	€ 1.1 m 15%	€ 0.4 m 5%	€ 0.4 m 5%		€ 1.1 m 15%		€ 2.9 m 40%	€ 4.4 m 60%			€ 4.4 m 60%	€ 0.0 m 0%
INDUSTRIAL CHAIRS	€ 7.1 m 6%	€ 1.0 m 14%					€ 0.6 m 8%	€ 1.6 m 23%	€ 4.8 m 67%			€ 4.8 m 67%	€ 0.8 m 11%
CARNOT	€ 92.3 m 75%	€ 4.1 m 4%		€ 1.9 m 2%		€ 9.9 m 11%	€ 18.1 m 20%	€ 33.9 m 37%	€ 17.8 m 19%	€ 9.6 m 10%	€ 13.8 m 15%	€ 41.2 m 45%	€ 17.2 m 19%
OTHER FUNDING EXCLUDING THE 4 COMPONENTS	€ 161.8 m 14%	€ 14.1 m 9%	€ 5.1 m 3%	€ 1.3 m 1%	€ 0.7 m 0.4%	€ 3.5 m 2%	€ 5.2 m 3%	€ 29.9 m 18%	€ 57.5 m 36%	€ 1.7 m 1%	€ 66.1 m 41%	€ 125.3 m 77%	€ 6.6 m 4%
HOST AND SITE PRECIPUT	€ 96.0 m 59%	€ 12.1 m 13%	€ 5.1 m 5%	€ 1.3 m 1%	€ 0.7 m 1%	€ 3.5 m 4%	€ 3.4 m 4%	€ 26.1 m 27%	€ 57.5 m 60%	€ 1.7 m 2%	€ 4.1 m 4%	€ 63.3 m 66%	€ 6.6 m 7%
LABORATORY AND MANAGEMENT PRECIPUT (INFORMATION - ALREADY INCLUDED IN PROJECT FUNDING)	€ 92.3 m	€ 31.6 m 34%	€ 10.2 m 11%	€ 1.3 m 1%	€ 1.0 m 1%	€ 4.0 m 4%	€ 2.9 m 3%	€ 51.1 m 55%	€ 32.0 m 35%	€ 0.9 m 1%	€ 3.2 m 3%	€ 36.1 m 39%	€ 5.1 m 6%
MICRO- AND NANO-FABRICATION PLATFORMS (RTB)	€ 3.8 m 2%	€ 2.1 m 54%					€ 1.7 m 46%	€ 3.8 m 100%					
INCA	€ 62.0 m 38%										€ 62.0 m 100%	€ 62.0 m 100%	
OVERALL TOTAL	€ 1,117.5 m	€ 297.1 m	€ 94.2 m	€ 15.1 m	€ 9.5 m	€ 48.3 m	€ 53.9 m	€ 518.1 m	€ 359.0 m	€ 19.0 m	€ 115.6 m	€ 493.6 m	€ 105.8 m

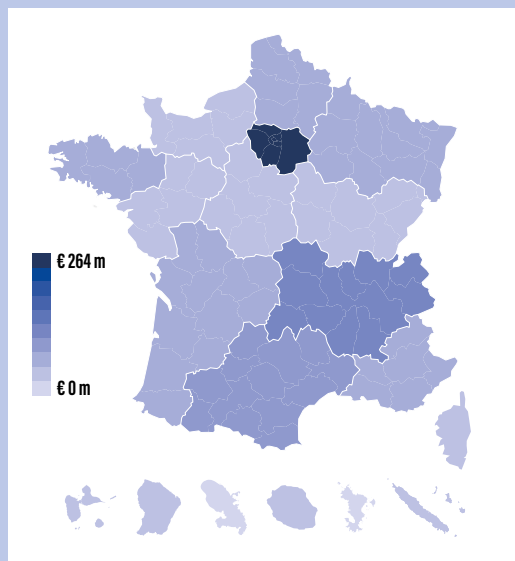
Review of 2022 actions

↳ Breakdown by region

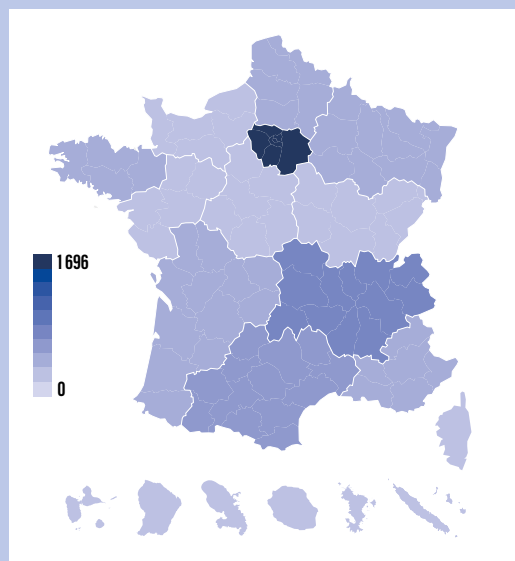
Funding (4 components)



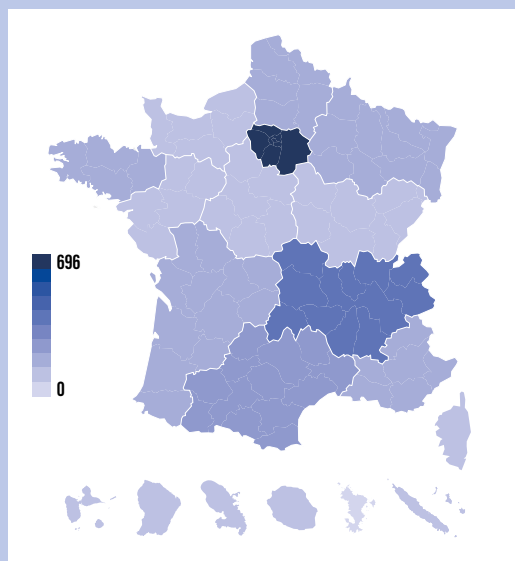
Funding (AAPG)



Number of partners (4 components)



Number of coordinators (4 components)



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



↳ Financial elements*

TOTAL AMOUNT DISBURSED	€ 18,775,455,005
TOTAL AMOUNT UNDER CONTRACT	€ 22,775,482,750

Excluding Campus and Saclay.

* Including non-consumable grants for the 17 fully certified IdEx initiatives.

↳ Breakdown of project funding by region

MAIN REGION OF THE PROJECT	NUMBER OF PROJECTS	TOTAL UNDER CONTRACT*	DISBURSED
AUVERGNE-RHÔNE-ALPES	179	€ 3,515,232,268	€ 2,535,755,396
BOURGOGNE-FRANCHE-COMTÉ	27	€ 222,741,460	€ 149,421,354
BRITTANY	54	€ 553,791,691	€ 370,869,307
CENTRE-VAL DE LOIRE	13	€ 7,917,004	€ 59,047,016
DOM/TOM	4	€ 8,000,000	€ 3,160,000
GRAND EST	72	€ 1,920,246,893	€ 1,730,929,114
HAUTS-DE-FRANCE	51	€ 1,078,327,903	€ 957,226,540
ÎLE-DE-FRANCE	448	€ 9,253,292,021	€ 7,691,721,774
NORMANDY	19	€ 124,552,393	€ 86,822,275
NOUVELLE-AQUITAINE	77	€ 1,558,427,704	€ 1,379,817,179
OCCITANIE	103	€ 1,777,609,877	€ 1,428,616,945
PAYS DE LA LOIRE	25	€ 656,176,561	€ 571,520,763
PROVENCE-ALPES-CÔTE D'AZUR	71	€ 2,003,237,818	€ 1,785,097,342
TOTAL	1,143	€ 22,749,553,593	€ 18,750,005,007

Excluding Campus and Saclay // excluding CVT.

* Including the non-consumable grants for the 17 fully certified initiatives (IdEx/I-SITE).

France 2030 including PIAs

↳ Project breakdown and funding per action


ACTION NAME	NUMBER OF PROJECTS	TOTAL UNDER CONTRACT	DISBURSED
SATT JOINT ACTIONS	6	€ 10,060,000	€ 0
ANTIBIOTIC RESISTANCE: UNDERSTAND, INNOVATE, ACT	20	€ 24,982,705	€ 6,836,595
AUTONOMY PPR: AGEING AND DISABILITY	4	€ 5,705,709	€ 735,115
BIOINFORMATICS	12	€ 16,719,880	€ 16,719,880
BIOTECHNOLOGY AND BIORESOURCES	13	€ 84,454,125	€ 83,304,552
COHORTS	15	€ 100,743,375	€ 75,346,197
FUTURE SKILLS AND PROFESSIONS	37	€ 149,858,263	€ 34,454,469
THEMATIC DEVELOPMENT CONSORTIA	6	€ 25,929,156	€ 25,450,000
ALTERNATIVE APPROACHES TO CULTIVATION AND PROTECTION	11	€ 27,959,369	€ 7,094,445
DEMONSTRATORS	4	€ 90,693,735	€ 76,982,336
DIGITAL DEMONSTRATORS IN HIGHER EDUCATION	17	€ 99,998,623	€ 47,399,784
LIVE DEMONSTRATION, INITIATION AND FIRST ENTRY ON THE MARKET	1	€ 30,000,000	€ 2,400,000
DEVELOPMENT OF EXPERIMENTAL DIGITAL UNIVERSITIES	5	€ 8,150,000	€ 7,768,581
DIADEM PEPR: INTEGRATED INITIATIVES TO ACCELERATE THE DEPLOYMENT OF EMERGING MATERIALS	15	€ 24,163,000	€ 5,887,560
GRADUATE SCHOOLS OF RESEARCH	53	€ 429,527,282	€ 172,394,540
EQUIPMENT OF EXCELLENCE	93	€ 591,678,291	€ 580,244,591
EQUIPMENT OF EXCELLENCE 2	5	€ 183,000,000	€ 141,889,448
STRUCTURING EQUIPMENT FOR RESEARCH	54	€ 620,103,312	€ 105,606,001
EXCELLENCE UNDER ALL ITS FORMS	32	€ 292,400,000	€ 42,075,000
ADDITIONAL EXPERIMENTATION BY SATTS	7	€ 22,500,000	€ 15,600,000
FERMENTS OF THE FUTURE GRAND CHALLENGE	1	€ 48,305,766	€ 1,000,000
DEEP SEABEDS	1	€ 16,740,000	€ 3,013,200
HYBRIDISATION IN HIGHER EDUCATION	15	€ 21,709,000	€ 19,148,100
IDEX / I-SITE	64	€ 5,410,055,459	€ 5,337,472,787
INFRASTRUCTURE	23	€ 564,059,258	€ 503,592,483
INITIATIVES OF EXCELLENCE	90	€ 7,140,143,013	€ 7,140,143,013
INITIATIVES OF EXCELLENCE IN DIGITAL EDUCATION	15	€ 25,845,008	€ 16,034,263
INITIATIVES OF EXCELLENCE IN INNOVATIVE TRAINING	19	€ 99,600,000	€ 83,917,763
CARNOT INSTITUTES	55	€ 136,216,771	€ 122,423,994
CONVERGENCE INSTITUTES	10	€ 103,136,000	€ 67,605,110
TECHNOLOGICAL RESEARCH INSTITUTES	8	€ 1,124,804,227	€ 826,986,118
INSTITUTES OF EXCELLENCE IN LOW-CARBON ENERGY	13	€ 392,491,668	€ 311,958,121
RESEARCH HOSPITALS	6	€ 423,329,163	€ 381,134,163

RESEARCH HOSPITALS 2	1	€ 50,000,000	€ 20,000,000
RESEARCH HOSPITALS B	6	€ 35,000,000	€ 34,627,292
RESEARCH HOSPITALS B 2	3	€ 15,000,000	€ 10,800,000
INTERDISCIPLINARY INSTITUTES OF ARTIFICIAL INTELLIGENCE	4	€ 74,500,000	€ 37,715,625
BIOTHERAPY-BIOPRODUCTION INTEGRATORS	8	€ 4,042,499	€ 1,478,850
INTEGRATION AND DEVELOPMENT OF IDEX AND ISITE	15	€ 180,300,000	€ 28,923,215
BOARDING SCHOOLS OF EXCELLENCE AND EQUALITY OF OPPORTUNITY	1	€ 900,000	€ 900,000
LABORATORIES OF EXCELLENCE	56	€ 711,253,895	€ 391,861,219
MAKE OUR PLANET GREAT AGAIN	41	€ 24,641,203	€ 20,346,367
RARE DISEASES: ACCELERATING RESEARCH AND INNOVATION USING DATABASES	12	€ 16,000,000	€ 2,660,260
MOLECULARXIV: STORAGE OF MASSIVE DATA ON DNA AND ARTIFICIAL POLYMERS	5	€ 15,200,000	€ 1,954,296
NANOBIOTECHNOLOGY	8	€ 17,171,029	€ 17,171,028
NEXTGEN	1	€ 450,000,000	€ 52,500,000
NEW UNIVERSITY CURRICULA	36	€ 325,897,569	€ 129,536,944
TOMORROW'S NUCLEAR	1	€ 599,000,000	€ 422,700,000
NUWARD	1	€ 50,000,000	€ 45,000,000
H2 DECARBONATED HYDROGEN PEPR	18	€ 59,045,686	€ 10,634,369
QUANTUM TECHNOLOGIES PEPR	10	€ 80,111,955	€ 13,793,083
NATIONAL HYBRID QUANTUM COMPUTING PLATFORM	2	€ 36,300,000	€ 0
HOSPITAL UNIVERSITY ONCOLOGY RESEARCH CLUSTER (PHUC)	2	€ 20,000,000	€ 19,813,478
AUTONOMY PPR	1	€ 3,445,954	€ 1,000,000
CYBER CAMPUS TRANSFER PROGRAMME	2	€ 39,994,239	€ 0
CYBERSECURITY PEPR	7	€ 43,270,937	€ 6,728,358
UNIVERSITY HOSPITAL HEALTH RESEARCH	56	€ 309,166,266	€ 243,127,582
TECHNOLOGY TRANSFER ACCELERATION COMPANIES	14	€ 849,020,365	€ 849,020,365
TRAINING SUPPORT WITHIN THE FRAMEWORK OF THE NATIONAL QUANTUM STRATEGY	3	€ 3,099,000	€ 697,275
E-FRAN PROJECT IMPLEMENTATION SUPPORT	9	€ 7,569,721	€ 2,117,767
VERY HIGH-PERFORMANCE SPORT	12	€ 17,072,249	€ 10,235,460
STRUCTURING OF RESEARCH-BASED TRAINING IN INITIATIVES OF EXCELLENCE	19	€ 280,500,000	€ 50,321,432
NUCLEAR SAFETY	22	€ 67,726,261	€ 61,032,298
EUROPEAN UNIVERSITIES	36	€ 30,234,371	€ 23,403,443
AN OCEAN OF SOLUTIONS	7	€ 14,957,393	€ 2,736,790
TOTAL:	1,149	€ 22,775,482,750	€ 18,775,455,005

Excluding Campus and Saclay.

* Including the non-consumable grants for the 17 fully certified initiatives (IdEx/I-SITE).

** Including Labex and IDEFI projects connected to the project in question.

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