



A 2010
annual report

EDITORIAL

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Chairwoman of the ANR



2010 was a year of exceptional growth for the ANR. Growth of its teams with the insourcing of the support units, and growth of its scope of action with the setting up of calls for Investments for the Future. The strong mobilisation of the teams enabled us to meet the deadlines of an agenda that was extremely tight, not only for ANR as the operator, but also for the scientific teams who responded to the calls. We succeeded in making a high-level international evaluation in record time, and I am very proud of this.

The 7% increase in the number of proposals submitted and their ever-greater quality once again show the high level of involvement of the various scientific communities. ANR funding also stimulates the emergence of multidisciplinary projects. A growing number of interdisciplinary projects have thus emerged in the areas of environmental and planetary changes, health-care technologies, and sustainable towns, for example.

The ANR's flexibility also enables it to respond very quickly to exceptional events. By putting in place a new instrument - the Flash Call for proposals - the ANR can rapidly select and finance projects, without departing from its basic principles, in order to acquire scientific data and information in exceptional contexts. Flash Call for proposals was set up following the disaster in Haiti.

SUPPORT TO YOUNG RESEARCHERS

The aid devoted to young scientists to help them get established and develop their research work is at the core of the ANR's action, and we are continuing our efforts in this respect. Thus, with 23% in 2010, the "Young Researchers" programme saw a significant increase in its rate of success. Our efforts are also bearing fruit at European level. The high level of success of French researchers in the European Research Council (ERC) "starting grant" programme is a very positive signal in favour of our policy to support young researchers.

A RIGOROUS SELECTION PROCEDURE

It is vital to have a rigorous process in order to select the best projects. The ISO 9001 certification of its selection process in 2008, and of its programme planning process in 2010 confers upon the ANR an additional guarantee of transparency and professionalism both for the scientific communities and international audiences. The ANR is thus the first research funding agency to hold ISO 9001 certification.

INTERNATIONAL COLLABORATIONS

The ANR also supports European and international collaborations. The intensification of its actions is materialised by the existence of 15 transnational calls for proposals and 8 programmes open to international cooperation. In 2010 ANR thus devoted nearly €48 million euros to international actions. Particular importance is placed on initiating collaborations with new players on the scientific research scene, such as China and Brazil. The ANR is moreover coordinating the activities of the ERA-Net initiative CHIST-ERA, a consortium of eleven research funding organisations in Europe, working on long-term challenges in ICT.

OUTLOOK

The planning of the thematic priority programmes for 2011-2013 is decisively oriented towards the objectives of the National Research and Innovation Strategy (SNRI) and the "Grenelle de l'environnement", the French national environment round table. Maintaining the balance between the thematic programmes and the bottom-up Blanc programme, and stimulating the emergence of new ideas and concepts will enable the funding of research projects to continue. Consolidation of the international network and the programmes targeting young researchers will help improve the integration of French research teams in the European scene.

The first projects in the "Investments for the Future" programmes have begun. The launching of new calls for proposals and the setting up of new and recently selected structures and equipment will induce major changes in the French research landscape as of 2011, and significantly boost the national research capacities in certain cutting-edge areas.

The ANR's actions provide significant support on different scales, from individual teams, synergistic groupings of several teams in research units up to larger structures allowing the geographical implementation of scientific policies to entire sites. Given the present overall economic context, the means provided really are considerable.

It is my personal conviction that, used in synergy with the policies of the French institutions and research organisations, these means will enable us to ensure that French research occupies a key position on the international scene.

SUMMARY

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ABOUT US

The French National Research Agency (ANR) is a public organisation established by the French government in 2005 to fund research projects, based on competitive schemes giving researchers the best opportunities to realise their projects, and paving the way for ground-breaking knowledge. The role of the Agency is to bring more flexibility to the French research system, foster new dynamics and devise cutting-edge strategies for acquiring new knowledge. By identifying priority areas and fostering public-private collaborations, the ANR also aims at enhancing the general level of competitiveness of both the French research system and the French economy.

Since its creation, the Agency's budget has been growing, stabilising at €854 M in 2010. 6390 applications were received and evaluated in 2010, and 1373 of them were funded.

Project-based research funding is well established in many countries where it is known to stimulate research organisations and strengthen their synergies. The ANR's approach to funding allows French research to reinforce its international position and better integrate the framework of European cooperation.

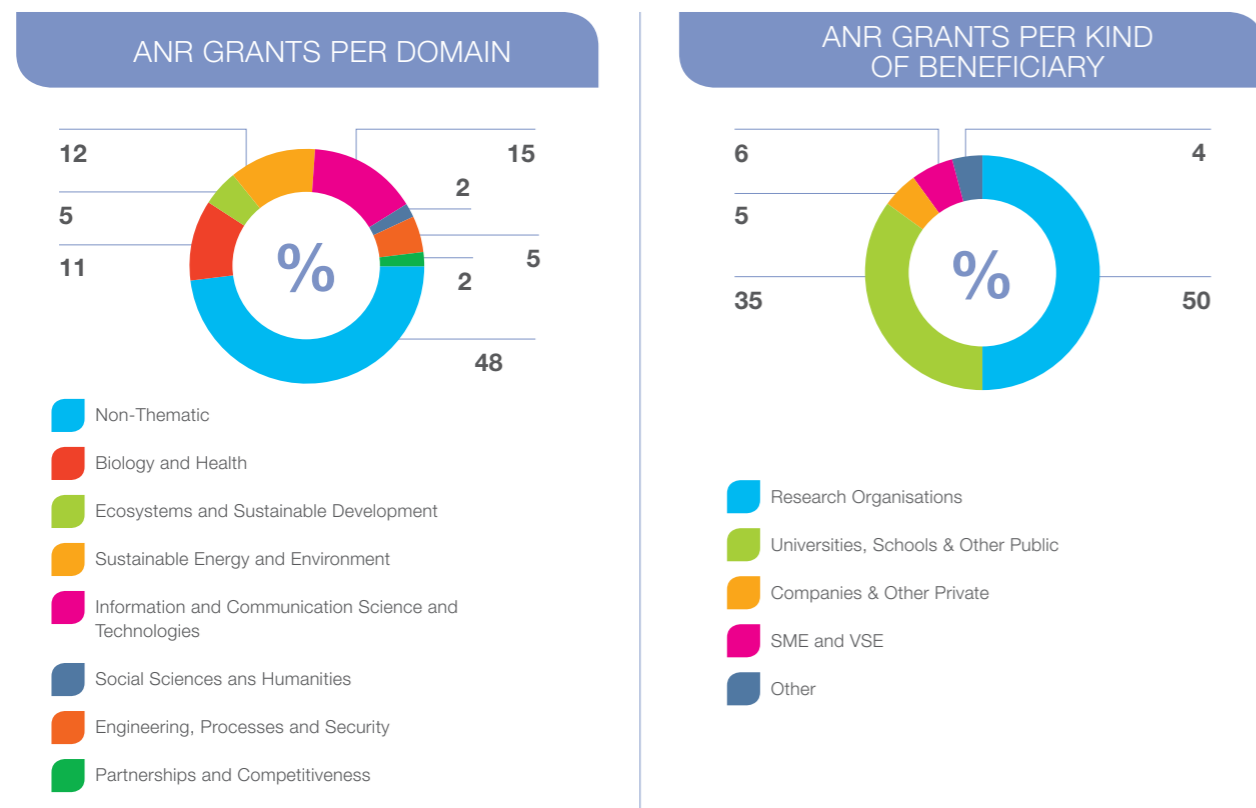
The role of the ANR is essentially to act as a catalyst and amplifier of the research themes that emerge within the various scientific communities, whether universities, research organisations, alliances or, in certain cases, companies, depending on their strategy and inventiveness. The programme planning it proposes to research teams meets current scientific, economic and societal priorities, while leaving extensive freedom to propose innovative projects, with 50% of its budget being allocated to bottom-up programmes.

→ ANR IN FIGURES

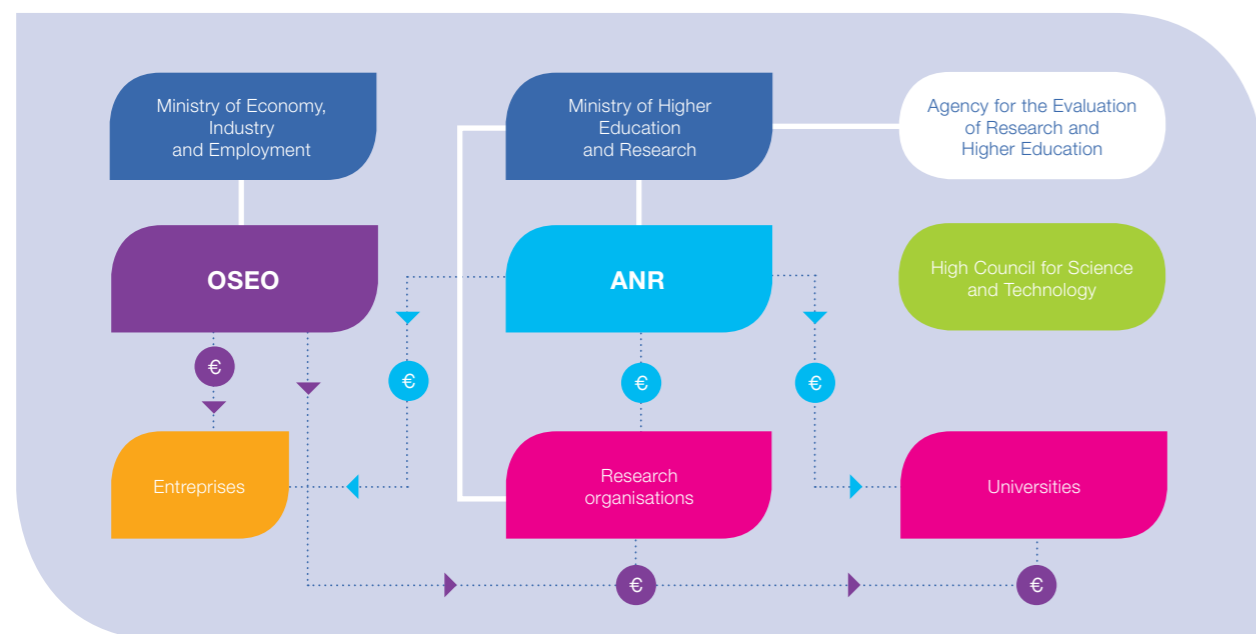
Overall
budget
€854 M

49	● Calls for proposals
18	● Calls open to international cooperation
6 390	● Proposals submitted
1 373	● Projects funded
8%	● Budget for transnational projects
AVERAGE FUNDING PER PROJECT:	
€376 k	● Open calls
€760 k	● Public-private partnership calls
9.9%	● Share of company research
18.9%	● Share of university research
50%	● Share of public research organisations research
22%	● Average selection rate
32%	● Foreign external reviewers
12%	● Co-funded transnational projects
13 500	● Peer reviews
1 455	● Members of Evaluation Panels
3 980	● Partners funded

ANR funds are available in all scientific fields, for both fundamental and industrial research and for public research organisations as well as private companies (through public-private partnerships). With a peer review process matching the highest international standards, ANR's general goal is to fund excellent research, while also facilitating innovation and interdisciplinary work and developing European and international collaborations.



ANR IN THE FRENCH RESEARCH SYSTEM



ANR is a public funding organisation depending on the **Ministry of Higher Education and Research** and a key actor in the French research and innovation system. The agency was created within the framework of a larger reform, which also comprised the establishment of the **AERES** – Agency for the evaluation of research and higher education, whose role is to assess French public research units and institutions. Alongside the AERES, the High Council for S&T was created in 2006 with a mandate to issue advice and recommendations on the evolution of the French research system. **OSEO** is a public-sector institution dedicated to economic development — and a key source of financing and other support for SMEs.

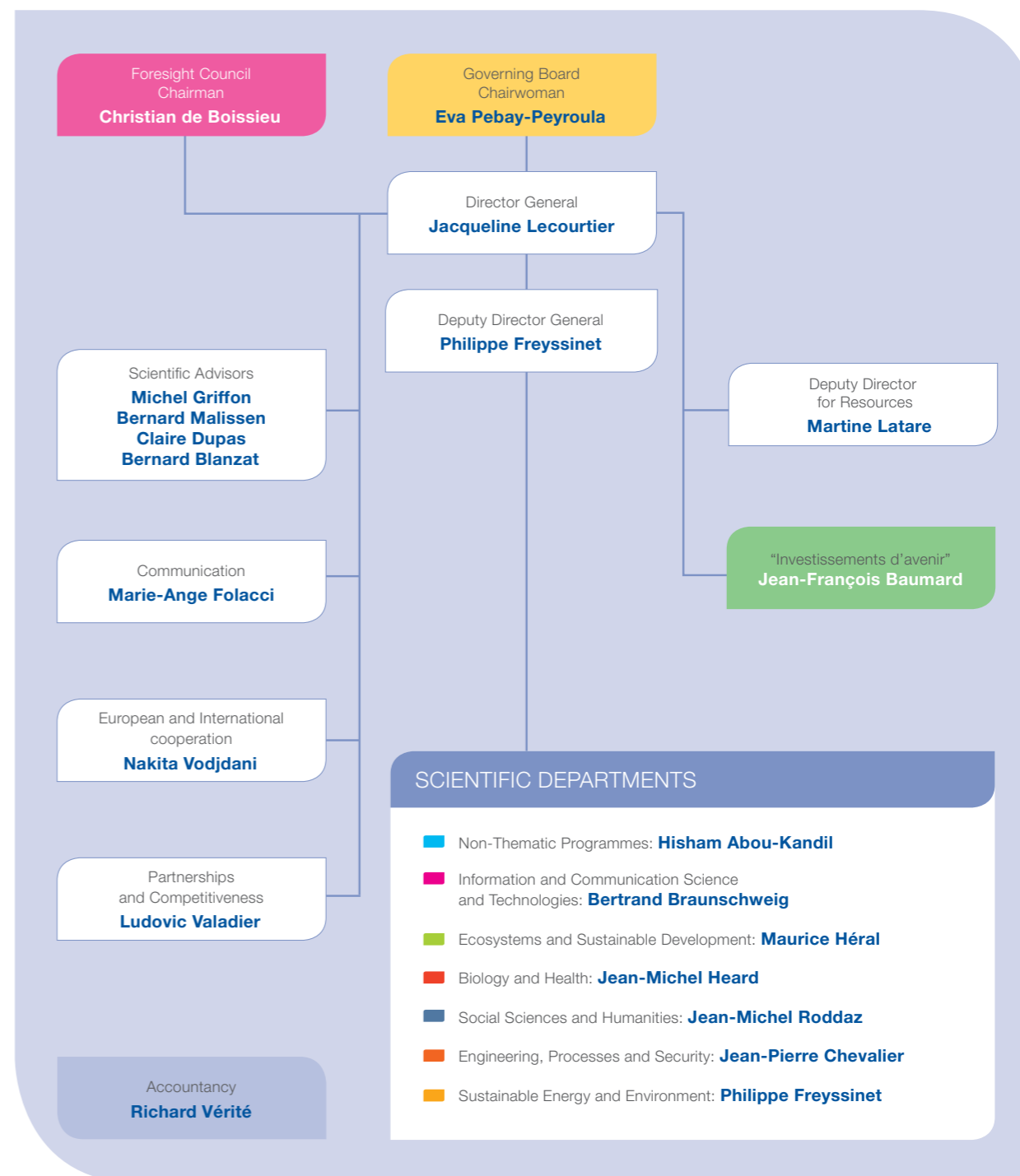
ORGANISATION & STAFF

The ANR is located in Paris, with its headquarters in the Gare de Lyon area. In 2010 the Agency opened a second site in the New National Library district to accommodate its growing number of collaborators. The Agency is headed by a Director General, who acts under the supervision of the Governing Board. It is organised in 8 scientific departments, each with a Head of Department and a number of

Programme Directors and Project Managers.

ANR staff is composed of 210 agents. Nearly half the staff members are scientists. The typical Programme Director supervising each ANR programme is an active senior scientist often working part time at the ANR for a set time before returning to her/his institution or moving to another one.

ORGANISATION CHART (July 2011)



- **6 departments** are dedicated to broad scientific areas and priorities. The other two are dedicated to running the agency's non-thematic schemes and to fostering public-private partnerships.

- **The European and International office** works with all the scientific departments. Administrative services are grouped under the General Secretary to handle all general affairs, legal matters and finance and awards management.

➔ **It is worth noting that administrative costs are maintained at a very low level at the ANR: they represent just 3.4% of the agency's funding budget in 2010.**

GOVERNING BOARD



GOVERNING BOARD

Taking all major decisions, the Governing Board's role is to define the general frame of agency's operations. It is responsible for questions relating to science and research policy, discusses the financial planning for the coming years and adopts the annual budget.

THE GOVERNING BOARD HAS 10 MEMBERS AND IS MADE UP OF:

➔ The chairman of the French High Council of Science & Technology

➔ Four State representatives:

2 from the Ministry of Research and Higher Education

2 from the Ministry of Finance and Budget

➔ Five highly-qualified scientific personalities. Although no pre-set quota exists for the distribution of seats, efforts are made to split the seats equitably between scientific and academic fields. The Chair is chosen from among the 5 scientific personalities.

SCHEMES AND PROGRAMME TYPES

The ANR's core activity is to issue calls for proposals through Programmes. In 2010, 49 calls for proposals were published in all scientific areas. A programme may consist of a number of calls for proposals, issued within the same year or over a longer period. ANR schemes and programmes can be divided along two lines:

- "Thematic programmes" and "Non-thematic programmes",
- "Open" programmes and "Public-Private Partnerships" programmes.

1 Thematic programmes are the result of a top-down definition process. Responding to economic, environmental and societal demands as well as areas of scientific or technological priority, they accounted for 50% of the agency's grants in 2010.

Non-thematic programmes cater for researchers' creativity through a clear bottom-up process. They account for the other 50% of the agency's grants.

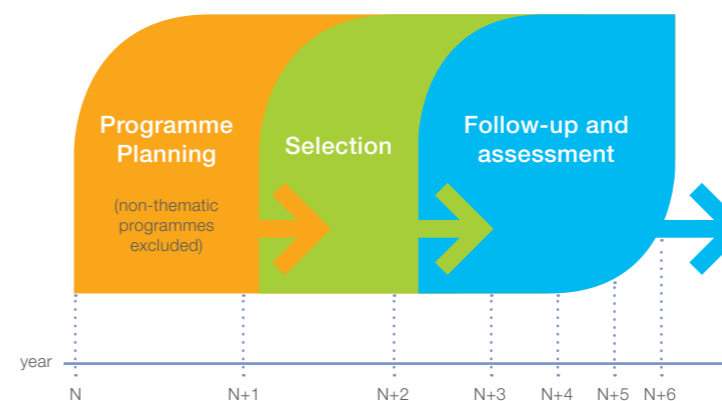
ANR's programmes are organised in 6 broad areas:

- Ecosystems and Sustainable Development;
- Engineering, Processes and Security;
- Health and Biology;
- Information and Communication Science and Technologies;
- Sustainable Energy and Environment;
- Social Sciences and Humanities.

2 Public-private partnerships programmes require at least one partner from each sector, public and private.

Open programmes are open to both public-private partnerships and academic research.

INITIATIVES CARRIED OUT BY THE ANR ARE ORGANISED IN THREE PROCESSES:



➔ **Programme Planning** defining the outline of programmes and the content of the calls for proposals each year

➔ **Selection** of projects to be funded through peer evaluation in accordance with international standards

➔ **Follow-up and assessment** of funded projects; programme assessment and dissemination of results when projects have ended.

TRANSPARENCY, EQUITY, EFFICIENCY



In 2008, ANR obtained the **ISO 9001** certification by AFNOR for its entire selection process. Since 2010, all of ANR's 3 processes have been ISO 9001 certified. This certification reflects the concerted efforts of the Agency's staff to develop rigorous and optimised working methods.

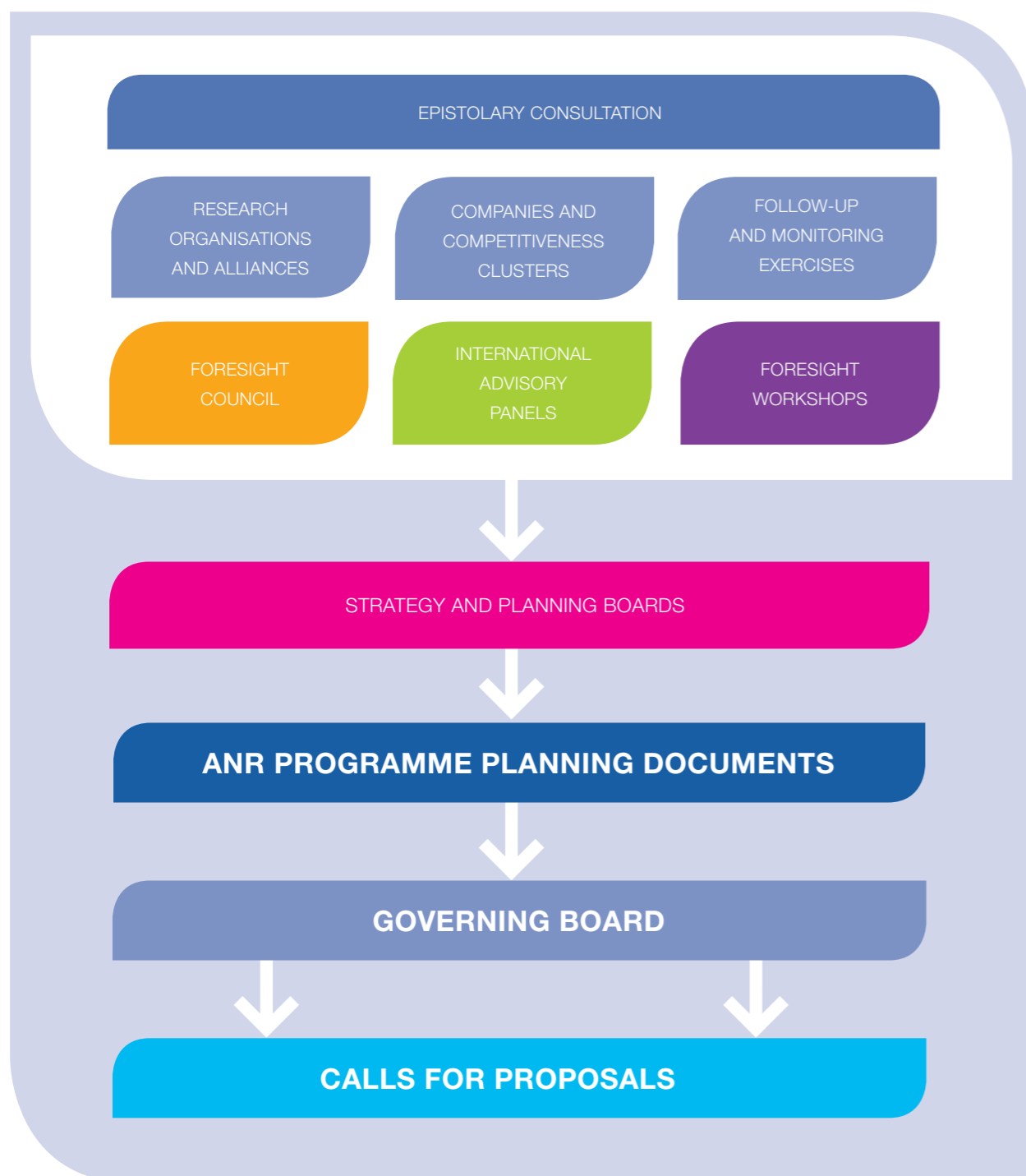
➔ CONSTANTLY ATTENTIVE TO THE SCIENTIFIC COMMUNITY

ANR programme planning and foresight studies

In order to enrich its portfolio of thematic programmes with the most strategic considerations, the ANR implements a continuous foresight and programme planning process in which it consults the widest possible range of national and international stakeholders.

Consulting the scientific community each year on the future needs in both fundamental and applied research is one of the agency's priorities. The ANR's goal is to identify themes which can respond to societal, environmental and economic needs, but also to technological and scientific challenges.

The annual programme planning process is the result of multiple inputs, including feedback from the previous or on-going programme follow-up and assessment process.



ANR FORESIGHT COUNCIL

The ANR Foresight Council was created in February 2008 and consists of a restricted number of members from a range of sectors with experience in foresight and planning. The council's objective is to provide a continuous set of guidelines for ANR strategic positioning on the international research and development scene. The council listens to expert testimonies and examines future prospective reports submitted by ANR Strategy and Planning Boards as well as by the Foresight Workshops. The opinions produced by the Foresight Council help ANR determine the content of its programmes over the long term. The Foresight Council meets tri-annually.

INTERNATIONAL ADVISORY PANELS

Established in 2008, the International Advisory Panels consist of prominent international scientific figures, with a majority of Europeans among their members. Each Panel, working in its specific field of competence, delivers a biennial report on the adequacy of ANR programmes and procedures and produces recommendations for future orientations. Standing at the crossroads of the programme planning and assessment processes, the international advisory panels' reports are one of several inputs leading to the ANR annual programmes plan.

ANR FORESIGHT WORKSHOPS

The Foresight Workshops are independent from the calls for proposals and ultimately designed to contribute to the definition of future ANR programmes. For this purpose, they bring together groups of researchers, experts and representatives from the public and private sectors to identify R&D needs in emerging or transformative scientific areas.

ANR STRATEGY AND PLANNING BOARDS

ANR's scientific strategy relies on 7 Strategy and Planning Boards (*Comités scientifiques sectoriels - CSS*) involving a total of 201 scientists. Board members are well-known figures in their field and represent all of the major scientific communities (*universities, research organisations, industry, and civil society*). Government officials participate as well. These boards play a key role in defining ANR programme planning through reflection on new programmes, permanent guidance on calls for proposals, or decisions to terminate programmes. Their reflection is enriched by considering all proposals on new programmes stemming from research stakeholders through an epistolary consultation, as well as advice from the ANR Foresight Council, existing foresight studies, assessments of previous calls, information on the international research scene and the results of Foresight Workshops. The Strategy and Planning Boards are invaluable as crossroads for discussion on strategies, in particular between public and private sector research. 2010 Strategy and Planning Boards:

- Ecosystems and Sustainable Development
 - Energy
- Biology and Health
- Chemistry Materials and Processes
- Nanoscience and Nanotechnologies
- Information and Communication Science and Technologies
- Social Sciences and Humanities

➔ Preparation of a new programme planning cycle for 2011-2013

2010 closed a programme planning cycle of 3 years. The ANR has therefore devoted much time to consultation and the maturing of ideas in the preparation of its choices for 2011-2013.

The programme planning for 2011-2013 firstly follows the priorities of the National Research and Innovation Strategy, in which fundamental research is favoured, multidisciplinary remains a priority, and openness to the society and the economy is highly present in the thematic programmes. The inspiration for programme planning also comes from the need to ensure that society and the economy emerge positively changed from the crisis in order to anticipate the necessary adaptations. Research work must accompany the choices of the public authorities in their drive to reduce public deficits and improve productivity and competitiveness in the production and services sectors. The priority sectors are therefore those likely to increase the productivity of companies, those that are anchored in society and difficult to relocate and corresponding to fundamental needs (ageing, decarbonisation of energy, scarcity of raw materials). The sectors of green growth, health, and the ICSTs are particularly concerned.

SELECTING AND FUNDING THE BEST RESEARCH PROJECTS

A selection process based on peer review

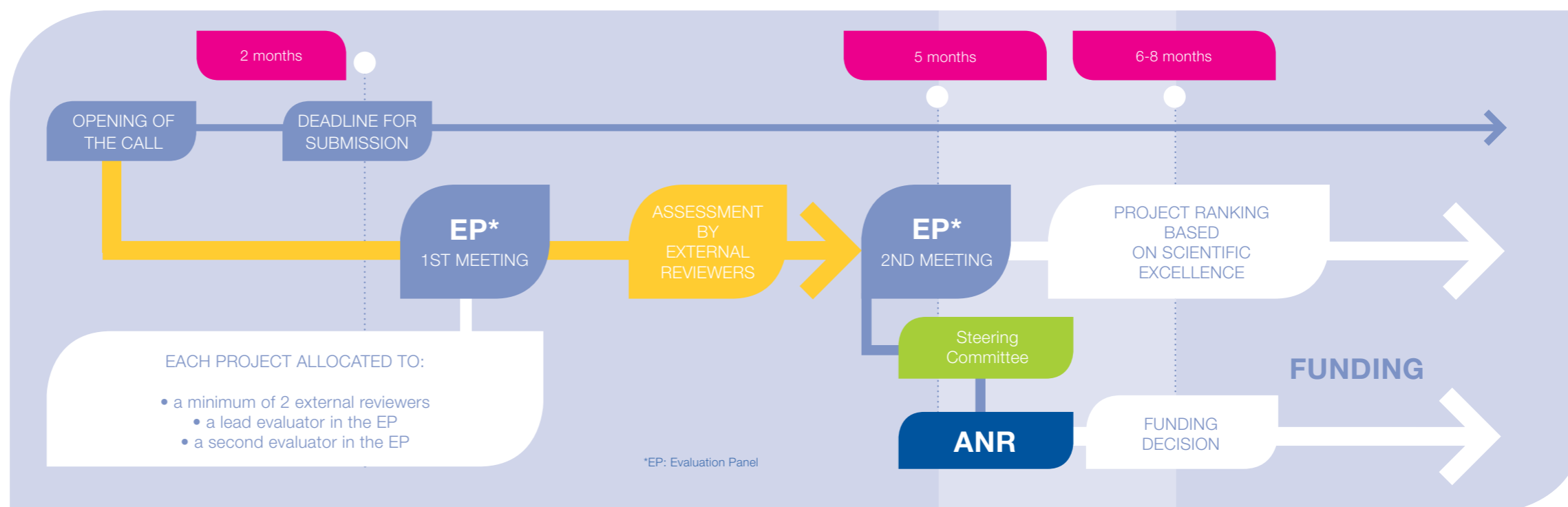
The keywords here are transparency, equity and quality. ANR processes are based on competitive schemes and a two-stage peer review process which received ISO 9001 certification in 2008. The central element of the review process is the evaluation panel. For every call for proposals, ANR nominates a specific panel, which consists of internationally recognised researchers from the public or private sector, with the highest knowledge of the scientific and technological issues addressed in the programme.

In the first stage, a minimum of two written reviews are obtained from external expert reviewers who are appointed by the panel members. In the second stage, the projects are assessed by the panel.

The panel assesses all eligible applications and ranks them in three categories (A: recommended for funding; B: acceptable; C: not recommended for funding).

The best projects are then examined by a steering committee. The steering committee comprises qualified prominent figures and institutional representatives whose role is to propose a list of projects to be funded by the ANR in accordance with the work of the evaluation panel and in line with the objectives of the programme.

THE SELECTION PROCESS



The evaluators in figures: →

1 455

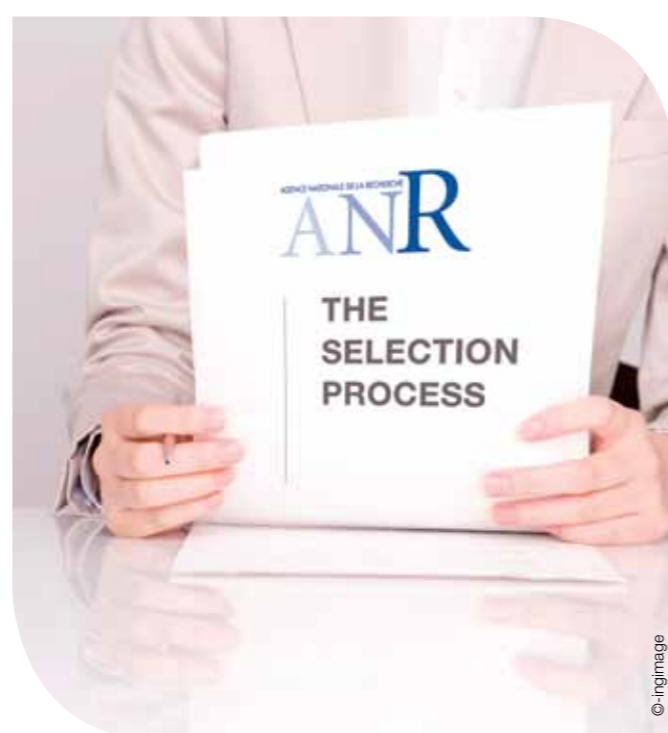
Members of evaluation panels

13 500

External reviews

32%

Foreign external reviewers




At the end of the process, rejected applicants receive the evaluation panel report for feedback, allowing for constructive enhancements of the projects. The ANR publishes the list of all panel members online, but external reviewers are kept anonymous.

FUNDING

In most ANR schemes, projects can last 2 to 4 years and the Agency funds either marginal costs or Full Economic Costs (FEC), according to the status of the applicants. The ANR generally funds marginal costs for public academic institutions, thus covering all expenses necessary for the projects: equipment, travel costs, outsourcing, contracted personnel costs (ANR grants can be used to fund post-doctoral positions as well as PhD students in most scientific fields. The salaries of researchers or participants with tenured positions are paid directly and independently by their own institutions and are not included in ANR budgets.) For private sector applicants, ANR funds in 'Full Economic Cost' mode. Funds are available to both SMEs and larger companies. The ratio of funding is subject to the applicable rules of the European Union regulations on free competition and State aids.


FOLLOW-UP AND ASSESSMENT PROCESS

 The third pillar of the ANR's activity is the follow-up and assessment process.

These activities serve to monitor the progress of the funded projects and verify that they actually meet their initial commitment, and to provide appropriate answers to the scientific teams if they encounter difficulties during the project lifetime.

All funded projects are therefore carefully monitored during their realisation through diverse procedures such as intermediate and final reporting, individual review seminars and collective workshops.

When individual projects end, the calls for proposals and programmes themselves are evaluated in the light of their initial objectives. The results of these assessment exercises are ultimately used as feedback for defining new programmes. They are also used to provide information on the domain concerned to research organisations and the ministry.

 Follow-up and assessment activities are based on the following principles:

- a relationship based on mutual trust between the ANR and the project coordinators;
- a set of common tools and processes adapted to the specificities of each programme;
- a direct relationship between ANR scientific staff and the projects.



INVESTMENTS FOR THE FUTURE

As part of a government initiative to reinforce long-term French competitiveness, a major programme called "Investissements d'Avenir" or "Investments for the Future" was launched at the end of 2009.

The ANR is the operator for the research and higher education component of this programme, which covers 21.9 billion euros.

Such a programme has a structuring and integrating purpose, and is part of a long-term and dynamic drive to transform higher education, research and innovation.

These large-scale initiatives promoting excellence will strengthen France's capacities for innovation and be a driving force in the dynamics of growth in the coming years.

Overall, 14 calls for proposals were launched in 2010.

The selection process hinged upon the expertise of international peer reviewers and panels, especially for the calls aiming at creating centres of excellence.



➔ 754: NUMBER OF PROJECTS SUBMITTED IN 2010

DIFFERENT TYPES OF CALLS

➔ CENTRES OF EXCELLENCE

- **Initiatives of Excellence - Idex**

This initiative aims at creating 5 to 10 multidisciplinary centres of excellence in higher education and world-class research within the French landscape. These centres will be organised as geographically coherent groupings of higher education institutions, universities and schools, involving research institutions and in partnership with businesses. They will provide selected groups with significant resources to develop and implement their policy of scientific and higher education excellence.

- **Laboratories of Excellence - Labex**

This initiative aims to select internationally renowned laboratories of excellence and to provide them with the means that enable them to keep pace with their foreign counterparts and to attract top level foreign researchers. It should help them build a high-level integrated higher education, training and technology transfer policy.

- **Equipment of Excellence - Equipex**

This initiative is designed to endow teams from every scientific field with high level equipment (1-20 million euros) allowing internationally competitive research.

- **University hospital institutes - IHU**

This initiative will finance clusters of excellence in the field of research, care, higher education and transfer of technologies in health.

➔ INSTRUMENTS OF TRANSFER AND VALORISATION

- **Technological Research Institutes - IRT**

A limited number of technological innovation campuses with a significant international dimension should be created through this initiative, grouping higher education institutions, public and private applied research laboratories, prototyping and industrial demonstration services, and businesses.

- **Institutes of Excellence in Decarbonised Energies - IEED**

In the energy and climate sectors, this initiative aims to create a limited number of technological innovation campuses capable of acquiring an international dimension, and grouping higher education institutions, public and private applied research laboratories, prototyping and industrial demonstrations services, and service and industry stakeholders.

- **Technology Transfer Acceleration Companies - SATT**

The aim of this initiative is to select a very limited number of projects that can bring together all university valorisation teams and prevent the fragmentation of such structures with a view to improving the efficiency of technology transfer and the economic value created.

- **Infrastructures for life science**

This initiative aims to develop large service infrastructures for researchers in all fields of life science.

➔ THEMATIC CALLS FOR PROPOSALS

- Bioinformatics
- Biotechnologies and bioresource engineering
- Cohorts
- Pre-industrial demonstrators
- Nanobiotechnologies.

FOSTERING THE EMERGENCE OF NEW KNOWLEDGE & THE PRODUCTION OF INNOVATIVE CONCEPTS

Fostering the production of knowledge and scientific progress in all disciplines is one of the ANR's scientific priorities. The Agency favours a creative environment for researchers by giving them total freedom to defining research themes through bottom-up non-thematic calls for proposals, thereby paving the way for advances in S&T and innovative developments.

NON-THEMATIC PROGRAMMES

Supporting curiosity-driven research

These programmes cater for the scientific community as a whole and accompany the researchers in different stages of their career:

- 1 "Blanc" Programme ■
- 2 Chairs of Excellence Programme ■
- 3 Postdoctoral Return Programme ■
- 4 Young Researchers Programme ■
- 5 "Blanc" International Programme ■



The only rationale that prevails is the acknowledgement of excellence and the support given to innovative or interdisciplinary approaches in order to open new paths in research and thus push back the frontiers of knowledge. The projects financed under the non-thematic programmes thus foreshadow striking scientific discoveries.

The non-thematic programmes grew strongly in 2010, with their share of the ANR funding budget increasing from 35% in 2009 (25% in 2008) to 50% in 2010. This increase gives the entire scientific community the opportunity to express its creativity in full, from the most fundamental research through to applied and partnership-based research, and to stimulate cooperation - between teams from different laboratories. This major development reveals a strategic choice that allows the free submission of research projects without any form or prior orientation or planning.

Due to their regularity and stability, these programmes have become one of the key milestones punctuating the life of the research laboratories.

This 'blue-sky' programme covers the entire research spectrum and gives significant impetus to ambitious projects at the cutting edge of traditional research paths. Researchers from all disciplines can submit a project on any topic they choose. It is open to all types of research: basic, fundamental and applied, as well as to partnerships with industry.

By creating know-how and pushing back the frontiers of knowledge, these research actions lead to a better understanding of our world and facilitate the emergence of innovations.

"BLANC" PROGRAMME: NUMBER OF PROJECTS FUNDED PER THEMATIC DOMAIN

Biodiversity, Evolution, Ecology and Agronomy	28	Molecular, Organic and coordination Chemistry, Catalysis	33
Genomics, Genetics, Biocomputing, Systems Biology	20	Earth System, Environment, Risks	22
Life Physics and Chemistry, and Biotechnological Innovations	25	Science of Universe	12
Neurosciences	34	Physics	30
Microbiology, Immunology, Infectiology	32	Materials and Softwares for Systems and Communications	17
Cell Biology, Development Biology	41	Information Science, Simulation	19
Physiopathology, Physiology, Public Health	40	Mathematics and Interactions	28
Nanosciences	19	Cultures, Arts, Civilisations	13
Engineering, Materials, Processes and Energy Sciences	48	Human Development and Cognition, Language and Communication	14
Chemistry of Solids and Colloids, Physical Chemistry	21	Societies, Space, Organisations and Markets	18



"BLANC" PROGRAMME

Fostering risk taking and audacity in science

1

FOCUS



SEISMIC POTENTIAL ALONG THE NORTHERN ANDES SUBDUCTION

Rapid subduction of the Nazca oceanic plate beneath the South American continent is known to produce megathrust earthquakes with a characteristic recurrence time of one to three centuries in Chile, southern Peru, northern Ecuador and Colombia. However, no information was yet available along a segment from Lima (Peru) to Guayaquil in Ecuador. In that area, no major earthquake has been detected for at least three centuries, suggesting either a long recurrence time between giant earthquakes or aseismic steady slip, therefore unable to generate large earthquakes. The project developed a multidisciplinary approach including geodesy, seismology, tectonics, marine geophysics and modelling. In particular, a dense network of GPS and seismological observation has been deployed in the field which led to some striking results. First, geodetic measurements reveal that the present-day stress accumulation is highly heterogeneous along this segment of the Nazca-south America

Project ADN 2007

Blanc programme 2007

ANR funding: €455 k

subduction, with high mechanical coupling in the area of Lima and very weak to null coupling north of latitude 10°S. Another surprising result is the recognition of a fast and major fault (7-8 mm / year) across Ecuador, which prolongates to Colombia and Venezuela. It was identified independently by geodetic results, tectonic analysis and historical earthquakes. This ~2000 km long fault system, located close to populated areas is the major seismic threat inland. The ANR also supported the geodetic survey following the 2007 magnitude 7.9 Pisco earthquake (Peru), leading to an article in Nature (Perfettini et al., 2010). This study illustrates how stress accumulates before the earthquake and is then released during the seismic rupture and aseismic slip during the months following the event.

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The hosting of high-level foreign researchers in French laboratories plays a crucial role in enhancing the attractiveness of France in the international context.

The top candidates make their choices according to key factors such as living and working conditions as well as the ready availability of project management resources. "Chairs of excellence" is a programme that provides substantial means for top foreign researchers willing to set up a team and rapidly undertake ambitious research projects in France. Such a programme is vital to reinforce the country's innovation potential as well as the structuring of new research themes.

3 types of chair are proposed according to the project duration and the researcher's career, whatever his/her nationality or discipline: junior and senior chairs for long duration (36 to 48 months) and senior chairs for a shorter duration (18 to 24 months).



A post doc stay abroad is a milestone in a young researcher's career. The return (of either French researchers or foreign researchers who did their PhD in France) is crucial in order to develop research initiatives for the future and to consolidate targeted initiatives undertaken with foreign countries. Measures are needed also to prevent the 'brain drain'. The ANR encourages young researchers who have already proved their strong scientific qualities to pursue a career of excellence on the French territory. This programme is an instrument to promote the return and integration of high-level young French researchers who have already had a post-doctoral stay abroad in higher education and research organisations or industrial research clusters. Successful candidates from all scientific disciplines are offered the appropriate means to continue their research project on the national territory for a maximum period of three years.

The expected impact of such an initiative is twofold: firstly to increase the number of post-doctoral researchers and benefit from the excellence of their training and experience, and secondly to increase the number of PhDs eager to visit foreign laboratories by facilitating their subsequent return.

FOCUS



THE MOST DISTANT GALAXY EVER MEASURED

The ambitious objective of the project was to study the origin and the evolution of the kinetic moment of galaxies. Within a collaboration framework between French and British astronomers, the project has measured the distance to the most remote galaxy so far, thanks to the Europe's ESO Very Large Telescope. By carefully analysing the extremely weak light coming from that galaxy, they noticed that at the time of the observed light emission from the galaxy, the Universe was aged about 600 million years old. For the first time astronomers have observed, through a re-ionisation process, the evolution of Universe from the state of the «dark age» to the state of the transparent universe, i.e. a very luminous one. Those observations show that the radiation coming from neighbouring galaxies helped to dissipate the surrounding opaque hydrogen fog which prevented the light from escaping and reaching the Earth after a journey of 13 billion years. These results were published recently in the journal Nature (Nature 2010: 467: 924–925).

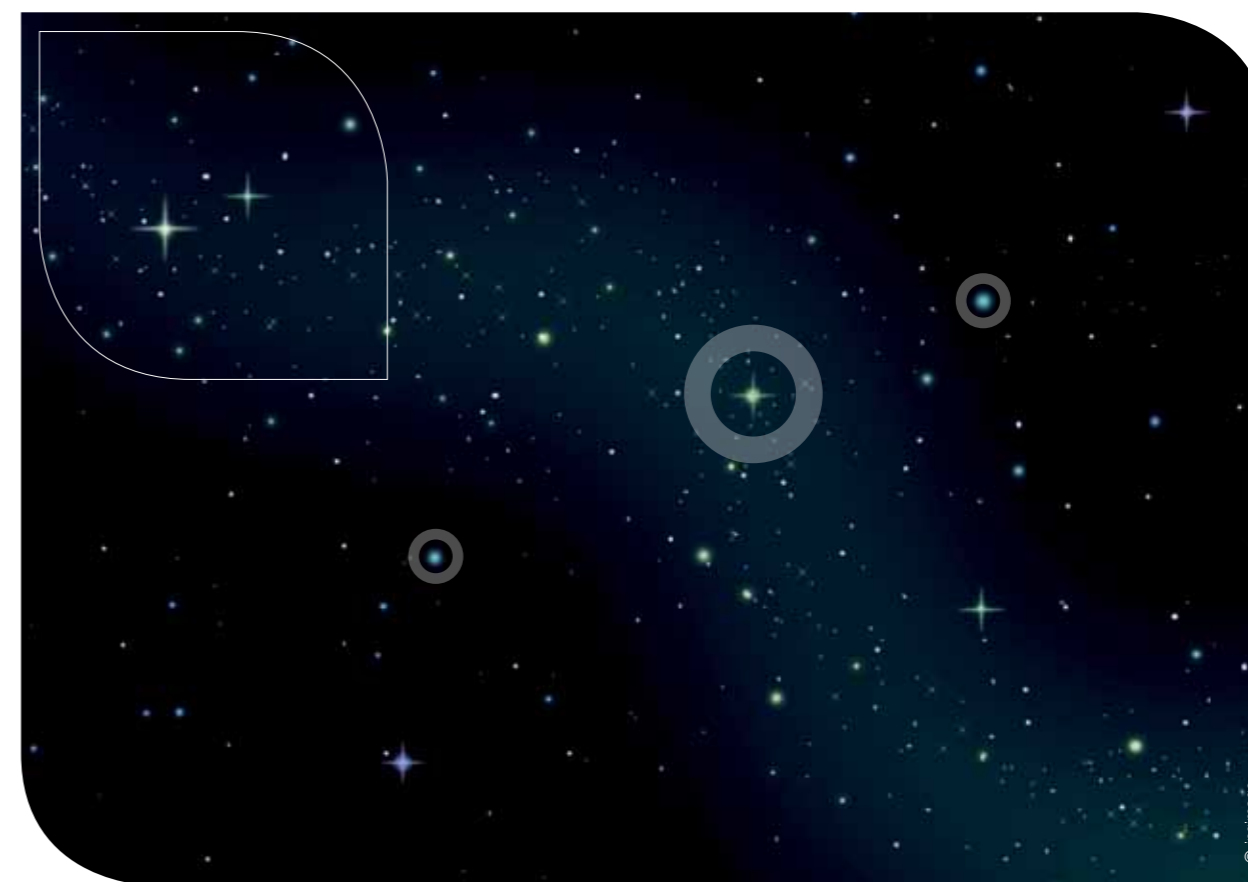
For further information: matthew.lehnert@obspm.fr



Project Ang. Momentum

Junior Chairs of Excellence
2006 Programme

ANR funding: €362 k





➔ YOUNG RESEARCHERS PROGRAMME

Encouraging autonomy and innovative initiatives

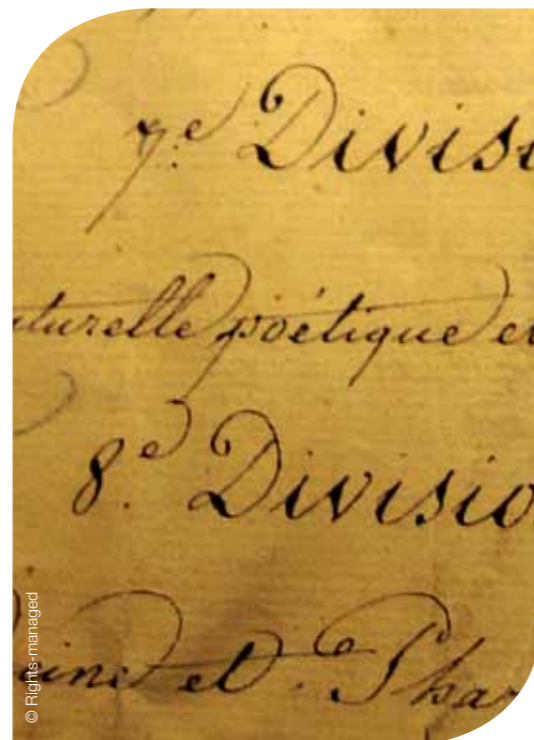
The ANR intends promoting scientists aged under 39 and helping them develop their own research themes, set up or consolidate research teams and give them the opportunity to rapidly express innovative initiatives by giving them strong support. The Young Researchers Programme can also be considered as a stepping stone for young French researchers applying to the ERC (European Research Council) starting grants programme.

FOCUS

SCIENTIFIC POETRY FROM 1792 TO 1939

From the end of the Enlightenment era to that of the Empire excelled a poetical genre, nowadays largely forgotten, namely scientific poetry. The Euterpe project established an as exhaustive as possible inventory of scientific poetry and catalogued some 600 titles. A database including editorial, biographical or thematic information for nearly 400 titles was set up to allow statistical modelling of the evolution of the genre. Relevant texts were scanned and made available at the French National Library on Gallica digital platform. The project has radically challenged chronologies assumed by most Historians, as it reveals that scientific poetry did not suddenly disappear with the arrival of Romanticism, but continued until 1900, fuelling a complex debate involving Scientists and Writers throughout the 19th century. More widely, it has uncovered many unpublished documents that will enable a better understanding of the relationship between Science and Literature.

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Project Euterpe

Young researchers 2007 programme

ANR funding: €130 k



➔ “BLANC” INTERNATIONAL PROGRAMME

Giving rise to European and international teams of excellence

5

This programme provides a significant stimulus to ambitious, original and competitive research on an international level. The ANR has concluded specific cooperation agreements with targeted countries on specific and broad domains, thus giving French researchers the opportunity to initiate or further their scientific collaborations with foreign teams. Depending on the country, the programme is open to all kind of research work, i.e. either academic research or research conducted in public-private partnership.

FOCUS

FRENCH-TAIWANESE PROJECT ON THE REGULATION OF TUMOR ANGIOGENESIS

From Structure to Function

The aim of this French-Taiwanese project was twofold: i) identify the structural determinants of molecules from a family of chemokines implicated in the development of tumor angiogenesis; ii) study the inhibitory mechanisms of Atragin, a protein extracted from cobra venom. The use of different complementary biological and biophysical approaches (molecular, cellular, structural, in vivo studies, etc.) was essential to meet the aims of this project. For example, as shown in the figure below, the combination of these approaches allowed the identification of structural differences between Atragin and the K-like molecule, which explains the anti-angiogenic effect of Atragin. The transnational collaboration was crucial because of the complementary skills of the teams: the French lab has strong expertise in molecular cancer research and undertook cell biology and molecular and in vivo studies, whereas the Taiwanese lab has strong expertise in structural biology and biophysics and undertook studies using those approaches.

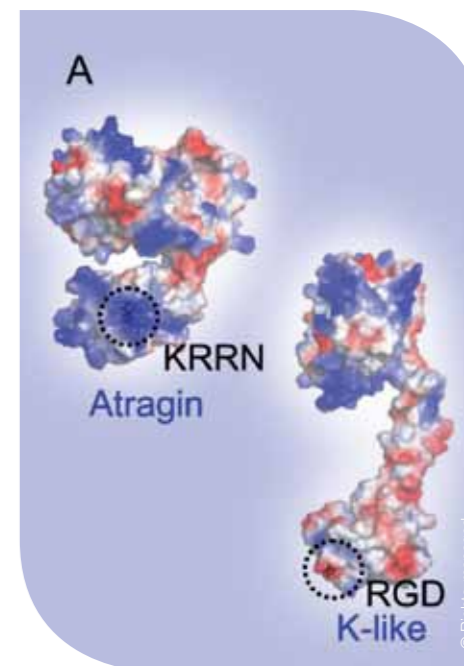
The biological properties of chemokines, the identification of mutants and the production and characterisation of specific antibodies were patented.

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Project Angio_ANR-NSC

Blanc International 2007 Programme

ANR funding: €210 k



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FUNDING RESEARCH RESPONDING TO SOCIETAL CHALLENGES

Advances in science and technology are often closely interconnected with major social issues and are therefore often analysed in the light of their societal implications.

A widespread expectation of scientific research is that it should help improve living conditions, therefore the ANR - through its choices of programmes - has made it a priority to ensure that the possibilities offered by the best of science and technology are oriented towards the needs of society.

The ANR directly addresses a number of societal issues in programmes that intend to provide scientific and technological responses to burning societal questions, such as security, social well-being, nutrition, etc.

These programmes stimulate research that is in line with major social demands, evolutions or lifestyle changes, and global concerns.



TECHNOLOGIES FOR HEALTH AND AUTONOMY PROGRAMME

The development of technologies for health and autonomy is associated with a strong societal need and growing constraints, including the move towards increased prevention of illness and dependency, the ageing population and a demand to subsidise health care and loss of autonomy. These technologies exploit scientific and technological advances to serve medicine or surgery, to make it safer, more precise, less invasive and more efficient. It is also meant to serve people who have lost their independence through illness, disability or age, to give them greater autonomy while maintaining a high level of security and assistance. This programme aims, through applied research projects, to develop innovative technologies and concepts with high potential for use in health and autonomy, and achieve major technological breakthroughs.



ALZHEIMER'S DISEASE AND RELATED DISEASES PROGRAMME



Alzheimer's disease and related diseases represent a major societal public health issue due to the ageing of the human population and the lengthening of average life expectancy. Their frequency and severity, as well as the disability and social exclusion they lead to, are a real challenge for patients, families and caregivers. This programme supports the research part of the National Alzheimer Plan 2008-2012 and aims particularly to produce new diagnostic tools and develop both drug and non-drug therapies that can block the evolution of the diseases or prevent them. It also aims to improve the comfort of patients and their friends and families at different stages of disease progression. The 2010 call had three objectives: to increase fundamental knowledge on these diseases; to promote interdisciplinary research and the convergence of basic, clinical and industrial research; to develop research projects using pre-existing and appropriate groups of patients/cohorts and biological resources.



FOOD AND FOOD INDUSTRIES PROGRAMME

The prime aim of food research is to improve quality of life and health by ensuring nutritive, safe and affordable food. This programme intends improving knowledge and developing tools for promoting more sustainable dietary systems and products that are economically accessible to everyone. It thus proposes developing research into food and food production by integrating the implications for the environment, health and production around three broad lines of reflection: 1) improving the quality of life of specific vulnerable populations by developing food that correspond to their needs; 2) improving company competitiveness by encouraging industrial innovation; and 3) developing tools favouring the production of safe and good quality food under conditions that respect the environment and the ecosystems.



FOCUS

**SHEDDING LIGHT ON PLAYING AND THE PLEASURE OF FOOD**

Children and Fun foods

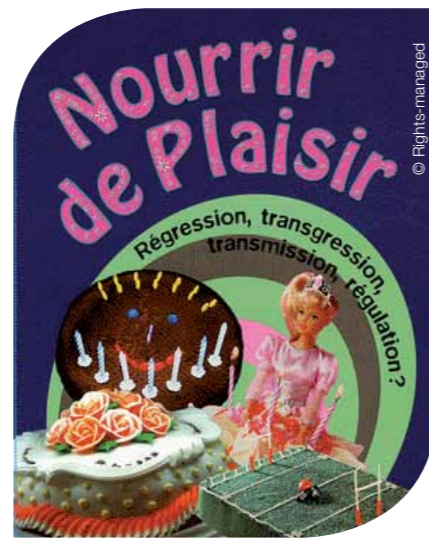
Project LUDO-ALIMENT

PNRA 2006 Programme

ANR funding: €394 k

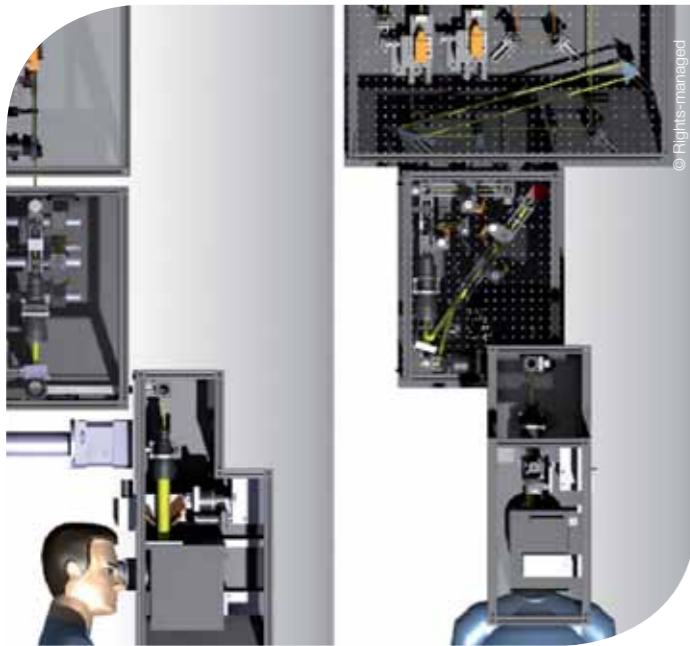
The aim of this project is to define the «fun food» concept. Several lines of study were explored to achieve this, ranging from the inception of the food product, its marketing and its mode of consumption, to the daily eating habits of children and their parents. The results of the study highlight that children as consumers are confronted with three different and sometimes contradictory messages: i) a message from the family unit which aims at rooting the child's eating habits in a specific culture, ii) a «hedonic» message transmitting sensorial pleasure and a fun dimension, projected by various marketing techniques (advertising, sales area), and iii) a «nutritional» message promoted by the French National Nutrition & Health Programme (PNNS) and State Education. This project shows there is an urgent need to devise an innovative way of educating children's eating habits, integrating the fun and hedonic aspects with the conventional nutritional messages.

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**DESIGNING AN INNOVATIVE DEVICE FOR OCULAR SURGERY**

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Project GRECO

TecSan 2006 Programme

ANR funding: €751 k

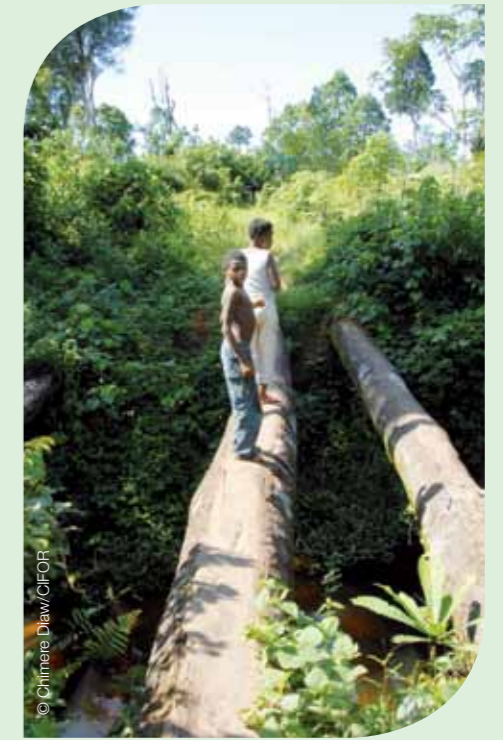
This project was proposed following the success of ultrashort pulsed lasers in refractive surgery. Most of the clinical systems currently available also offer routines for keratoplasty (corneal grafting). Unfortunately, most indications for corneal grafting are associated with an insufficient optical quality of the patient's cornea, which severely compromises the outcome of laser procedures. However, as was shown during the project, the strong light scattering in pathological corneas may be compensated by an increase in laser wavelength towards 1.65 μm . The main objective of the project was to identify the optimal laser parameters in order to conceive an effective tool for corneal grafting. A demonstrator device has been developed in order to demonstrate the clinical potential of this new

tool. The results show a considerable improvement in the laser penetration depth and in the quality of the incisions, which illustrates the interest of this approach for the clinical practice.

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**THE SOUTH (LES SUDS) PROGRAMME**

The dynamics of the contemporary world reinforce interdependencies between countries. Analysing these dynamics is a prerequisite for development and overcoming crisis situations. All fields are concerned: economic, social and cultural policies; financial, health or military risks; advances in know-how, techniques and knowledge; relations between players, organisations and institutions; interrelations between nation-states whose role is rapidly changing. If the relations between the North countries are well known, identified and analysed, those between South countries and between the South and the North countries are less studied. Furthermore, the crisis of global financial capitalism has generated major effects on the economies and societies of the South countries. A series of questions merits renewed reflection in view of this crisis - and not just those relating to the economy. This programme covers all the aspects of the situation of the South and the relations between South countries and between South and North countries in their response to the economic, social and cultural changes.



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FOCUS

**IMPACT OF MICROFINANCE ON RURAL EMPLOYMENT**

This research project explores the links between rural finance and employment. Qualitative analysis and ethnography have been combined with a household survey designed jointly between economists and anthropologists and implemented in South-India, Madagascar and Mexico. There are three major outcomes from this research. Firstly, it highlights the diversity of the ways in which finance and labour interact. Labour and finance mutually shape one another in multiple and complex ways, whether in terms of livelihood diversification and self-employment, or circulation and migration. Then, men and women juggle a variety



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of financial tools and livelihood opportunities for economic and social motives. Debt, saving and labour cannot be seen solely as economic transactions but also – and sometimes mainly – as social relationships. The project also highlights the risks posed by financial inclusion policies for household over-indebtedness. It stresses that the nature and scale of over-indebtedness vary greatly – over-indebtedness is for instance widespread in South India but very much less so in Madagascar. Where there is over-indebtedness, it is shaped by and constitutive of broader socioeconomic dynamics such as the tightening of labour markets and the rise of consumerism patterns, including among the poor.

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Project Rural Microfinance and Employment: do Processes Matter?

Les Suds 2007 Programme

ANR funding: €210 k

FUNDING RESEARCH ADDRESSING ENVIRONMENTAL ISSUES AND GREEN TECHNOLOGIES

ANR programmes give high priority to the issues raised by the "Grenelle de l'Environnement" (French National Environment Round Table), with the result that the Agency is now a major actor in funding environment-oriented projects. Many programmes are partly or entirely oriented towards finding solutions to environmental issues, covering a wide spectrum of domains and key challenges such as ecology and biodiversity; low carbon energy and greenhouse effect; global change; renewable energies and pollution; energy efficiency; etc.



SUSTAINABLE CHEMISTRY - INDUSTRIES - INNOVATION PROGRAMME

Chemistry plays a fundamental part in the improvement of living conditions. Nowadays it must be effective at promoting sustainable development. The "Grenelle de l'Environnement" proposed initiatives in favour of the transformation of the chemical industry, such as reducing greenhouse gas emissions, increasing the proportion of renewable materials from 7 to 15% by 2017. "Eco-efficiency" should be replaced by "eco-design", where environmental parameters are taken into account from the beginning of product design. The programme focuses on the optimising of existing processes and the development of new synthesis strategies aiming at reducing waste production, by encouraging chemists to think differently.



SUSTAINABLE PRODUCTION AND ENVIRONMENTAL TECHNOLOGIES PROGRAMME

The aim of this programme is to reinforce research endeavours in eco-technologies in France, develop innovation in eco-industries and significantly reduce the environmental impact of industrial activities. It focuses on developing technologies, tools and services that could foster innovation in terms of sustainable industrial production and eco-industries, i.e. an industry providing goods, services and equipment while protecting the environment by reducing greenhouse gas emissions, industrial and urban waste, effluent, and the consumption of non-renewable resources and raw materials, and by substituting polluting substances.



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ECOSYSTEMS, TERRITORIES, LIVING RESOURCES AND AGRICULTURE PROGRAMME

The progress of human societies in the biosphere shows that ecosystems have been deeply modified by agriculture and fishing, and will continue to be modified by future demographic pressure. Ecosystems are facing a global ecological crisis, where economic activities using ecosystems and territories (i.e. 'ecocultures') can play a key role, by either amplifying the problems or helping resolve them. The objective of this programme is to ensure that agricultural production meets the needs of populations, while remaining in line with prospects of sustainable development. It focuses on the ecological functionalities of agriculture, forestry and fishing – which form the so-called 'ecocultures'. The programme fosters the development of a new wave of 'ecologically intensive' technologies and methods allowing more sustainable management of the factors that govern agricultural productivity, e.g. biological quality of soils, genetic patrimony of species, sustainable management of water resources, etc.

➔ ENERGY EFFICIENCY AND REDUCTION OF CO₂ IN INDUSTRIAL SYSTEMS PROGRAMME

The Energy-climate package adopted by the EU aims at enhancing energy efficiency and targets a 20% reduction of CO₂ emissions by 2020. The main economic lever to reduce greenhouse gas emissions consists in reducing our energy consumption through energy savings. This can generate a redesign of energy efficiency, particularly on the scale of complete industrial production systems.

The programme aims to enhance the energy efficiency of industrial processes while reducing the CO₂ emissions in order to contribute to the EU objectives by 2020, while pursuing the objective of reducing greenhouse gas emissions by a factor of 4 before 2050. It should contribute to the development of innovative methods of energy production/conversion with CO₂ capture, as well as new strong-impact transfer/transport materials and components, and lastly, through advanced energy integration of industrial systems.

BIOENERGIES PROGRAMME ↵

Developing bioenergies contributes to sustainable development by fostering independence with respect to fossil fuels and protecting the environment, developing new opportunities for agriculture and forests, and promoting renewable energies. Biomass is one of the major sources of renewable energy in France, where the substantial reserves offer high potential. This programme aims to improve the mobilisation of resources and the energetic valorisation of all the biomass components, in particular by using thermochemical and biotechnological processes to develop gaseous bio-combustibles and biofuels of the 2nd generation (bioethanol and biogas) and 3rd generation (biohydrogen and biolipids).



FOCUS



GREEN CHEMISTRY

New perspectives for mechanism elucidation in catalysis

Project HAMAC

CP2D 2008 Programme

ANR funding: €369 k

The increasing awareness of energetic and environmental challenges is changing the way chemists design the synthesis of chemicals, especially in the case of chiral molecules. In this context, inorganic catalysis and biocatalysis have considerable potential to enable this change. For instance, the design of hybrid systems, namely artificial metalloenzymes, which bring the best of both worlds by applying most of the twelve principles of green chemistry. These devices are made of an inorganic catalyst embedded in a protein, thus creating a synergy between both entities: the former determines the type of reaction, whilst the latter controls its selectivity. Based on this concept, artificial monooxygenases were prepared by inserting homogeneous iron catalysts in a NiKA transport protein; the iron complex is maintained in the enzyme pocket by supramolecular interactions. The ability of these systems to perform selective hydroxylation of aromatic rings was demonstrated. By combining protein crystallography with inorganic catalysis, the mechanism of the metal mediated oxygen atom transfer (Nature Chemistry 2010, 2, 1069) was elucidated.

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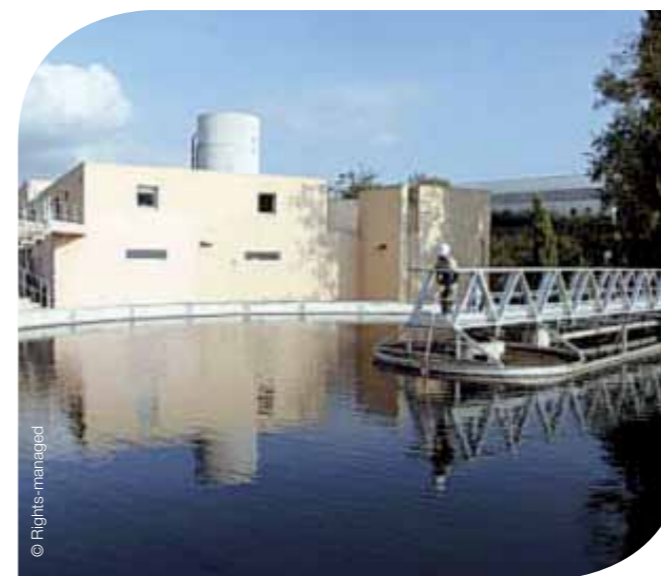


A COMPREHENSIVE STUDY IN THE FIELD OF WATER MANAGEMENT

Project AMPERES

PRECODD 2006 Programme

ANR funding: €800 k



This project addressed the analysis of emerging micropollutants (pharmaceutical substances, etc.) and how wastewater treatments perform in coping with them. The micropollutant removal potentials of conventional facilities and more innovative systems were examined through a global approach. This is one of the most exhaustive studies to date on this major water management subject, involving 21 wastewater treatment plants covering the majority of wastewater purification technologies.

It more particularly allowed the development of high-performance methodologies for analysing these micropollutants in complex matrices.

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SUPPORTING RESEARCH ENDEAVOURS RESPONDING TO ECONOMIC AND COMPETITIVENESS CHALLENGES

Scientific and technological breakthroughs play a key role in terms of modernisation or economic growth and gains in productivity in developed and emerging countries. This is especially the case for rapidly growing or evolving fields such as biotechnologies, nanotechnologies, and Information Communication Science and Technologies.

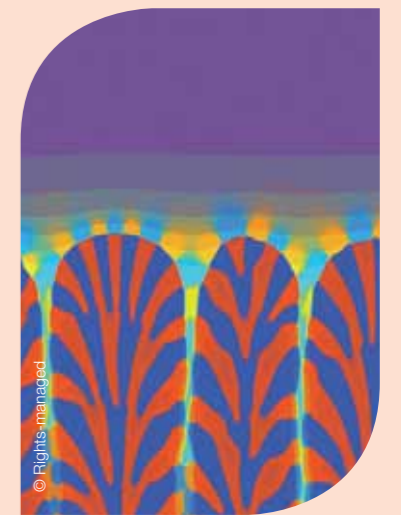
The ANR supports research in all fields representing a driving force for productivity, employment and competitiveness and having a real leverage effect in terms of technological and industrial development, patenting, start-ups and SME creation.

For those fields, the partnerships between industry and public research ensure the relevance of the research results for the private sector and the transfer of knowledge.

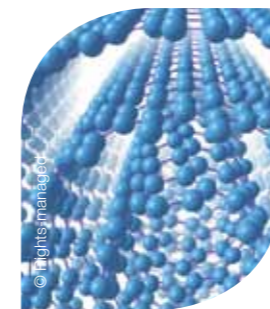


MATERIALS AND PROCESSES PROGRAMME

This programme intends to rally scientific actors in various fields such as chemistry, mechanics, physics, materials science and mathematics around the common objective of developing materials responding to societal (health, security, comfort), sustainable development (recycling, climate change) and extreme performance needs. Materials and associated processes exist in almost all traditional and innovative sectors. The aim is to facilitate knowledge transfer between the worlds of research and industry and to support innovative SMEs. Improving industrial knowledge in the field of materials and design processes could enhance their skills and competitiveness. Functional materials are also a significant asset for the development of SMEs in niche sectors.



NANOTECHNOLOGIES AND NANOSYSTEMS PROGRAMME



Nanotechnologies are a rapidly growing sector in terms of publications and patents but also in terms of R&D investments and incentives. Scientific and technological advances of the past decade are now reaching many key sectors such as building, mechanics, textile, communications, aeronautics and space, sustainable energy, health and electronics. They also represent a fantastic opportunity for tackling present and future economic challenges. The P2N programme should contribute to realising functions and systems for those applications fields demanding less material, less energy but more complexity, at a lower cost. It focuses on three strategic objectives hinged around nanotechnologies: making progress in the field of technological processes, instrumentation and simulation; exploring the concept of smart micro- and nanosystems for applications with a strong impact in the area of health, energy and environment; and fostering the sustainable development of nanotechnologies and nanosystems.

nanosystems for applications with a strong impact in the area of health, energy and environment; and fostering the sustainable development of nanotechnologies and nanosystems.

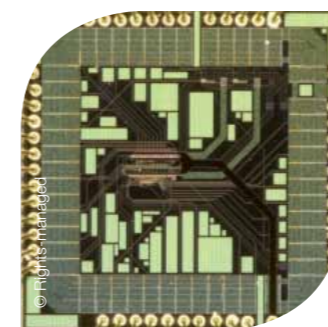
FOCUS



GREEN ICT

Magnetic Logic Circuits

Recent development in spintronics open the way to integration of magnetic devices with programmable logic circuits. These circuits would be simultaneously faster, low power, more reliable and would integrate new functionalities due to the non-volatility of MRAM. In that frame, this project proposed several "magnetic" logic architectures going from the simple latch to FPGA parts. 5 patents were filed and a complete design/process line was developed from SPICE modelling of the magnetic devices to magnetic "Back-end" (magnetic device integration on CMOS) based on the Thermally Assisted Switching™ MRAM technology of one of the partners. 2 demonstrators were thus realised, respectively in CMOS/0.35µm technology from AMS and in CMOS/0.13µm technology from ST Microelectronics. The design/process line was further enhanced in 2009 to integrate other spintronic technologies such as spin valves used in sensors. This platform was selected in the NanoInnov/RT programme as the SPIN project (Spintronic Platform for Innovative Nanotechnologies) in order to produce a complete magnetic FPGA.



Project CILOMAG

PNANO 2006 Programme

ANR funding: €832 k

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→ HEALTH BIOTECHNOLOGY PROGRAMME

At global level, health biotechnology constitutes a rapidly growing economic sector. The development of biotechnology industries represents a major stake in terms of intellectual and industrial property and economic growth. This programme aims at funding projects stemming from high tech SMEs in the field of health biotechnology, exploiting results of leading-edge science and technology in order to develop new therapeutic, prevention and diagnosis products and tools, and improve productivity while reducing harmful impacts on the environment.

Project AcLiFa

BIOTECS 2008 Programme

ANR funding: €1100 k

FOCUS



A NEW DRUG FOR FULMINANT HEPATITIS TREATMENT

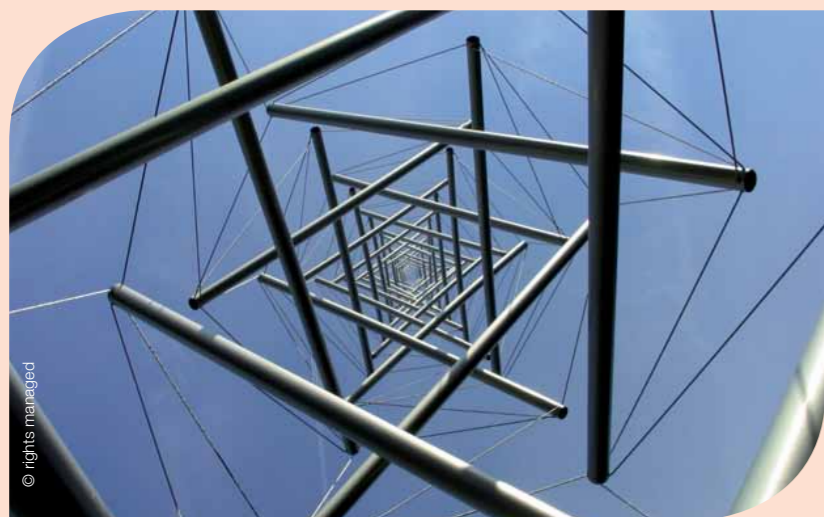
The aim of this project was to set up a novel drug for fulminant hepatitis treatment. Fulminant hepatitis is a rare complication (approximately 1%) but very severe (30 - 50% lethality) of viral hepatitis. Liver graft is currently the only possible treatment. This new drug (ALF-5755) is the recombinant (produced by genetic engineering in bacteria) homologue of a human protein (HIP/PAP) that is able to prevent the death of liver cells and to stimulate their regeneration. A batch of protein suitable for human administration has been produced and a clinical trial in healthy volunteers has demonstrated the lack of severe adverse effects. A novel clinical trial, on fulminant hepatitis patients, was launched at the beginning of 2011.

For further information: amouyal.paul@wanadoo.fr



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→ EMBEDDED SYSTEMS AND LARGE SCALE INFRASTRUCTURES PROGRAMME



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This programme supports projects for developing specific technological bricks in the areas of embedded and large scale systems, sensors and control architectures, safety and security of information systems, and software engineering. In these domains it is necessary to maintain and develop a strong capacity for innovation and leadership. Controlling these 'core technologies' is vital for the competitiveness of ICT industries and all their application sectors.

→ DESIGN AND SIMULATION PROGRAMME

Modelling and simulation, high-performance computation and the associated pre- and post-processing of large volumes of data, are vital strategic tools not only for addressing the major scientific and technological challenges, but also for ensuring the competitiveness of companies and their ability to innovate and provide solutions for the major societal issues. This programme aims at developing design simulation for scientific research, industry and services with three clear objectives: 1) to guarantee - through the development of methods, tools and design and simulation applications - enhanced

efficiency and competitiveness of various activity sectors; 2) to fuel a substantial share of global scientific and technical innovation to extend the national scientific reach and create new industrial outlets; and 3) to develop softwares adapted to the new massively parallel and hybrid architectures providing petaflop - and then, exaflop - performance. This programme has significant economic spin-offs by stimulating the competitiveness of industries designing goods and services, where having cutting edge design tools is one of the keys to success.

→ FUTURE NETWORKS AND SERVICES PROGRAMME

This programme covers all research work aiming at anticipating the evolution of network infrastructures and ubiquitous, convergent and interoperable services for the implementation of applications centred on human communication, information, multimedia content distribution, calculations, communicating objects, and the interaction and cooperation of these applications. It integrates the components, architecture, and networking, software aspects of research relating more specifically to the uses and deployment of services, and of research relating to security and regulation questions.

FOCUS

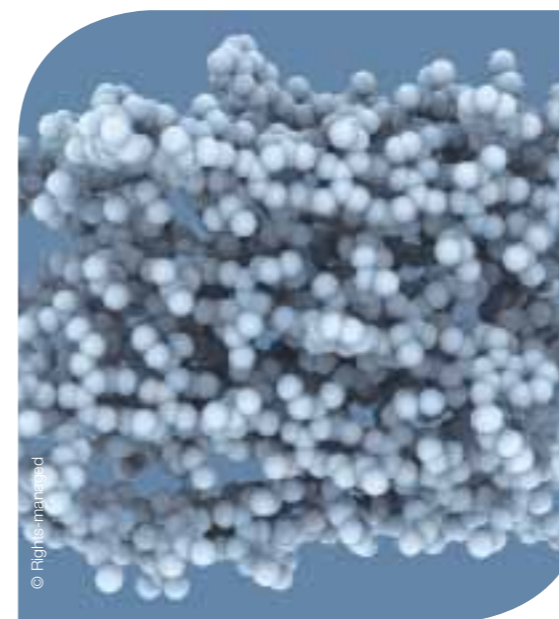


IN SILICO DESIGN AND MODELLING OF COMPLEX NANOSYSTEMS

Project SAMSON

COSINUS 2008 Programme

ANR funding: €380 k



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SAMSON develops a software platform for the modelling and simulation of nanosystems (SAMSON stands for "Software for Adaptive Modelling and Simulation of Nanosystems"). It features generalised, adaptive multipole methods to compute the electrostatics of molecular systems. Adaptivity enables fast updating of electrostatic terms when low precision is required. SAMSON core modelling and simulation algorithms rely on powerful adaptive methods which automatically refine computations where necessary. The user arbitrarily chooses the desired precision, and the adaptive algorithms automatically determine the most relevant degrees of freedom at each time step based on the user actions and the underlying force field. This approach allows for intuitive modelling of complex systems on low-end desktop computers.

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PROMOTING INTERDISCIPLINARITY

Multidisciplinarity is crucial to open the way towards innovative scientific approaches adapted to societal and global challenges.

Some issues due to their nature, their causes or their impact, involve several different sectors and can only be resolved through an interdisciplinary approach.

One of the goals of the ANR is to encourage dialogue and avoid "silo effect" between disciplines,

and to foster research responding to cross-discipline and often cross-border issues by implementing programmes that bring together teams from different sectors.

These programmes call for cross-disciplinary research efforts in various fields such as sustainable cities, global changes or contaminants and health.



SUSTAINABLE CITIES PROGRAMME

Cities centralise most of the challenges of the 21st century, e.g. energy in buildings and transport, new services to face the permanent influx and evolution of populations (e.g. population ageing). Urban and economic developments are closely interlinked. If not controlled, however, urban development can be the cause of dysfunctions and major social or environmental crises. Improving the quality of life in urban areas implies improving city components in accordance with a rationale of sustainable development, by optimising the consumption of energy and natural resources (water, air, and soils), reducing pollution and greenhouse gas emissions, in a socially harmonious and economically sustainable context. The programme focuses on applying sustainable development concepts to urban management and encourages scientific



communities to gather around pluridisciplinary projects through systemic approaches tackling environmental, economic and social dimensions.

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HOW CITIES ADAPT TO CLIMATE CHANGE

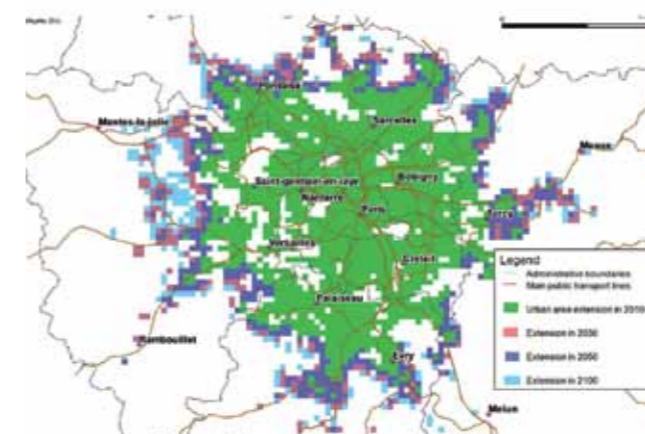
The 2100 horizon

Project MUSCADE

Sustainable Cities 2009 Programme

ANR funding: €650 k

The MUSCADE project investigates, from today to 2100, the interactions between city structure, building construction, energy use, decentralised energy production, urban micro-climate and climate change. But why 2100? Because climate change and urban development timescales are extremely long. If cities are to consume less energy and be adapted to a different climate in 2100, specific actions need to be implemented without delay. The Paris agglomeration is used as a case study, but the methods, based on the laws of physics and general economic constraints, will be easily applicable to other cities. An integrated modelling approach is adopted to jointly address different aspects of cities (architecture, urban planning, socio-economics, transportation, and climate) and time and spatial scales. The socio-economic model Nedum of CIRED creates scenarios for the future development of the Paris agglomeration, following three policy options: «business as usual», «green city» or «compact city». It is then coupled with models of urban form, building energy, and local weather. This integrated modelling system provides invaluable insights into the city energy consumption and production. Considering the uncertainty in economic, technological and climate projections, the project focuses on the identification of "robust" policy actions, i.e. actions that are most likely to provide benefits and to lead to a sustainable development pathway.



Paris agglomeration from now to 2100 socio-economical simulation according to a "city as usual" scenario.

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GLOBAL ENVIRONMENTAL CHANGES PROGRAMME

Environmental issues are usually understood to result from the summing of independent phenomena, such as climate change, loss of biodiversity, intensive use of water, diffuse chemical pollution, etc. In fact, those issues are deeply interlinked by the superficial envelopes of the planet (air, water, soils) and the evolution of human activities (demographic increase, progress in living and technological conditions, changes in social behaviour). Environmental changes are now clearly understandable on a global scale, hence the terms 'global environmental changes' (or 'global changes'). The awareness of a global change, especially climatic, has resulted in a proliferation of programmes which have not sufficiently encouraged exchanges between disciplines. It is therefore a major challenge of current environmental research to favour the emergence of a systemic, multi- and trans-disciplinary approach to 'Earth System Science'. The programme encourages prospective or retro-prospective research endeavours on the evolution of different economic, societal and ecological systems interacting under the impact of global change.



CONTAMINANTS, ECOSYSTEMS AND HEALTH PROGRAMME

The general increasing of exchanges, climate change and the accelerated production of xenobiotics and new synthetic compounds increase the risks of contaminating ecosystems and animal and human health. The increasing use of numerous biological and chemical molecules or physical factors (such as EM waves or magnetic fields) require in-depth knowledge of fundamental aspects of their dynamics in the environment (distribution, accumulation, transformation and biotransformation, and effects of climate changes) and of their potential impacts on ecosystems and health. The aim of this programme is to foster fundamental and applied research on the dynamics of contaminants, their impact on ecosystems, and their effects on human and animal health through integrative interdisciplinary approaches rallying experts from the scientific disciplines concerned.



THE G8 TRANSNATIONAL CALL ON APPLICATION SOFTWARE TOWARDS EXASCALE COMPUTING FOR GLOBAL SCALE ISSUES

Global challenges not only need global solutions but also a framework for cooperation across a broad range of disciplines and on a multilateral and multinational basis. This pilot initiative gathering 7 research funding organisations from the G8 member countries was an unprecedented opportunity to support excellent research on topics of global relevance.

Simulation supported by high performance computing infrastructures has become the third pillar of science, complementary to experimentation and modelling. Major challenges of the 21st century such as climate change, energy, water, environment, or natural disasters can be addressed by high performance numerical and symbolic simulations that are both data- and computer-intensive.

Computing resources required for these simulations, including improved model resolution, model physics, data analysis and visualisation, will reach the exascale (10^{18} operations per second) level by 2020. However, taking full advantage of these resources for global scale scientific challenges will rely on application software featuring fundamentally new algorithms and data structures capable of exploiting the massive parallelism underlying future exascale level computing. This international programme aimed at supporting interdisciplinary multinational collaborations between experts in research areas related to these global challenges and developers of future exascale platforms, so that they address together the relevant needs of the research community during the early design stages of emerging new computing systems.

FLASH CALL FOR PROPOSALS Earthquake in Haiti – Towards a sustainable reconstruction

After the massive earthquake that struck Haiti on January 12th, 2010, the ANR launched a new scheme called 'Flash call for proposals' allowing for the selection of research projects in a shorter period of time. The purpose of this initiative is to support research that must be undertaken rapidly and whose scientific relevance is closely linked to a major event, its consequences and the lessons to be learned from it. The Haiti disaster had to be analysed in order to acquire knowledge - particularly multidisciplinary knowledge - and to help set up prevention and management systems adapted to the context. The purpose of the analysis was also to heighten awareness with the aim of reducing the human, social and economic costs of such events, which can affect large urban agglomerations, major political and administrative centres, or extremely vulnerable areas heavily exposed to risks. Research projects were supported in agreement with the Haitian and French authorities in Haiti, and with the Haitian scientific community. They focus mainly on resilience, a little studied aspect in the field of natural hazards, which is tackled from different perspectives: construction, agronomy, social sciences and health.



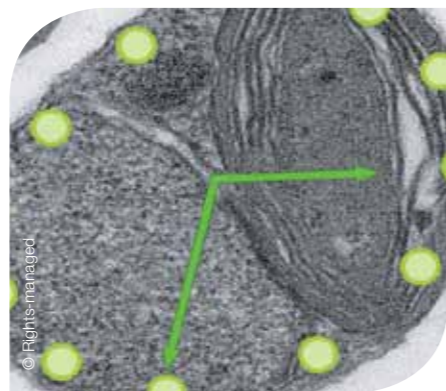
FOCUS



MINIMAL MODELS OF THE CIRCADIAN CLOCK IN A NOVEL BIOLOGICAL SYSTEM

Living organisms are exposed to periodic changes in light/dark conditions that are linked to the earth's rotation around its axis. Most, if not all organisms, feed this light information into molecular clockworks that allow them to anticipate rhythmic changes in their environment and to synchronise the main biological processes along the day/night cycle. Circadian clocks are precise timing mechanisms which orchestrate the life of organisms from simple prokaryotic and eukaryotic microalgae to complex multicellular organisms such as plants and animals.

The Franco-British interdisciplinary project "Miniclock" studies the circadian clock architecture of the smallest free-living organism known to date, *Ostreococcus*, from a systems point of view, combining biological experiments (FY Bouget CNRS, UPMC Banyuls sur Mer), statistics (Jim Smith, Warwick), mathematical analysis (Marc Lefranc, USTL Lille) and computer modelling (Andrew Millar, Edinburgh). They showed that a simple negative feedback loop encompassing the two genes *TOC1* and *CCA1* accounts for most properties, including robustness to daylight fluctuations and flexibility. Furthermore, a non-genetic oscillator was evidenced for the first time in eukaryotes, in *Ostreococcus* and in human red blood cells. These results were published by the consortium in the journal *Nature* (*Nature* 2011, 469:554-558).



Project MINICLOCK

Bilateral Programme with the UK on Systems Biology 2007

ANR funding: €300 k

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INTENSIFYING PARTNERSHIPS BETWEEN ACADEMIA AND INDUSTRY

One of the ANR's key roles is to intensify research partnerships between the academic world and industry. By launching calls for proposals that are open to public-private partnerships, and by supporting research which closely ties public laboratories and enterprises through research contracts, the ANR stimulates collaborative research and technological transfers, by creating conditions that foster greater communication between public and private research.



TOOLS AND MECHANISMS FOR SUPPORTING PUBLIC/PRIVATE R&D

The Carnot Programme The Public-private partnership research commitment



Since 2006 the Ministry of Higher Education and Research has awarded the Carnot label to public institutes (the Carnot Institutes) that undertake to place research with/for industry at the centre of their research strategy. The Carnot Institutes encourage closer relations between public research entities and the industrial world, with the notable aim of achieving smoother and faster transitions

from research to innovation and the transfer of technologies.

The ANR manages the programme by examining the calls for candidacies and monitoring the 33 labelled institutes. Each year the Carnot institutes are awarded an additional sum calculated according to their revenues from the contract with industry.

Inter-Carnot Fraunhofer Programme (ICFP)

This bilateral programme provides a common vector for uniting Germany and France in the development of partnership research. Jointly financed by the BMBF and the ANR over the 2009-2011 period, the ICFP programme supports innovative Franco-German research projects between France's Carnot institutes and Germany's Fraunhofer institutes. In 2010, 8 projects addressing the themes of energy, environment, health, civil safety, ICT and transport, were financed out of the 39 submitted projects, involving 36 Fraunhofer institutes and 28 Carnot institutes.

KEY FIGURES FOR CARNOT 2010

- 33 multidisciplinary institutes
- 16 000 researchers
- Budget of €1.5 billion
- €230 million contractual revenue from more than 5000 contracts with industry

Helping competitiveness clusters achieve their performance targets



Since their creation, the ANR has implemented a supportive policy towards competitiveness clusters, alongside the other State and Regional funding entities, thereby responding to the government's determination to back the development of these innovation ecosystems.

A competitiveness cluster brings together companies, research laboratories and educational institutes in a given geographical location. These entities have committed themselves to a partnership approach that is intended to create synergies around innovative joint projects.

The ANR has decided to conduct a financial incentive policy («cluster bonus»), paid to the consortium partners. Part of R&D projects financed by the ANR receive a label delivered by competitiveness clusters. The ANR allows to these projects the allocation of additional financing equal to 6% of the assigned grant. This system of additional funding encourages the laboratories to move closer to the competitiveness clusters. The competitiveness clusters are involved in the ANR's programme planning (participation in the epistolary consultation) and follow-up process.

KEY FIGURES FOR CLUSTERS 2010

- 313 cluster projects financed, 1 404 partners
- €206.5 million of grants, with €55.19 million of this awarded to companies (45% to SMEs)
- €6.9 million additional funding (clusters bonus)
- 1773 labels delivered
- 1411 projects labelled (by at least one cluster)
- The "average" cluster project involves 4.5 partners and €660 thousand of funding

Programme for the emergence of projects with high valorisation potential

Industrial sectors use the results and discoveries of academic research as a development vector to meet the growing needs in terms of energy, information and communication technologies, health, environment, agronomy or economics.

This programme - which is open to all disciplines - finances university or research organisation projects that have high valorisation potential. The aim is that the projects should result in the development of innovative products, technologies or services which can be used by players in industry (sale or licensing of patents, industrial partnerships, and creation of enterprises).

This programme is of three-fold interest: firstly it promotes the valorisation of public research by financing the proof of academic concept in the laboratories, secondly it optimises the valorisation culture in the research teams of universities and research organisations, and lastly it professionalises the valorisation structures of universities and research organisations.

"THE PARTNERSHIP SEARCH ENGINE", a website serving the public-private dialogue

'Le moteur de la recherche partenariale' (Partnership search engine) is a portal which can consult simultaneously the largest existing databases in the field of public-private research in France, and proposes innovative tools. It is a crossroads where the supply of expertise from public laboratories and demand for research collaborations from companies meet: projects, partners, technology, events. Companies can also publish their calls for proposals directly on the website:

<http://www.lemoteurdelarecherche.fr/>



An example of Competitiveness cluster project

FOCUS



TAILORPACK

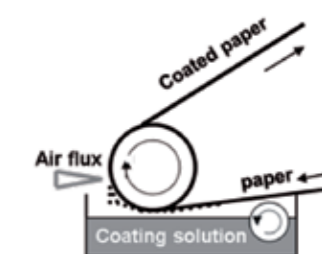
Active biodegradable packaging designed for the preservation of fresh fruit and vegetables

PNRA 2007 programme

ANR funding: €452 k

The short lifetime of fruit and vegetables can be a hindrance to their consumption. Over and beyond satisfying the requirements of the cold chain, modified atmosphere preservation is an effective way of slowing down their senescence. Controlling the gaseous exchanges necessary for the respiration of vegetables requires the micro-perforation of the synthetic films used in packaging. The key aim of this project, which involved three academic partners and two companies, was to propose an ecological alternative to microperforated synthetic films for the packaging of fruit and vegetables, with the additional possibility of controlling the emission of active antifungal compounds. The combination of fibrous substrates, proteins and nanoparticles has allowed pilot-scale development of single/multi-layer composite materials using the layer-by-layer deposition technique. The conditions of release of the active antifungal agent in response to a rise in humidity were observed in the laboratory.

Advantages of the labelling: The QUALIMED and PEIFL competitiveness clusters labelled the project, supported the putting on line of a tool for simulating modified atmosphere packages for fruit and vegetables (www.tailorpack.com), and facilitated promotion of the results through the openings provided by their network and participation in national technical congresses.



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DEVELOPING EUROPEAN AND INTERNATIONAL COOPERATION

Developing European and international collaborations is one of the ANR's priorities.

By accelerating and deepening the collaborations initiated by French scientists and research organisations where high-level communities exist, ANR's international policy aims at supporting French research teams to optimise their position in the worldwide competition. Through its policy of European cooperation, the ANR contributes actively to the construction of the European research area. Furthermore, the Agency intends to develop strategic partnerships with emerging countries such as China and Brazil.

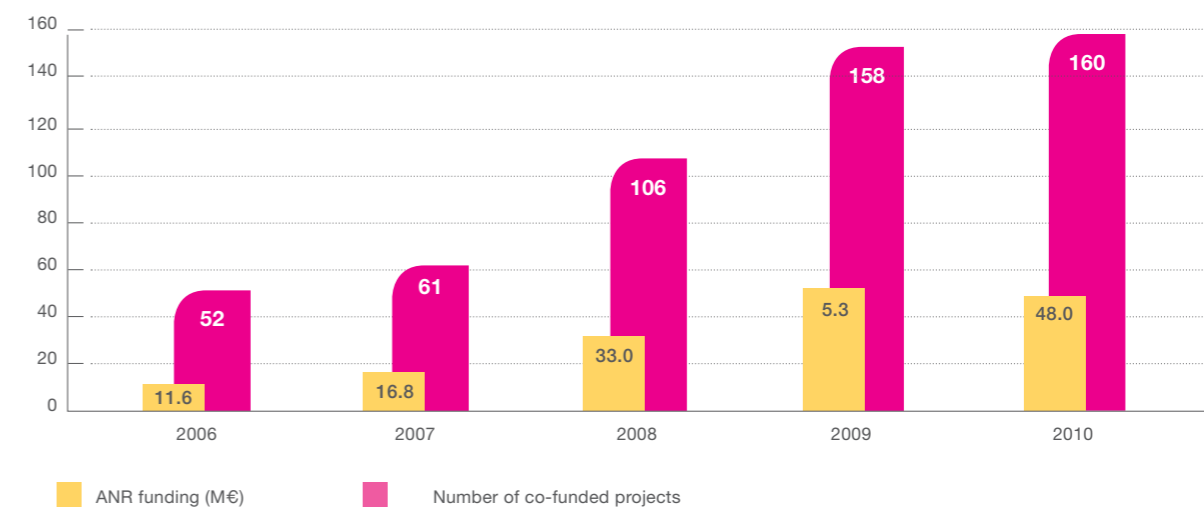
Based on cooperation agreements signed with foreign partner funding organisations, the ANR develops binational or multilateral partnerships on topics of common interest and deemed strategic by the partners.



CONTINUING COLLABORATIONS

In 2010, ANR's transnational collaborations remained stable compared to 2009: they represent 11.6% of the funded projects and amount to 7.6% of the budget dedicated to calls for proposals.

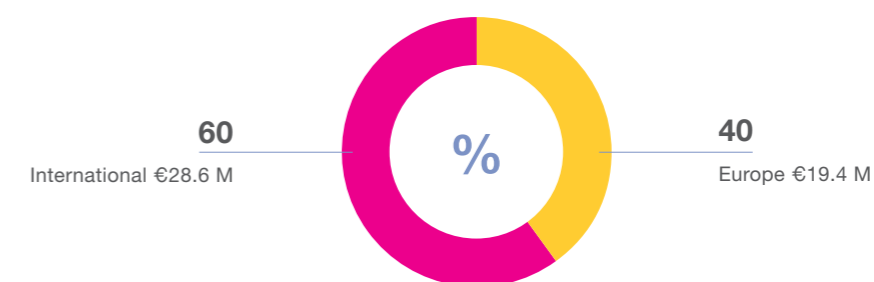
EVOLUTION OF ANR TRANSNATIONAL CO-FUNDED PROJECTS - (2006-2010)



KEY FIGURES

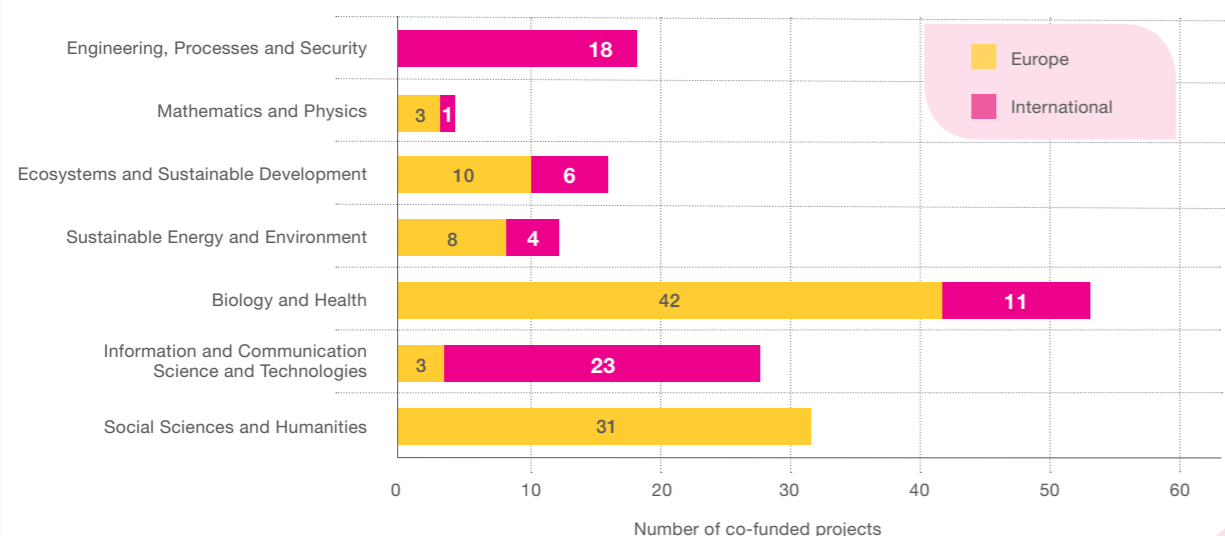
- 965 transnational proposals submitted
- 15% of all proposals submitted
- 160 co-funded projects
- 11.6% of all projects funded
- €48 millions of funding
- 7.6% of ANR's call budget
- 16.6% average selection rate
- €300 k average ANR funding per project

ANR FUNDING TO TRANSNATIONAL PROJECTS IN 2010



Europe remained ANR's main partner in 2010 although collaborations outside Europe gained momentum, increasing from 25% in 2009 to 40%.

EUROPEAN AND TRANSNATIONAL COLLABORATIONS CONCERN ALL THEMATIC FIELDS



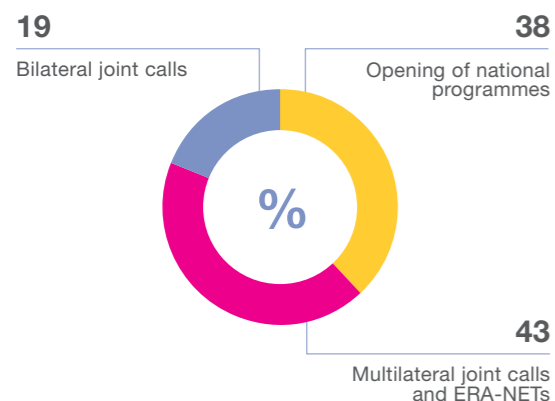
Moreover, the ANR finances transnational public-private partnerships rallying academic partners and French and/or foreign companies. In 2010, this type of projects accounted for 31% of the transnational projects funded, and 40% of the funding devoted to transnational collaborations.

THE INSTRUMENTS OF COOPERATION

Competitive transnational projects may be funded according to two schemes of cooperation:

1 The launch of joint calls specifically dedicated to bi- or multilateral collaborations. In this framework, a common call text is drawn up and a joint evaluation panel composed of international experts is set up. This includes the calls launched in the context of EU initiatives such as ERA-NETs and article 185.

TRANSNATIONAL FUNDED PROJECTS PER INSTRUMENT



• 62% of the projects funded

2 The opening of ANR national programmes, either thematic or non-thematic, to transnational collaborations. Contrary to dedicated calls, there is neither a common call text nor a joint evaluation panel, but the agencies agree on common selection and funding modalities. Projects are evaluated in parallel by each agency, but both organisations make a common funding decision.

• 38% of the projects funded

Open to collaborations with 10 countries, the "Blanc" international programme represented 34% of the transnational projects for funding amounting to €14.5 M, i.e. 30% of transnational funding.

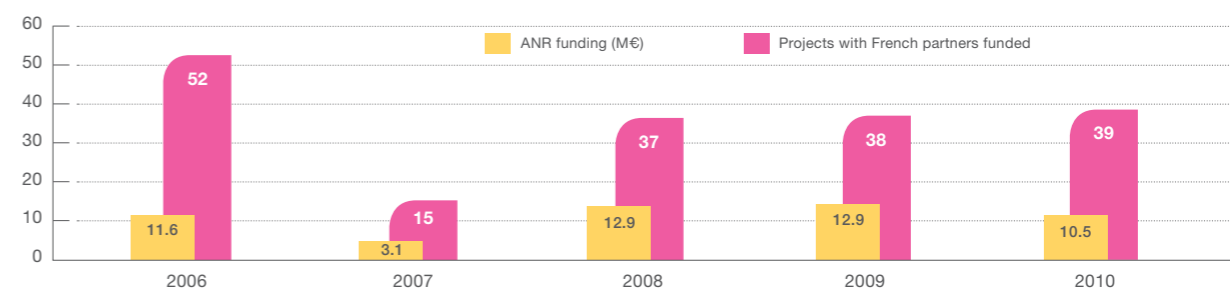
ANR AND EUROPE

In order to reinforce European research in certain target areas, the ANR has participated in multilateral calls since 2006 alongside numerous European partners under the ERA-NET initiatives. In 2010, they accounted for 24% of all transnational collaborations and 40% of the European activity of the agency. The ANR also participated in the third call launched by the AAL Joint Programme in the field of ambient assisted living.



The agency is moreover coordinating the activities of CHIST-ERA, a consortium of eleven research funding organisations in Europe, working on long-term challenges in ICT. Following the first call launched in 2010, seven highly innovative and multidisciplinary projects in ICST projects were selected for funding.

ERA-NETs 2006-2010 - 181 PROJETS CO-FUNDED - €51 M OF ANR FUNDING



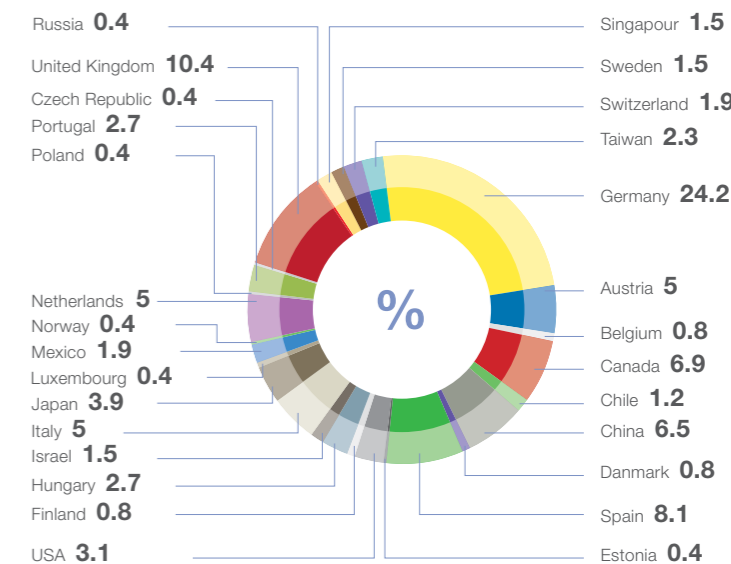
Through bi- and multilateral calls covering a broad thematic spectrum, the ANR co-funded 97 projects with European funding organisations, namely 7% of all the projects funded by the agency. Among the 20 countries concerned, ANR's main partners are Germany, the United Kingdom and Spain.

THE DIVERSITY OF PARTNERSHIPS

In 2010, the ANR reiterated its participation in the common programme KBBE – Knowledge-based bio-economy in the field of plant genomics. Favouring public-private partnerships, the programme has evolved since 2008. The collaboration between France, Germany and Spain was extended to Portugal in 2009, then to Canada in 2010.

The ANR took part in the first call for proposals launched by the multilateral programme grouping seven research funding organisations from the G8 member countries (the Natural Sciences and Engineering Research Council of Canada (NSERC), the German Research Foundation (DFG), the Japan Society for the Promotion of Science (JSPS), the Russian Foundation for

OVERVIEW OF ANR'S COLLABORATIONS IN 2010



Basic Research (RFBR), the Research Councils of the United Kingdom (RCUK), and the U.S. National Science Foundation (NSF), aiming to support excellent research on global themes. In 2010, the call concerned Application Software towards Exascale Computing for Global Scale Issues.

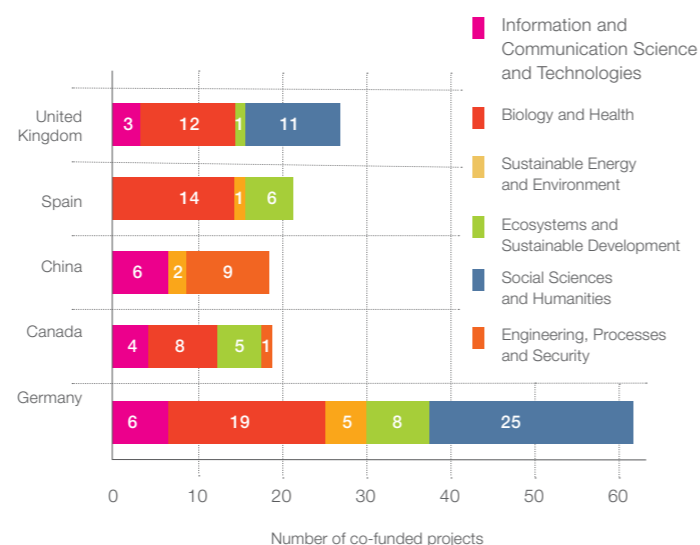
Moreover, the cooperation initiated in 2008 with the Japan Science and Technology Agency (JST) was reinforced in 2010 through a bilateral call in the field of ICT and their usages. The aim was to finance large and ambitious collaborative research projects. All the proposals were assessed by a joint Franco-Japanese evaluation panel. Following the evaluation, some of the projects were directly interviewed by the joint panel.

For the fourth consecutive year, the ANR reiterated the French-German partnership with the DFG in the field of social sciences and humanities. Moreover, with the view of promoting European cooperation in social sciences, the Agency participated in the launch of the quadrilateral call aiming to create an "Open Research Area" (ORA) between France, the United Kingdom and the Netherlands.

Finally, it is interesting to note that some European partnerships may serve as starting points for the extension of ANR collaborations with partners outside Europe, as is the case with KBBE.

Overall, collaborations between French and foreign researchers from 28 countries were supported in 2010. Canada and China are ANR's main non-European partners.

ANR'S MAIN COLLABORATIONS IN 2010



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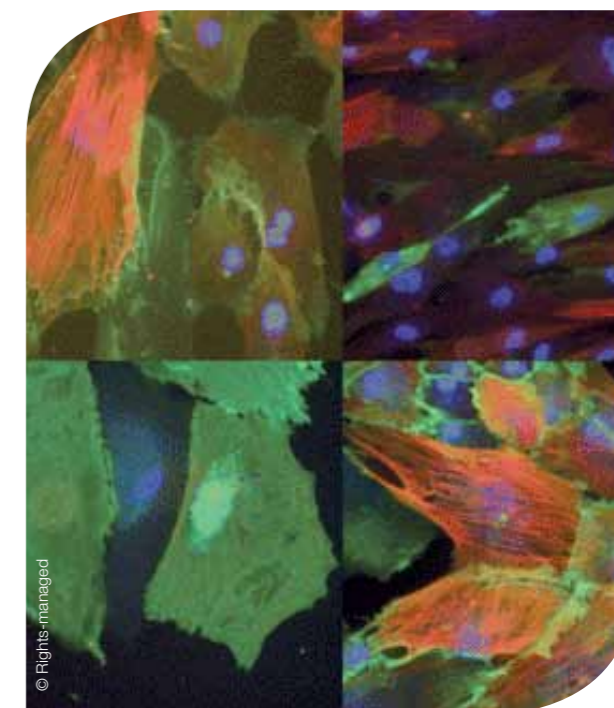


COLLABORATION BETWEEN 3 CONTINENTS TO IDENTIFY THE CAUSES OF A RARE DISEASE

Project Genetics and molecular bases of oligogenic Hirschsprung disease

ERA-NET E-Rare 2007 Programme

ANR funding: €140 k



Hirschsprung's disease (HD) is a rare malformation (1/4.500 births) characterised by the absence of enteric nervous system, causing a malfunction of the terminal portion of the intestine, which results in neonatal intestinal obstruction. It is a polygenic disease, i.e. it is due to a particular combination of mutations or variations of several independent genes. The aim of the international consortium (involving researchers from 3 continents: Europe, America and Asia) was to study the molecular basis of isolated forms of the disease and thereby identify susceptibility genes involved not only in HD but also in other abnormalities of the neural crest cells, from which cells involved in this disease are derived. Using transcriptomics studies, comprehensive sequencing and association studies performed on large series of cases, which were made possible through the international collaboration, new loci whose products interact with that of RET gene were identified, already known to be associated with MH. New methods of statistical genetics for studying the complex inheritance of this disease were also developed.

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OVERVIEW OF ANR'S BI-NATIONAL PARTNERSHIPS IN 2010

COUNTRY	PARTNER ORGANISATIONS	THEMES
Germany	DFG, BMBF	Social Sciences and Humanities, Energy, Environment, Security, Health, ICT, Food, Ground transportation
Austria	FWF	Mathematics, Physics
Brazil	FAPESP, FACEPE	Environmental changes
Canada	NSERC, FRSQ, IRSC	Environment, Engineering, ICT, Health Alzheimer's disease
Chile	CONICYT	Mathematics, Physics, ICT, Engineering sciences, Food and Agriculture
China	NSFC, MOST	ICT, Nanotechnologies, Engineering sciences, Ecotechnologies and Water
USA	NSF	Chemistry, Materials
Hungary	NKTH	Health Biotechnologies, Agronomy and Environment
Japan	JST	ICT and associated usages, Nanosciences and nanotechnologies, and components for ICT
Mexico	CONACYT	Biology & Health, Environment, ICT, Energy
Singapore	A*STAR	ICT, Nanosciences and nanotechnologies
Taiwan	NSC	Biotechnology and Agriculture, Health and Genomics, Nanosciences and nanotechnologies, ICT, Technologies for health, Social Sciences and Humanities

FOCUS



A FRANCO-BRITISH PERSPECTIVE ON URBAN TRANSFORMATION RELATING TO SOCIAL AND POLITICAL CHALLENGES

This comparative study investigates the contemporary characteristics of the 'new urban' middle classes in France and Britain. It does so by comparing Paris and London in terms of the different types of neighbourhoods in which middle class people have settled particularly over the last 25 years – gentrified, gentrifying, gated communities, suburban and exurban neighbourhoods. The study asks whether the middle class is the same across these locations in terms of social relations and political engagements. It asks whether territorial identity is a strong factor of social identity, and how these territorialised identities reflect political engagements. Understanding the attitudes and activities of the middle classes in the city will be relevant to a range of urban policy professionals, as well as policy makers and professionals in public services such as education and health. The degree to which they do see themselves as advocates of neighbourhood improvement or are retreating from social mix in terms of services or neighbourhood will be of interest to civil servants and policy professionals in urban policy in general and neighbourhood renewal in particular.

Project MICCY

ANR-ESRC 2009 programme on social sciences

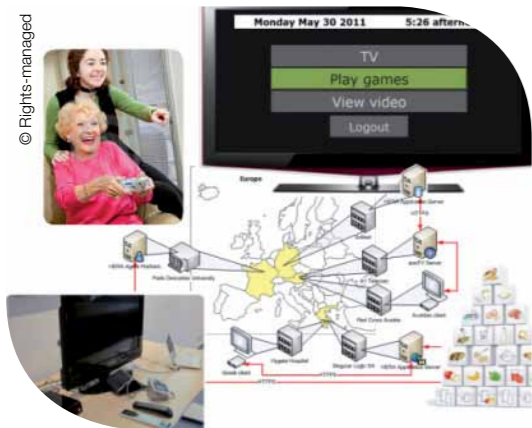
ANR funding: €310 k

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FOCUS



ICT AT THE SERVICE OF AGEING AND AUTONOMY IN EUROPE



Project HERA

AAL 2008 Transnational
Joint Programme

ANR funding: €147 k

The transnational HERA project gathering groups from four European countries aims to provide a platform with cost-effective specialised assisted living services for elderly people suffering from mild cognitive impairment or mild/moderate Alzheimer's disease or other diseases (diabetes, cardiovascular) with identified risk factors, which will significantly improve the quality of their home life, extend its duration and at the same time reinforce social networking. The services offered by the HERA platform for the end users are the following: Cognitive Exercises; Passive communication (the end user can select to watch informative videos and news items related to his/her disease); Pill and Exercise reminders;

Reality orientation (date and time is visible on screen while watching videos or the TV, also while doing their exercises); Nutrition counselling; Weight monitoring; and Blood pressure monitoring.

A backoffice allows the medical personnel to assign tasks to the users and monitor their progress. The end users use the system at home using a remote control, their TV set and set-top-box (a mini computer usually supplied by the telecom operator for offering IP-based services at home). The system is demonstrated in Greece (as a service offered by the Hygeia hospital) and Austria (as a service offered by a telecom operator - A1Telecom).

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FOCUS



TOWARDS IMPROVEMENT OF YIELD STABILITY OF CROPS

Project COGS

ERA-NET Plant Genomics 2006
Programme

ANR funding: €123 k

Shoot branching is a key agronomic trait and changes in branching habit have been central in the domestication of wild species for agricultural use. For example, the maize TEOSINTE BRANCHED1 (TB1) gene, which affects plant and inflorescence architecture, is a target for artificial selection during maize domestication from its wild and highly branched ancestor

teosinte. The European laboratories involved in the project integrated their expertise in development to compare the molecular mechanisms involved in shoot branching in a range of species. A gene homologous to the maize TB1 gene was identified and analysed in pea (Psbrc1). The increased branching phenotype of the Psbrc1 mutant demonstrated the role of the PsBRC1 transcription factor in the control of bud outgrowth. Its action downstream of the strigolactone pathway and within the axillary bud supports a role in directly connecting strigolactone with repression of bud outgrowth. Such knowledge about the molecular mechanisms regulating plant development are expected to help in the designing of tools for architectural improvement of crops with the ability to contribute to yield stability of virtually all crops.



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DISSEMINATING
KNOWLEDGE
&
SCIENCE
OUTREACH

➔ A NEW WEB SITE GIVING EASIER ACCESS TO INFORMATION

In June 2010 the ANR launched a new version of its web site, integrating a direct approach by type of research, and giving more space to current topics and the projects it funds.

The revamped site makes for easier navigation through its various sections, which was one of the demands of the site users.

An English version of the site is also on line.

KEY FIGURES ON WEB SITE FREQUENTATION

- 3,374,595 pages viewed, i.e. 9245 pages per day (+21.9%)
- 892,712 visits: i.e. 2446 visits per day (+35.2%)
- 706,591 visitors: i.e. 1936 visitors per day (+33.3%)
- 61.5% of displays/research programmes



WWW.AGENCE-NATIONALE-RECHERCHE.FR



➔ INCREASED NUMBERS OF SYMPOSIA AND CONFERENCES

The ANR organises workshops and symposia informing the scientific communities - along with a wider audience - of its programme planning activities, future calls for proposals and the results of the financed projects.

45 symposia organised in Paris and the regions

The ANR celebrated its 5th anniversary on 5 May 2010 at a large seminar in the Collège de France, attended by prestigious contributors from France and abroad. A round-table entitled «The ANR tomorrow» was organised on this occasion.



Symposia to discuss the progress of projects financed under the various thematic and non-thematic programmes were organised throughout France. For instance, an interdisciplinary symposium on the «hard» sciences was organised on 15 October 2010, at which Jean-Marie Lehn - Laureate of the 1987 Nobel Prize in Chemistry - gave a general presentation of these sciences and their interfaces. Selected projects from the 2006 Young Researchers programme were presented.



A second ANR- Public-private partnership conference on the subject «Which research for new growth models» held on 6 October 2010 attracted 300 participants. A key contributor was the economist Daniel Cohen, who presented his reflections on the post-industrial world. It gave private companies the opportunity to discuss their experience and their visions of the future with the ANR, to express their research and partnership needs, and to discover the ANR's funding instruments fostering research in private sector.

For the second year running, the ANR took part in the Cinémascience film festival (festival of scientific movies), where an ANR prize was awarded.



→ TRANSNATIONAL SEMINARS

Working in collaboration with its foreign counterparts, the ANR organises and takes part in international seminars as part of the European ERA-NET actions, or in the framework of its bilateral partnerships.

The aim of these scientific events is either to identify topics for future calls, or organise brokerage events to prepare common transnational proposals or to monitor the progress of the financed projects and share information between the project teams of a given community. Each project team presents its progress, its achievements, and the future work planned.

These seminars also provide an opportunity for the researchers from the various countries to meet one another.



This is notably the case with the biology & health ERA-NETs: A joint annual seminar on the projects of the 1st and 2nd calls of Pathogenomics was thus organised on January 18-19, 2010 in Spain.

The ANR also participated in the intermediate symposium of the first transnational call of ERA-NET NEURON on «Neurodegenerative diseases of the central nervous system», in Rome, Italy.



In the framework of the bilateral partnership in ICT and nanotechnologies with Japan, a workshop was co-organised with the JST in Paris.

Lastly, as part of the collaboration on social sciences and humanities with the DGF, two progress monitoring meetings for the financed projects are held per year, one for the social sciences, the other for the humanities, organised by ANR and DFG in alternation.



→ PUBLICATIONS ADDRESSING A WIDER AUDIENCE

→ LES CAHIERS DE L'ANR

In 2009, the ANR launched a collection called "Les Cahiers de l'ANR" which addresses pertinent thematic questions that span the ANR's diverse calls for proposals. Through a cross-disciplinary approach, this collection brings the on-going research, innovations and technological advances in a particular field into perspective. What are the technological, societal, economic and prospective issues? What is the ANR doing in this particular field?

The reviews do not attempt to make an exhaustive study of their subjects. The aim is to explain the broad themes and present the projects financed by the ANR on these themes in the form of summary sheets. It is not only intended for researchers, but also for decision makers and a wider public.



→ High-performance computing: a key technology for the future - January 2010

High-performance computing represents a ground-breaking revolution. This key technology, which is of strategic importance for the future, concerns not only supercomputers technology but also a very wide range of applications. Today the applications help promote discoveries and innovations in numerous scientific disciplines (physics, geophysics, biochemistry, etc.), in energy and nuclear activities, in health and the environment, and many other industrial sectors.

→ Shared energy: a new vision of the residential environment, the car and the territory - July 2010

Reducing greenhouse gas emissions resulting from the consumption of fossil fuels, and finding alternatives to oil, which will dry up in a few decades, are two major challenges that must be met to ensure the future balance of our societies.

It will only be possible to ramp up renewable energies if they become economically competitive with respect to the energies predominant today. Incentives or regulatory mechanisms can help make them competitive, but the margins for progress also lie in greater efficiency in the technologies for capturing these energy resources. It is crucially important to find technical solutions to optimise the management of energy, distribution networks and improve storage systems so that energy production can be better matched to the needs.



→ THE MAGAZINES IN SOCIAL SCIENCES AND HUMANITIES

In the field of social sciences and humanities, the ANR communicated on the results of its projects through two publications in cooperation with the publishing house Autrement:

The Mook (Magazine Book)

Using varied texts and images, – studies, investigations, portraits, interviews, essays, travel logs, photos, illustrations – this brand new concept enables difficult subjects to be staged (a region, a societal debate, research work, etc.), by highlighting the players in the field, their work and their achievements, which often have low visibility.

→ Wars, conflicts, violence. The state of research

The Mook magazine provides an overview of the state-of-the art research on the topic “Wars, conflicts, violence”, through summaries of ANR’s financed projects. From Prehistory to nowadays, from European to Nepalese, Arabic-Persian or American territories, from interstate war to urban violence, the Mook deciphers periods, places, and diverse themes, by means of a pluridisciplinary approach.



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The New Waver

Based on the editorial and graphic model of Le Mook, which is published in French, the New Waver provides a portrayal in English of the things that are moving in France, in all the societal, economic and technological sectors.

→ Cognitive science

France is at the cutting edge of a vital field of research spanning a variety of scientific disciplines and exciting new topics. This special issue focuses on scientists working in France and French-speaking countries who are making a difference to cognitive science worldwide.

APPENDICES





INTERNATIONAL COOPERATION 2010

PROGRAMME ACRONYM & TITLE	Number of proposals submitted	Number of proposals submitted with French partners	Number of projects funded with French partners	ANR funding in M€
MULTILATERAL PROGRAMMES IN THE FRAMEWORK OF EU FP7 INITIATIVES				
ERA-NET EMIDA: Infectious and emerging diseases of animals	77	47	8	1,5
ERA-NET EuroNanoMed: Nanomedicine	34	21	5	1,5
ERA-NET NEURON: Neurodegenerative diseases	103	55	6	1,4
ERA-NET Pathogenomics: Prevention, diagnosis, treatment and monitoring of infectious diseases in humans	49	39	8	2,5
ERA-NET Priomedchild: Priority medicines for children	22	14	5	1
ERA-NET Urban-Net: Sustainable cities	21	10	1	0,2
AAL JP: ICT solutions to mobility	91	36	6	2,4
BILATERAL AND MULTILATERAL JOINT PROGRAMMES				
French-Japanese call ANR-JST: ICT and nanotechnology	31	31	4	2,9
French-German call ANR-DFG: Social sciences and humanities	66	66	18	4,2
Quadrilateral call 'Open Research Area' France (ANR), Germany (DFG), Netherlands (NWO), and United Kingdom (ESRC): Social sciences	135	53	13	2,4
Trilateral call with Canada (IRSC) and Quebec (FQRC): Alzheimer's disease	34	34	5	1,7
Multilateral call KBBE France (ANR), Germany (BMBF), Spain (MCI), Portugal (FCT), and Canada (Genome Prairie): Plant genomics	34	31	7	3
Multilateral call G8 research councils (France, Germany, Canada, USA, Japan, UK, Russia): Application Software towards Exascale Computing for Global Scale Issues	84	45	5	0,9
Inter Carnot-Fraunhofer Partnerships	39	39	8	2,7
OPENING OF NATIONAL PROGRAMMES TO INTERNATIONAL COLLABORATIONS				
CSOSG: Global security with Germany (BMBF)	5	5	0	0
ALIA: Food and food industries with Germany (DFG)	7	7	0	0
CEP&S: Environmental changes with Brazil (FAPESP, FACEPE)	5	5	0	0
VTT: Ground transportation with Germany (BMBF)	5	5	0	0
ECOTECH: Ecotechnologies and water with China (MOST)	9	9	2	1,7
TecSan: Technologies for health with Taiwan (NSC)	6	6	1	1
«BLANC» INTERNATIONAL PROGRAMME				
Austria (FWF)	27	27	5	1,8
Canada (NSERC)	36	36	6	2,2
Chile (CONICYT)	19	19	3	0,9
China (NSFC)	86	86	15	2,5
United States (NSF)	57	57*	3**	0,9**
Hungary (NKTH)	28	28	5	2,4
Japan (JST)	18	18	3	0,6
Mexico (CONACYT)	30	30	5	1,4
Singapore (A*STAR)	45	45	4	0,8
Taiwan (NSC)	36	36	5	1
INTERNATIONAL COLLABORATIONS WITHOUT FORMAL AGREEMENTS				
Bioenergies	5	5	2	1,7
Sustainable cities	2	2	1	0,3
Smart building and photovoltaic	2	2	0	0
Genomics	7	7	1	0,5
Nanoscience, Nanotechnologies	7	7	0	0
TOTAL	1262	963	160	48

* Including NSF-ICC pre-proposals

** Projects evaluated and funded within the national "blanc" programme



ANR PROGRAMMES 2010

PROGRAMME ACRONYM	PROGRAMME TITLE	Number of proposals submitted*	Number of projects funded*	Selection rate (%)	Total ANR funding (in M€)	Average funding per project** (in k€)
INFORMATION AND COMMUNICATION SCIENCES AND TECHNOLOGIES						
ARPEGE	Embedded Systems and Large Infrastructures	60	17	28.3	14.6	861
CONTINT	Content and Interactions	105	29	26.3	20.9	1050
COSINUS	Design and Simulation	60	16	26.7	10.7	669
VERSO	Future Networks and Services	56	16	28.6	15.5	968
P2N	Nanotechnologies, Nanosystems	90	22	24.4	19.9	907
ANR-JST	French-Japanese call ANR-JST in ICT and Nanotechnology	31	4	12.9	2.9	718
G8 Exascale	Multilateral call G8 research councils: Application Software towards Exascale Computing for Global Scale Issues	45	5	11.1	0.9	183
BIOLOGY AND HEALTH						
RFCS	Targeted Research on Stem Cells	34	8	23.5	4.4	548
MI2	Integrated Mechanisms of Inflammation	83	14	16.9	7.8	555
CES	Contaminants, Ecosystems and Health	95	19	20.0	8.4	443
PSRP	Research Programme on Public Health	62	12	19.4	3.4	285
BIOTECS	Health Biotechnology	63	14	22.2	12.9	920
MALZ, including Trilateral	Alzheimer's Disease	85	14	16.5	6.1	439
TECSAN	Technologies for Health and Autonomy	95	19	20.0	15.9	836
AAL JP	Transnational Programme in Ambient Assisted Living	36	6	16.7	2.4	400
ERA-NET EuroNanoMed	Transnational Programme in Nanomedicine	21	5	23.8	1.5	300
ERA-NET Neuron	Transnational Programme on Neurological and Psychiatric Diseases	55	6	10.9	1.4	233
ERA-NET Pathogenomics	Transnational Programme «Prevention, diagnosis, treatment and monitoring of infectious diseases in humans»	39	8	20.5	2.5	312
ERA-NET Priomedchild	Transnational Programme on Priority medicines for children	14	5	35.7	1.0	200
ERA-NET EMIDA	Transnational Programme on Infectious and emerging diseases of animals	47	8	17.0	1.5	187
ENGINEERING, PROCESSES AND SECURITY						
CD2I	Sustainable Chemistry, Industry, Innovation	73	15	20.5	10.9	730
CSOSG	Concepts, Systems and Tools for Global Security	67	13	19.4	9.2	707
MatetPro	Functionnal Materials and Innovative Processes	78	16	20.5	14.3	893
ECOSYSTEMS AND SUSTAINABLE DEVELOPMENT						
ALIA	Food and Food industries	69	13	18.8	8.4	644
Systerra	Ecosystems, Territories, Living Resources and Agricultures	57	11	19.3	8.2	749
KBBE	Transnational Programme Plant KBBE	31	7	22.6	3.0	430
N/A	Genomics and Plant Biotechnologies	79	18	22.0	9.6	534

*For transnational programmes, only projects with French partners are taken into account

**For transnational programmes, only ANR funding is taken into account



ANR PROGRAMMES 2010

PROGRAMME ACRONYM	PROGRAMME TITLE	Number of proposals submitted*	Number of projects funded*	Selection rate (%)	Total ANR funding (in M€)	Average funding per project** (in k€)
SUSTAINABLE ENERGY AND ENVIRONMENT						
BIO-E	Bioenergies	31	8	25.8	7.4	927
H-PAC	Hydrogen and Fuel Cells	42	7	16.7	6.9	989
VTT	Land Transportation Vehicles	53	13	24.5	14.0	1000
EESI	Energy Efficiency and Reduction of CO2 in Industrial Systems	25	6	24.0	6.5	1082
HABISOL	Smart Building and Solar Photovoltaic	48	11	22.9	10.9	991
Stock-E	Innovative Storage of Energy	36	10	27.8	7.5	746
ECOTECH	Sustainable Production and Environmental Technologies	62	15	24.2	10.7	713
Flash	Flash Call Haiti: Towards a Sustainable Reconstruction	31	8	25.8	3.4	424
CEP&S	Global Environmental Changes and Societies	56	12	21.4	9.5	792
N/A	Sustainable Cities	26	8	30.8	3.2	395
SOCIAL SCIENCES AND HUMANITIES						
N/A	Space and Territory: Spatial Enigmas of Life in Society	57	12	21.1	2.9	241
N/A	South (Les Suds) Today II	71	16	22.5	3.6	222
N/A	Creation: Processes, Actors, Objects, Contexts	80	14	17.5	3.2	232
N/A	French-German Programme in Social Sciences and Humanities	66	18	27.1	4.2	232
N/A	Programme Open Research Area in Social Sciences	55	13	23.6	2.4	181
PARTNERSHIPS AND COMPETITIVENESS						
PICF	Inter-Carnot Fraunhofer Programme	39	8	20.5	2.7	337
Emergence	Programme for the emergence of projects with high valorisation potential	233	49	21.0	13.0	265
NON-THEMATIC PROGRAMMES						
«Blanc»	«Blanc» Programme	2419	524	22.0	220.7	421
«Blanc» International	«Blanc» International Programme	325	51	16.0	13.6	266
N/A	Chairs of Excellence	61	15	25.0	7.3	489
JCJC	Young Researchers	860	201	23.0	39.6	197
N/A	Postdoctoral Return	125	22	18.0	8.7	397

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