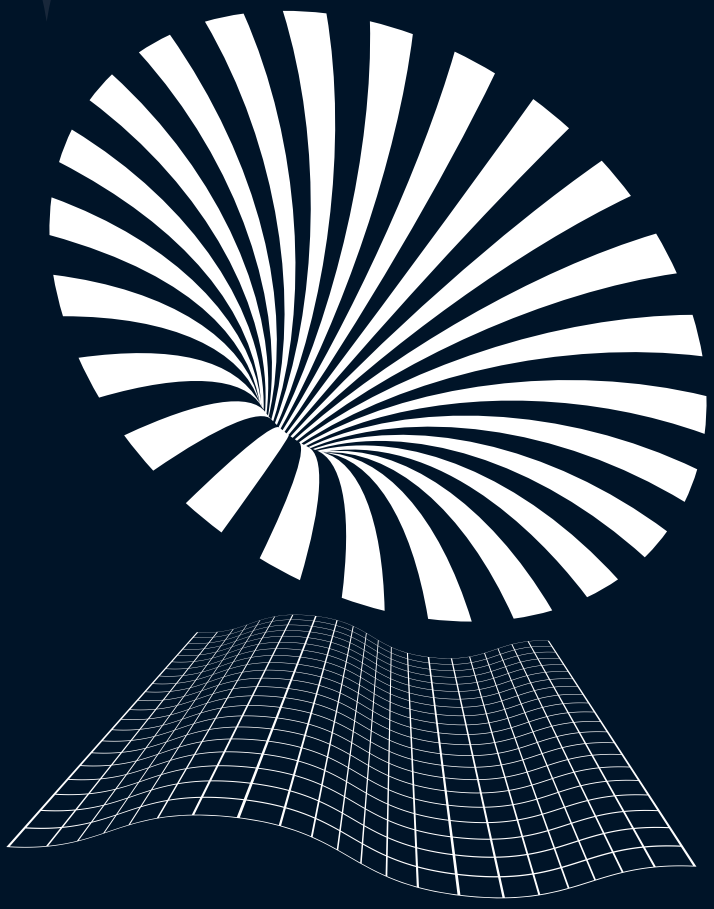
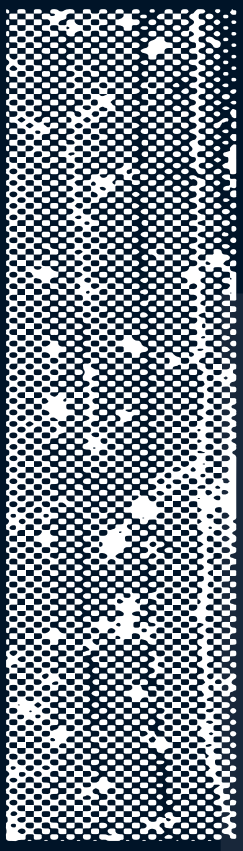
Fonds National de la Recherche Luxembourg





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FNR ANNUAL REPORT 2021

The Luxembourg National Research Fund (FNR) is the main funder of research activities in Luxembourg. The FNR invests public funds and private donations into research projects in various branches of science and the humanities, with an emphasis on selected core strategic areas. Furthermore, the FNR supports and coordinates activities to strengthen the link between science and society and to raise awareness for research. It also advises the Luxembourg government on research policy and strategy.

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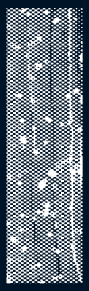

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EACH CRISIS IS AN OPPORTUNITY IN DISGUISE

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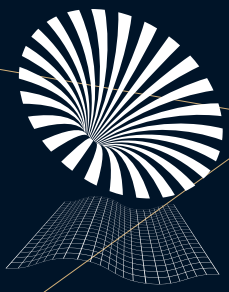

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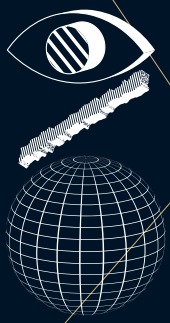

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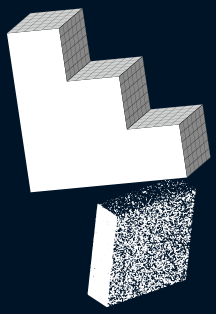

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2021 ACTIVITY REPORT

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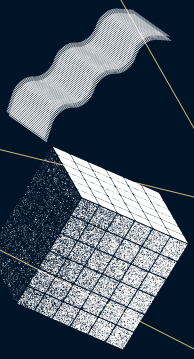

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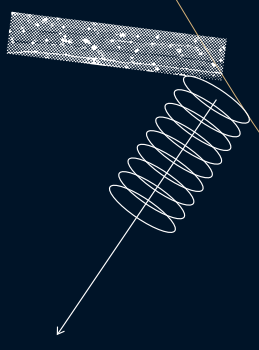

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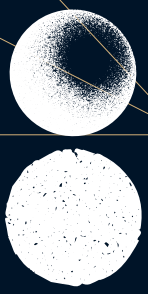

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ORGANISATION

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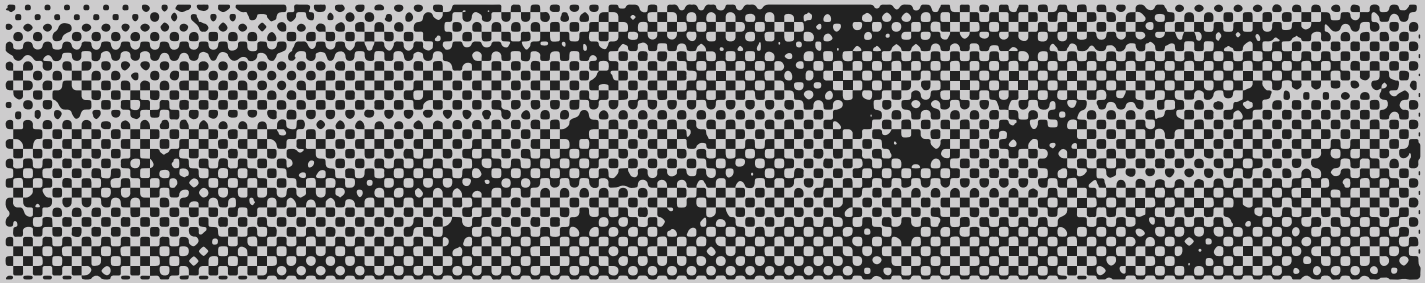
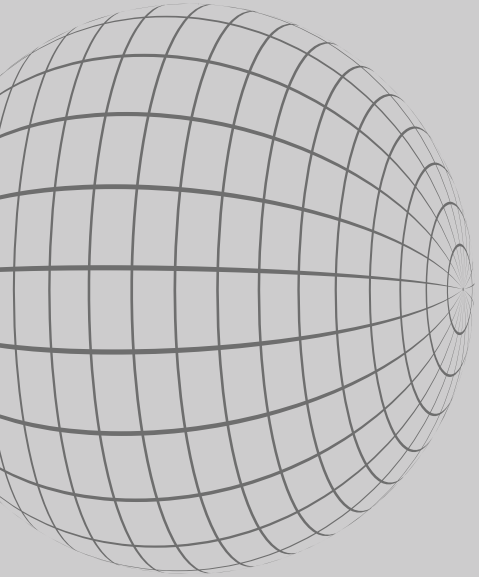




01

WE ARE CREATING VALUE FOR SOCIETY.

Dear Reader,

The past two years have been tremendous in many aspects. The pandemic has changed our world, both professional and private environments. Like every crisis, it also bears opportunities for change and improvement.

In Luxembourg, science was thrust into the limelight, considered a source of evidence and information, both by the public and policymakers. 20 years ago, it was questioned if a small country like Luxembourg should set up research centres and a university at all - now, the crisis proved how much the country can benefit from its own scientific expertise.

Beyond this, and this might have been forgotten, Luxembourg research not only has virologists, infectiologists, and epidemiologists but also economists, psychologists, sociologists, material scientists, and many more who, from in their respective fields, provide important input that creates value for society. Researchers are working on topics such as COVID-related wastewater analysis, improving the efficiency of solar cells, or improving treatments for patients.

To further deepen and extend this input of Luxembourgish research on society, the Luxembourg National Research Fund (FNR) has signed its multi-annual agreement with the Government for the period 2022-2025.

The FNR's 2022-25 Strategy and Action Plan is part of the implementation of the National Research and Innovation Strategy for Luxembourg adopted by the Government in late 2019. Our ambition: to invest in developing a first-class R&I system that creates value for society.

Society expects research to produce knowledge that, in the long run, will positively impact people's quality of life, economic diversification, and sustainable development. Thus, a key element of the FNR's strategy is the integration of the needs, values, and expectations of societal stakeholders into research activities.

One of the main actions of the FNR's four-year plan is to support flagship projects that bundle existing strengths of the national R&I system through the NCER framework programme. The objective: developing concrete missions together with relevant societal stakeholders, following a transdisciplinary research approach. Missions addressed are directly relevant to society, industry, government, health, and education of the population. This framework builds on the vast experience the FNR gathered over the past seven years through the National Centre for Excellence in Research on Parkinson's Disease (NCER-PD), which the FNR funded with 14 MEUR. This framework gathered researchers, practitioners, medical doctors, physiotherapists, and patient associations. Patients and researchers are already directly benefitting from this collaborative network.

Strengthening the foundations of our national research and innovation system will remain a key priority in the coming period. The FNR will continue to invest more in investigator-driven research programmes and international scientific collaboration. Open science (i.e. increasing the transparency and improving the accessibility of public research results) and a positive research culture will also be central to the FNR's priorities. The FNR has built up a solid network of international collaborations with strong partners to co-fund research projects. We have also demonstrated our ability to react quickly to new developments, shown i.e. by setting up the COVID fast track scheme or, more recently, by offering INTER Mobility Ukraine grants, plus add-on grants and discussing how to organise help directly in Ukraine, in close coordination with Science Europe.

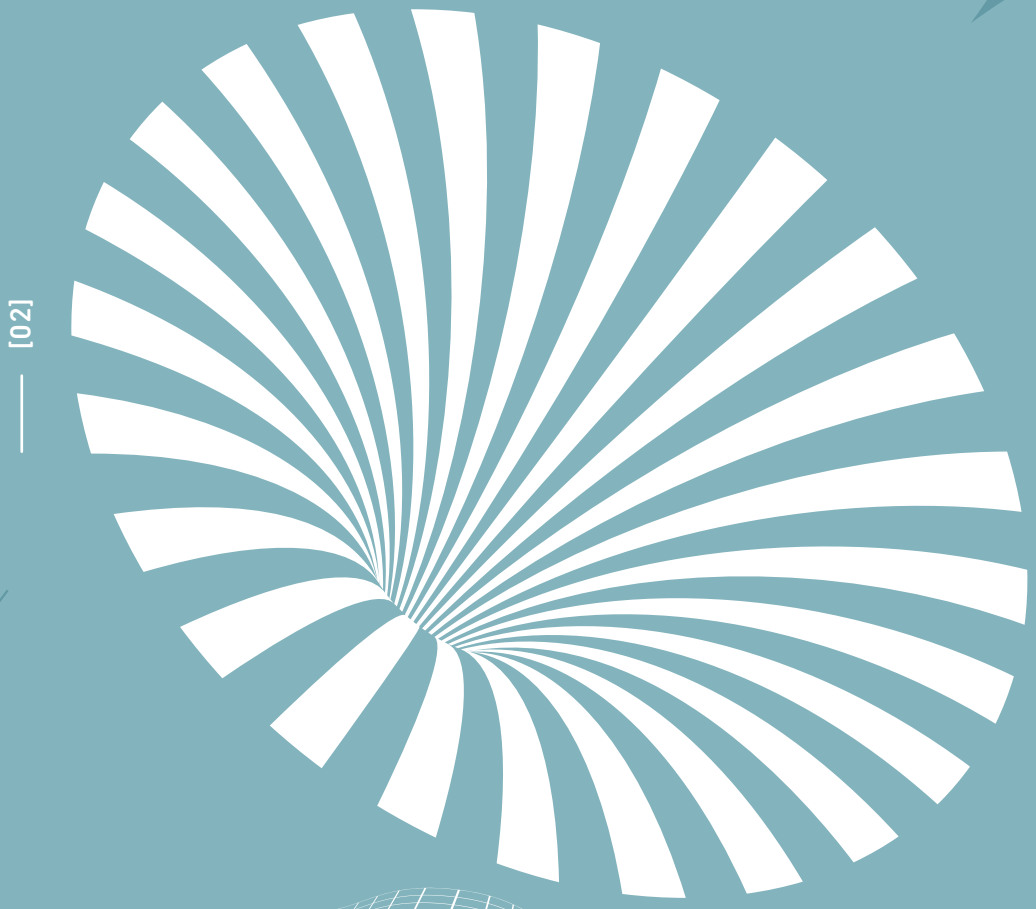
Further actions are planned to reinforce the critical role of science communication, science education and public awareness, as well as the importance of evidence-based public debate and policymaking.

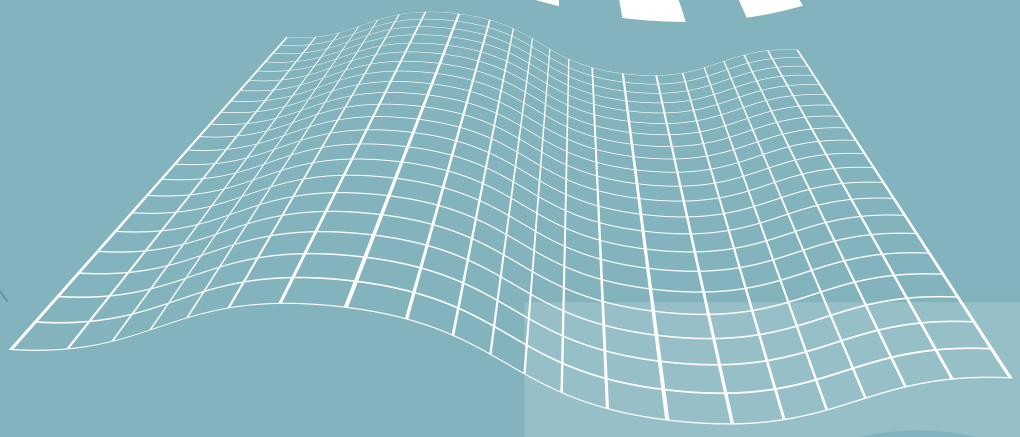
The expectations of research and society continue to rapidly evolve in a changing environment. The FNR will remain agile and further develop its capacity to identify emerging research trends and adapt its priorities accordingly.

Marc Schiltz, *Executive Head*

Martine Reicherts, *Chair of the Board*

Thierry Wolter, *Vice-Chair of the Board*





02

OBJECTIVES, STRATEGY, POLICY

Luxembourg National Research Fund
Research with impact

OUR VISION

FNR's vision is to establish Luxembourg as a leading knowledge-based society through science, research, and innovation, thereby contributing to the country's economic diversification, societal development, and future prosperity.

OUR MISSION

FNR's mission is to champion the development of a sustainable first-class research system that will generate societal impact in key strategic areas for Luxembourg.

CORE STRENGTHS IN SERVING THIS MISSION

- FNR is a custodian of research quality and integrity in our national research system.
- FNR is a trusted, unbiased, autonomous facilitator and enabler.
- FNR has an overarching view, and at the same time deep knowledge of the Luxembourg R&I eco-system.
- FNR is championing best practices and can take bold moves early.
- FNR is agile, innovative, and open to partner up with others.
- FNR the premier communicator/facilitator between science and society in Luxembourg.
- FNR is highly connected internationally.

STANDARDS OF OPERATION

The FNR's most highly valued criterion is quality in research. In order to identify the highest quality and most promising projects, we systematically submit funding requests to an expert assessment. We implement the Principles for Scientific Merit Review, which embody the highest international standards of expert assessment, transparency, impartiality, confidentiality and integrity. We commit to conduct our operations through a Quality Management System (QMS) certified in accordance with the ISO 9001:2015 standard.

CORE VALUES

- **Towards researchers and research institutions**
  We implement a fair and transparent process in our decision-making and nurture an open dialogue with the scientific community..
- **Towards the government, tax-payers and partners**
  We are accountable for the usage of funds that we are entrusted with and we strive for efficiency in our operations.
- **Towards the general public**
  We care for the long-term interest of the country and consider engagement with society as a constitutive part of science.
- **Towards our collaborators**
  We aim to stimulate talent-development and competence building of our staff, who translate FNR's vision, mission and core values into action.

STRATEGIC PRIORITIES 2022–25

Our ambition is to deliver on the National Research and Innovation Strategy for Luxembourg and to bolster a research and innovation system that creates value for society.

PRIORITY 1: A FIRST-RATE RESEARCH SYSTEM FOR TODAY – STRENGTHENING THE FOUNDATIONS

In order to deliver value for society, we must foremost sustain and further develop a high-quality research system in Luxembourg. Strengthening the foundations of our research and innovation system will therefore remain an important strategic priority.

- Sustaining research quality and research integrity.
- Attracting and nurturing talent.
- Ensuring efficient funding mechanisms.
- Supporting a cohesive and collaborative research system.
- Developing state-of-the-art research infrastructures, research data management and open science practices.
- Anchoring Luxembourg in the global fabric of research.

PRIORITY 2: CONNECTING SCIENCE AND SOCIETY – CREATING VALUE FOR ALL

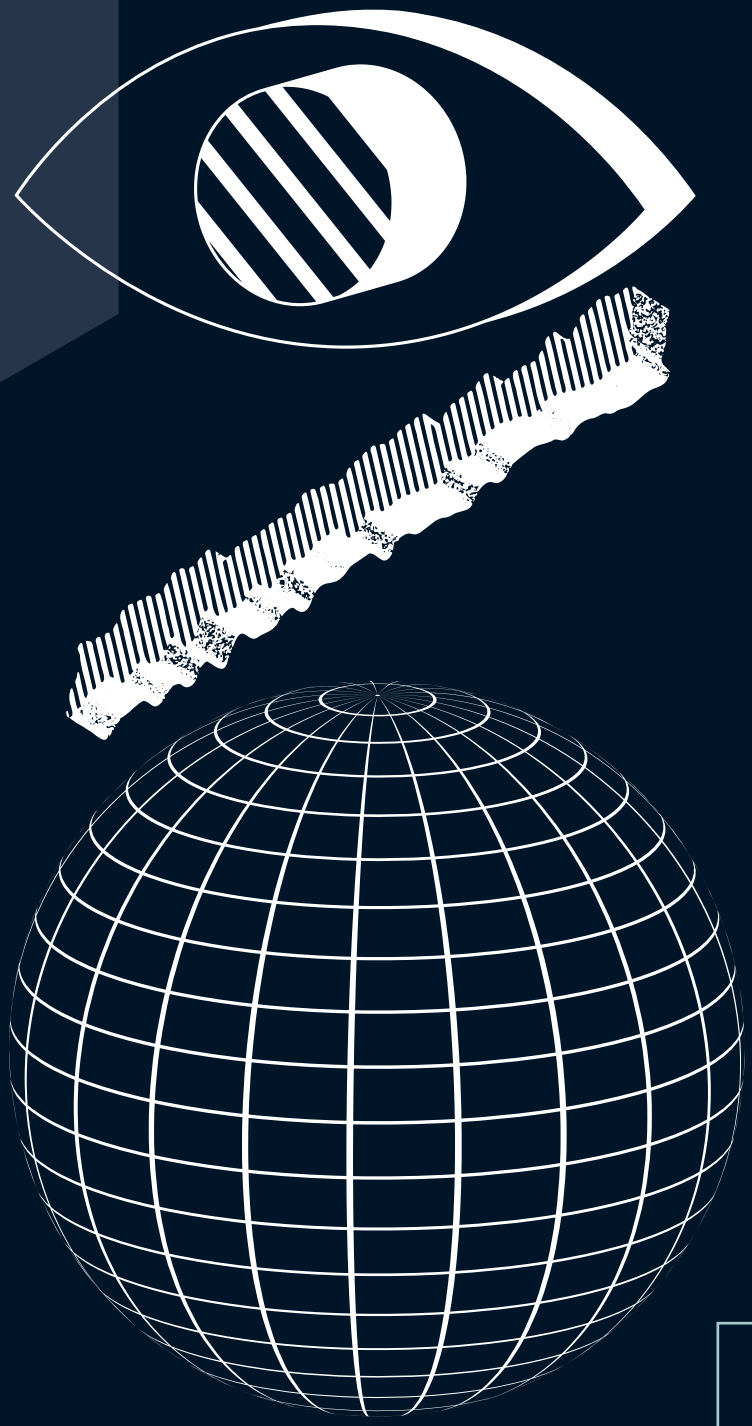
Key to our strategy is the approach to integrate the needs, values, and expectations of societal stakeholders into research activities.

- Building on our expertise in knowledge transfer, translation, and innovation.
- Ensuring societal relevance in research – integrate needs, values, and expectations of societal stakeholders into research programmes.
- Promoting public engagement and trustworthy, relevant, and innovative science communication.
- Supporting innovation in science education.

PRIORITY 3: A LEADING-EDGE RESEARCH SYSTEM FOR TOMORROW – BEING BOLD AND LEADING THE WAY

Research and societal expectations are rapidly evolving in a changing environment. Maintaining our agility and further developing our capacity to identify emerging trends in research and to adapt rapidly is a key priority for us.

- Identifying, assessing, and embracing emerging trends in research.
- Understanding and evaluating the impact of research.
- Embracing and shaping a forward-looking research culture.
- Influencing research policy developments at the European and global levels.
- Nurturing FNR's key assets: people, data, brand.



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03

2021 MAIN FIGURES

50

NEW CORE PROJECTS

887.25

MEUR COMMITTED TO RESEARCH ACTIVITIES 2000-2021

226

NEW PROJECTS

2

COLLABORATIONS WITH MINISTRIES

657

PROJECTS SUBMITTED FOR EVALUATION

2

ATTRACT FELLOWSHIPS

20

BRIDGES PROJECTS

43

EARLY-CAREER GRANTS

214

FINISHED PROJECTS

14

INDUSTRIAL FELLOWSHIP

16

PSP PROJECTS - PROMOTING SCIENCE TO THE PUBLIC PROJECTS

31

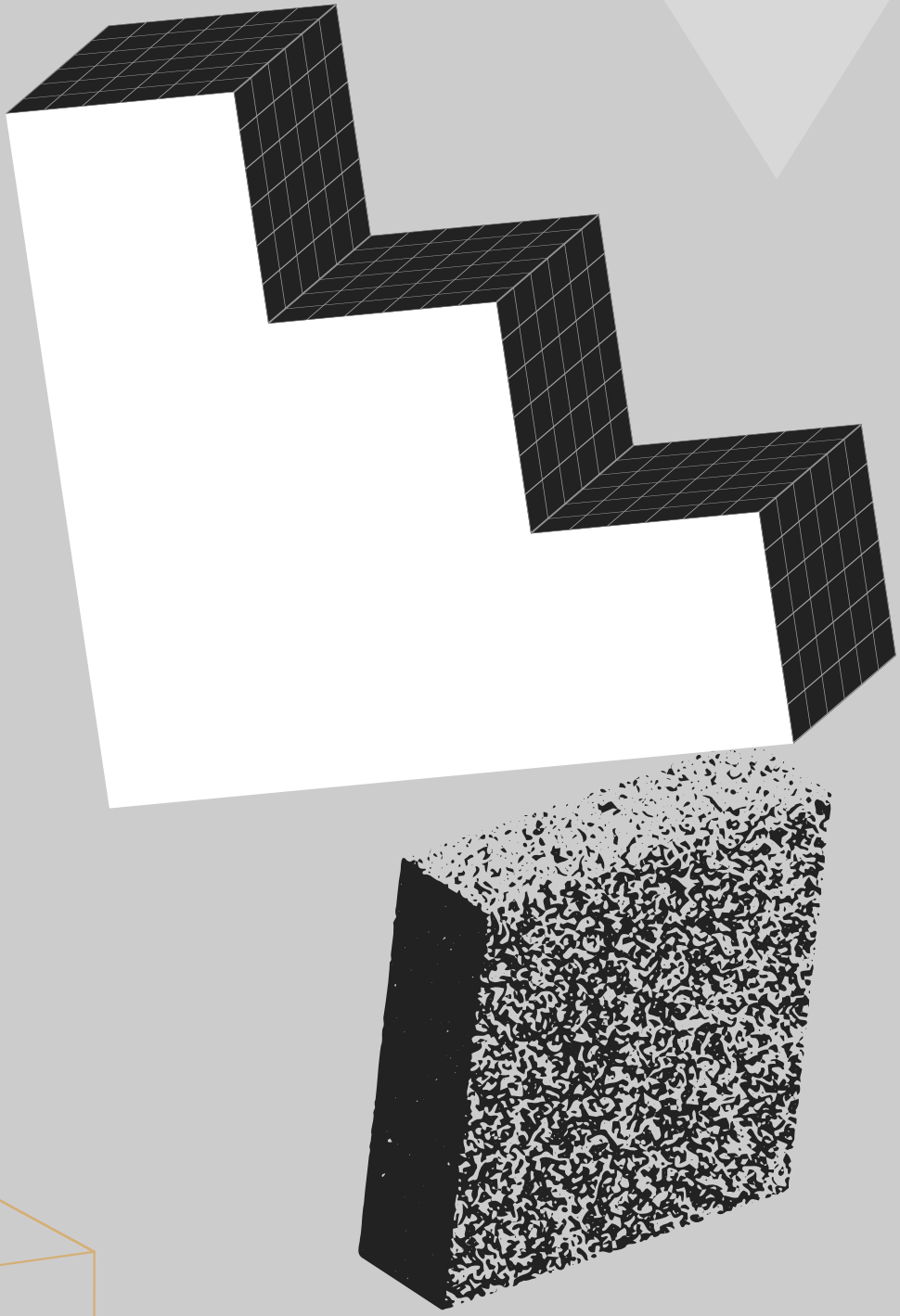
INTER PROJECTS

74.08

MEUR NEW COMMITTED

4 395

PROJECTS FUNDED 2000-2021



04

2021 ACTIVITY REPORT

I. MAIN PROJECTS

The Luxembourg National Research Fund has developed its Strategy and Action Plan 2022-25, leading to the signing of the multi-annual agreement with the Government for 2022-2025 in January 2022. To implement the activities covered by this agreement, the Government authorises the FNR to make commitments up to an overall ceiling of 445 MEUR over the next four years. The FNR's 2022-25 strategy and action plan are part of implementing the Luxembourg National Research and Innovation Strategy adopted by the Government at the end of 2019.

The FNR's ambition is to invest in developing a first-class R&I system that creates value for society. One of the main actions of the FNR's four-year plan will be to support flagship projects that bring together the existing strengths of the national R&I system through the NCER framework programme. The objective is to develop concrete missions designed jointly with the relevant societal actors, following the transdisciplinary research approach. The missions addressed will be of direct relevance to society, industry, government, health and education of the population.

The flagship projects will focus on concrete tasks in areas such as

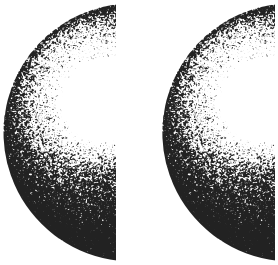
- Personalised and digital healthcare
- Financial technologies of the future
- Education, training and skills for the 21st century
- Climate and energy challenges

In addition, strengthening the foundations of our national research and innovation system will remain a key priority in the coming period. The FNR will also invest more in investigator-led research programmes and international scientific collaboration. Open science and a positive research culture will also be at the heart of the FNR's priorities. Further actions are planned to reinforce the critical role of science communication, science education and public awareness, and the importance of evidence-based public debate and policy-making.

Marc Schiltz, Secretary General of the FNR, has been re-elected as Chair of the Governing Board of Science Europe, the European association of research and research funding organisations in Europe, marking the beginning of his third term in this role. Marc Schiltz's re-election as President of Science Europe will also allow him to continue to serve on the governance board of the Global Research Council (GRC), which brings together the heads of science and engineering funding organisations from around the world.

In November, the Minister for Higher Education and Research, Claude Meisch, opened a European Workshop in Luxembourg-Kirchberg, where heads of national research funds, representatives of national research ministries and the European Commission met to discuss topics such as research culture. The 2021 High-Level Workshop on the European Research Area (ERA) addressed key aspects of research culture in the European Research Area (ERA) and its influence on how research is designed, conducted, communicated and evaluated. The aim is to understand better the views of the different research and innovation actors in the ERA and to advance the focus on key aspects of research culture. This way, it will be possible to identify measures to make the European Research Area more attractive to researchers and top-level research. This year's High-Level Workshop was co-organised in Luxembourg by the Ministry of Higher Education and Research and the Fonds National de la Recherche, in close collaboration with Science Europe.

The FNR and the Fondation Cancer have renewed their collaboration agreement to jointly support research projects in the field of cancer. Within this framework,



four cancer research projects have been selected for funding at the end of 2020. The FNR provides expertise in evaluating research projects according to strict quality criteria. The Fondation Cancer is very well connected with health professionals and, above all, with patients. To publicise and promote cancer research in Luxembourg to these groups, the FNR and the Fondation Cancer have launched a communication campaign via their respective networks, based on four videos presenting the four projects to an uninformed public.

The first call for projects in health technologies, launched by the Ministry of Economy, jointly with the FNR and supported by Luxinnovation, was opened in May 2021. Minister of Economy Franz Fayot announced the call during a joint press conference with Luxinnovation and the FNR on 1 April. A new dedicated digital platform, www.research-collaboration.lu, has been set up by Luxinnovation, and the three stakeholders have signed a Memorandum of Understanding to formalise their collaboration. The objective of the call for projects is to stimulate collaborative R&D projects through public-private partnerships (PPP). This is the first time in Luxembourg that such a joint call for projects has been launched in the research, development and innovation ecosystem. Common objectives have been defined by the FNR and the Ministry of Economy to address the development needs of the sector. At the same time, Luxinnovation plays a facilitating role by providing a digital platform to encourage networking.

In June, the FNR and the Ministry of Agriculture signed a Memorandum of Understanding (MoU), announcing the launch of a joint call on "sustainable and resilient agriculture and food systems". Moving towards sustainable and resilient agriculture and food systems is a priority of the government's agenda. The Ministry of Agriculture and the FNR has decided to join forces to support policy and decision-making in these areas to achieve these goals. The objective is to develop innovative, resilient and sustainable agricultural practices and systems adapted to the specificities of the Luxembourg agricultural sector.

The FNR has awarded two new ATTRACT fellowships: Ass. Prof. Dr Lindsay Flynn receives 2 MEUR for a project that studies the relationship between housing policies and inequality. Ass. Prof. Dr Etienne Fodor receives 1.5 MEUR for a project on the theme of active matter. Both projects will be carried out at the University of Luxembourg for five years. Lindsay Flynn will study the relationship between housing policies and inequality. The theoretical framework is interdisciplinary and draws on political science, sociology, demography and economics. Ass. Etienne Fodor's topic is active matter, a new class of non-equilibrium systems composed of self-propelled agents.

The second call with the Fonds de la recherche du Québec (FRQ) to support bilateral projects under the AUDACE programme was launched in July. The FNR had signed an MoU with Quebec in May 2020. The main objective of this agreement is to foster cross-border collaboration between the scientific communities of Quebec and Luxembourg. Under the AUDACE programme, research consortia are invited to submit joint interdisciplinary projects.

The FNR and DORA have published a joint publication on research evaluation: "Balanced, broad, responsible: A practical guide for research evaluators" is a short explanatory video that provides a "checklist" of six concrete suggestions for research funders seeking to improve the responsible evaluation of funding applications. These recommendations have been summarised in an accompanying document. This one-page document contains suggestions for use in multiple contexts, including sharing the video and document with grant reviewers, institutions and researchers. These resources are the result of the partnership between DORA and FNR. In addition, the checklist has been iteratively developed and improved with valuable input from the DORA Steering Committee, the DORA Funders' Focus Group, active researchers and other funding agencies.

In October, the FNR organised the 13th edition of the FNR Awards: 7 researchers/research groups were rewarded for their outstanding efforts in four categories. An "FNR

Award for outstanding Mentorship" was presented for the first time.

In November, Joseph Rodesch, aka Mr Science, received the Lions Club 2021 Award at a ceremony in Luxembourg. Joseph Rodesch received the award in recognition of his efforts to bring science closer to the public for more than ten years as Mr Science. Reporting on physics, chemistry, biology and medicine in the RTL programme "Pisa" is not the only activity of Joseph Rodesch, himself a chemist, on behalf of the FNR. Mr Science also regularly entertains children and young adults in live shows that spark their interest in science.

The FNR communication campaign "letzSCIENCE" won a second prize at the European Excellence Awards 2021. The campaign is based on the letzSCIENCE AR application - a free application 100% made in Luxembourg, through which one can discover the beauty of science in augmented reality. The campaign and the application were developed to raise awareness of the research supported by the FNR.

The Luxembourg Parliament has hired its first staff for its newly created research service. This parliamentary research service is, in fact, a result of the FNR's Pairing Scheme, organised in 2016 and 2019 in collaboration with the Luxembourg Parliament. Since 2019, the FNR has accompanied the Chamber of Deputies in its efforts to create this scientific unit within the Parliament's administration.

The FNR, in collaboration with the National Museum of Natural History, organised the 13th Science Festival in November. Due to the pandemic, this edition was somewhat smaller than usual. Nevertheless, 160 school classes participated during the week and 6000 people during the weekend. The festival was sold out. In all, around 500 scientists offered 45 workshops and scientific shows.

In May, the auditor recommends maintaining the quality management system's ISO 9001: 2015 certification (No. 9108637133, www.tuv.com).

II. GOVERNANCE

The Board of Directors met five times in 2021, under the chairmanship of Mrs Martine Reicherts. There was also a joint meeting of the Board and the Scientific Council.

The Presidency met five times.

The Audit & Finance Committee (Hilger, Schlesser, Sedrani, Secretary General, Head of Finance) met three times (one formal meeting, two by circular).

The Nomination and Remuneration Committee met twice.

The Board of Directors is composed of:

- Martine Reicherts (Chair), former Director General at the European Commission
- Thierry Wolter (Vice-Chair), Member of the Executive Committee, Ceratizit, Luxembourg
- Tania Brugoni, Director, 1535° Creative Hub, Luxembourg
- Stéphanie Damgé, Director, Jonk Entrepreneuren Luxembourg ASBL
- Jean-Marc Fandel, expert consultant, scale up, Luxembourg
- Yves Fromes, PhD and Research Director, NMR Laboratory CEA-Institut de Myologie, France
- Anouk Hilger, Director of Renewable Energies, Enovos, Luxembourg
- Isabelle Schlesser, Director, ADEM, Luxembourg
- Richard Sedrani, Director, Novartis, Switzerland

The Scientific Council met three times under the chairmanship of Mrs Nadine Martin.

The Scientific Council is composed of:

- Nadine C. Martin (Chair), sitem-insel AG, Switzerland
- Gabriele Dobenecker (Vice-Chair), EMPA, Switzerland
- Yves Cocard, Universities of Bern and Lucerne, Switzerland
- Patrycja Paruch, University of Geneva, Switzerland
- Burckhard Stiller, University of Zurich, Switzerland
- Nicolas Gengler, University of Liege, Belgium
- Rachel Chambers, University College London, Great Britain
- Jane Elliott, University of Exeter, Great Britain
- Georges Thielen, Goodyear Innovation Center, Luxembourg

III. SPECIFIC PROGRAMMES AND ACTIONS

The activities carried out during the year for the strategic objectives set out in the Multi-annual Agreement are summarised as follows

STRATEGIC OBJECTIVE 1: Strengthen the foundations of public research

- We intend to strengthen the sustainability of the public research system based on a broad culture of excellence;
- We aim to achieve critical mass in key research areas to take scientific leadership.

CORE

The FNR received 158 proposals, all of which were eligible. One proposal was withdrawn from the evaluation by the project leader. After evaluation of 157 proposals by independent international experts, the FNR selected 51 (of which one was withdrawn) projects (of which 14 "Junior CORE" proposals and five proposals in the framework of bilateral international cooperation), which were funded to the tune of 30.98 MEUR. The budget was again substantially increased due to the high number of positively evaluated projects. Despite this significant increase, ten projects could not be held for funding despite their positive evaluations. The six selection panels confirmed that the project selection process is applied according to the highest international standards.

OPEN

The FNR received 9 proposals, all eligible. After evaluation by international experts, the FNR selected 3 projects to be funded with 1.31 MEUR.

INTER

The FNR evaluated 159 proposals (157 INTER + 2 AFR Nasa) and granted funding to 32 projects (17 bilateral, 14 multilateral, 1 AFR Nasa) for a total commitment of 12.32 MEUR. In the AAL and EUROSTARS programme framework, 3 projects were selected. In addition, the FNR evaluated 16 mobility proposals, of which 9 were selected for a total commitment of 0.65 MEUR.

To encourage bilateral scientific collaboration between Quebec and Luxembourg, the Fonds de recherche du Québec (FRQ) and the Fonds National de la Recherche du Luxembourg (FNR) have developed a joint funding programme for collaborative projects through the AUDACE programme. For this first call in 2021, one project has been selected for funding.

It should be noted that in the framework of the Fulbright programme, one of the two projects submitted was selected.

In addition, in the framework of strengthening the said multilateral cooperation, namely the Multilateral Lead Agency Agreement (Weave), a new collaboration with GARC was signed at the beginning of 2021, and a first project was selected for funding. In 2021, two new cooperations will be added to the growing "Weave" consortium, namely NCN and Formas. With this "Weave" cooperation and the other agreements, the FNR collaborates with more than twenty international partners. After joining the CHIST-ERA and QuantERA II ERAnets in 2020, one project, respectively two projects, have been selected in 2021 in these ERAnets.

RESCOM

The FNR evaluated 7 proposals, and 7 were selected for total funding of 0.28 MEUR.

OPEN ACCESS

The FNR selected 3 proposals submitted under the 2020 call for a total funding of 50 kEUR. The implementation in 2021 of the ChronosHub platform to support Open Access-related costs was successful.

AFR

The expert panel evaluated 108 eligible proposals, of which 28 were selected for funding in the amount of 4.89 MEUR.

PEARL

Within the call framework, 3 PEARL projects were submitted (including one "Open PEARL" under evaluation). Of the others, 0 projects were selected.

ATTRACT

3 proposals were evaluated and 2 applicants were selected, Dr Aurélia Chenu (UL, MEUR 1.99) and Dr Alexandros Gerakis (LIST, MEUR 1.99).

Following the launch of the 2022 call, 5 pre-projects were received (3xM, 2xF). All of them were invited to submit a developed project, including 1 in the "starting" track and 4 in the "consolidator" track. One applicant withdrew her application. The evaluation will continue until 2022.

PRIDE

In mid-year, the 2021 call was launched. By the end of the year, 9 proposals were submitted by doctoral training units. The evaluation will continue until 2022.

NCER-PD -National Centre of Excellence in Research on Parkinson's Disease. A virtual meeting of the Scientific Advisory Board was held in 2021.

NCER

2 projects were submitted (Clinnova 2.0 and Fintech). Both are under evaluation.

STRATEGIC OBJECTIVE 2:
Contribute to shaping the Luxembourg of tomorrow

- Through the development of priority research themes aligned with the country's strategic development plans, we aim to support innovation in the industry, the health sector and the public sector and to support digital and societal transformations;
- We want to anchor science in society by supporting an active exchange between researchers and citizens.

JUMP (Proof of Concept (PoC)

The FNR evaluated 15 proposals and awarded funding to 12 projects for a total of 3.09 MEUR.

Knowledge & Innovation Transfer Support (KITS)

The FNR evaluated 5 proposals and awarded funding to 5 projects for 1.33 MEUR, including 1 project supported by MECO and FNR in the joint call launched in December 2020.

MECO-FNR-LUXINNOVATION

The FNR launched in 2021 a new joint call with MECO and LUXINNOVATION in the field of biotechnology. The FNR evaluated 8 proposals and granted funding to 4 projects for an amount of MEUR 2.78.

BRIDGES and **Industrial Fellowships**

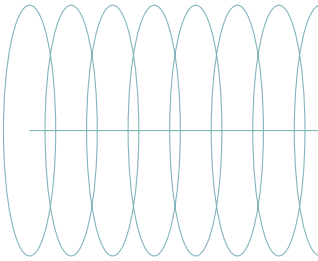
A total of 37 BRIDGES projects and 21 Industrial Fellowships projects submitted were evaluated. 21 BRIDGES projects with a funding of 5.95 MEUR and 14 Industrial Fellowships with a funding of 2.83 MEUR were selected after evaluation.

IPBG

No IPBGs were submitted in 2021.

INITIATE

3 proposals were evaluated and selected for funding of 0.73 MEUR.



FNR COVID19

In response to requests from the scientific community and after the two successful Covid-19 Fast-Track calls, the FNR has launched a new co-funding programme to support projects addressing the current and future challenges of the COVID-19 pandemic. This programme is part of the activities of the COVID-19 Task Force, which carried out a pre-selection of projects. A total of 11 proposals were evaluated and 4 projects were selected for a total funding of 0.62 MEUR.

FNR-MAVDR

In the framework of targeted cooperation, a pilot call was launched, together with the Ministry of Agriculture, Viticulture and Rural Development (MAVRD), to support research projects in the fields of climate change, water protection and biodiversity. 8 proposals were received. The evaluation will continue until 2022.

PSP

PSP-Classic: the FNR evaluated 15 project proposals and awarded funding to 12 projects for a total commitment of 0.54 MEUR.

PSP-Flagship: the FNR evaluated 5 project proposals and awarded funding to 4 projects for a total commitment of 1.67 MEUR.

Science in Society

Events: In 2021, the FNR organised its 11th edition of "Researchers in School". 74 researchers participated in 44 sessions in 21 high schools. And the Science Festival was organised together with the National Museum of Natural History. About 400 scientists participated, 45 workshops and 4 shows were presented to 160 school classes during the week and about 6000 visitors during the weekend. The FNR organised the virtual ScicomLuxembourg, an event bringing together science communicators from Luxembourg (65 participants).

And finally, the FNR helped recruit and set up the new science cell within the Parliament and started to work concretely on the project "Remix Science - The Sound of Data" in the framework of Esch2022.

Media: In 2021, the FNR renewed its media partnerships with RTL Télé, RTL Radio and Eldoradio ("Mr Science partnerships") and its partnerships with RTL Today, RTL 5 min, Radio 100.7, Tageblatt and Lëtzebuerger Journal.

science.lu continues to mobilise and retain readers, with 1.03 million page views in 2021. Facebook, Instagram, YouTube, Twitter and TikTok networks are also widely followed. TikTok, in particular, has become a success, with over 10,000 followers. Of the 205 articles published in 2021 on science.lu, about 50 were dedicated to COVID19. And the media continues to report and interview about topics launched on science.lu.

Training courses: The FNR organised 12 training courses, 7 for teachers in collaboration with SCRIPT and IFEN, and 5 for researchers (media training, Mr Science training) and a new training course on "how to communicate with policymakers" in the framework of our collaboration with the Chamber of Deputies.

FNR AWARDS 2021

The 13th edition was organised in person while keeping a hybrid format. Some 200 people were able to attend the ceremony in person, and almost 300 more followed it via livestream on one of the FNR's broadcast channels and today.rtl.lu. Two new categories were presented this year, namely "Outstanding Mentor" and "Oustanding Scientific Achievement". The latter replaces the former categories "Outstanding Scientific Publication" and "Outstanding Research-Driven Innovation". The other categories, Outstanding PhD Thesis and Outstanding Promotion of Science to the Public, complete the list. A total of 7 winners (or teams) were awarded. Each prize is endowed with €5000.

Promotion of FNR activities

The FNR regularly communicates via its website fnr.lu and its digital channels (LinkedIn, Twitter, Facebook, Instagram, YouTube and FNRInfo) to inform the scientific community and the general public about its activities, as well as the results of Luxembourg research. In July, the FNR launched its second campaign, "LetzSCIENCE", an awareness-raising campaign combining traditional poster advertising and augmented reality. This campaign won a second prize at the European Excellence Awards. The FNR's 2020 digital annual report won an award at the German Design Awards.

STRATEGIC OBJECTIVE 3:
Promote innovation in the organisation of public research.

- We will develop the know-how and infrastructure to implement an evidence-based approach to the design, monitoring and evaluation of research strategies and programmes;
- We will position the FNR at the forefront of national and international debates on research policy and strategy;
- We will explore new ways to evaluate projects and programmes using digital technology and draw on the latest research knowledge.

The FNR has developed in-house expertise in the Science of Science policy through international collaborations, hiring an expert and training FNR staff, and defining some of the infrastructure and analytical tools needed to carry out a more rigorous and quantitative follow-up evaluation of the results and impact of Luxembourg's research efforts. In collaboration with expert teams (Frontiers and Dimensions), pilot projects were conducted to assess the feasibility of implementing new technological solutions in the evaluation processes of the FNR.

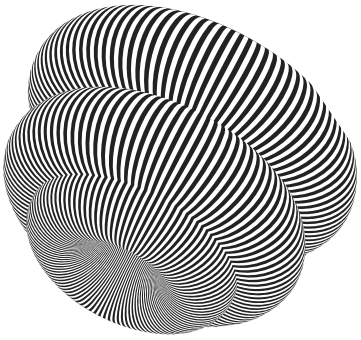
The "Dimensions" database was adopted to facilitate access to data on researchers in Luxembourg and beyond. In the same vein, to facilitate access to researchers' data, the ORCID identifier was included in all applications to the FNR. The evaluations of the INTER and PPP projects were concluded. Negotiations for membership in the RORI working group have been completed, and the FNR will be an official partner from January 2022. A longitudinal survey on self-assessment of doctoral students has been proposed and will be discussed with the university for implementation in 2022.

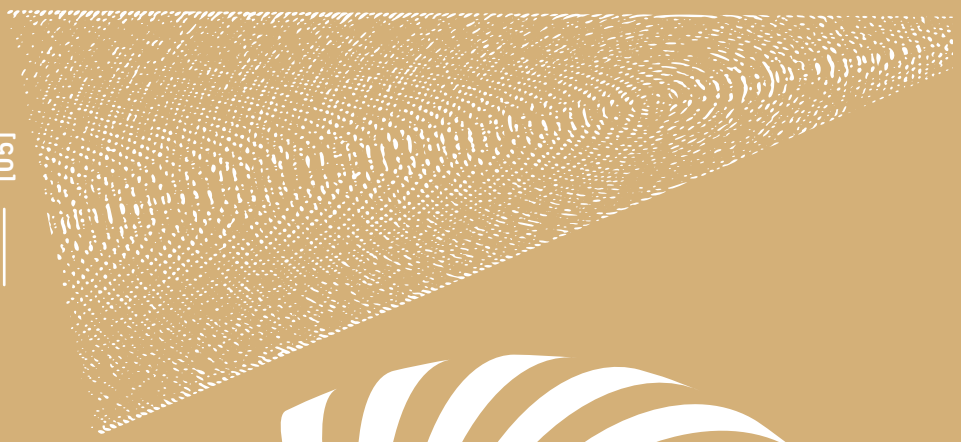
Several changes to the funding rules and criteria have been developed and will be applied to most of our various programmes from 2021. These changes represent an evolution in that they align with international best practices to improve the quality of science and research at a systemic level.

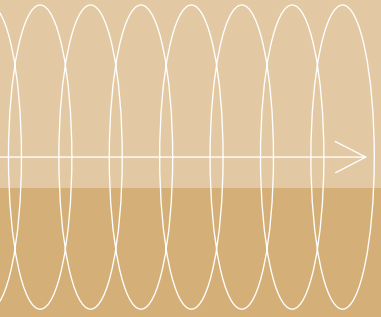
- Open Science - Evolution of the FNR policy and alignment with the new rules implemented by the European Commission in the framework of the future Horizon Europe framework programme.
- Open Access policy in the framework of the implementation of Plan S.
- Requirement of data management plans in FNR programmes.
- Implementation of the new narrative CV in all FNR programmes and changes in project reporting.
- ORCID unique identifier and digital profile - Requirement to update the profile of all researchers applying for FNR funding.

In addition, the FNR's participation in international debates and discussions on research policy issues, notably within Science Europe and the World Research Council, has intensified.

The following steps will be to continue the digital transformation of the FNR. The COVID19 crisis has significantly accelerated the implementation of the proposed actions on digitisation and the use/acceptance of online platforms, but this is only the beginning of the digital transformation of the FNR and how we use the new tools. The digital transformation of the FNR and the way we use the latest devices is still in its infancy. "Paperless/Digital FNR is an essential and priority project for the FNR in the coming years.





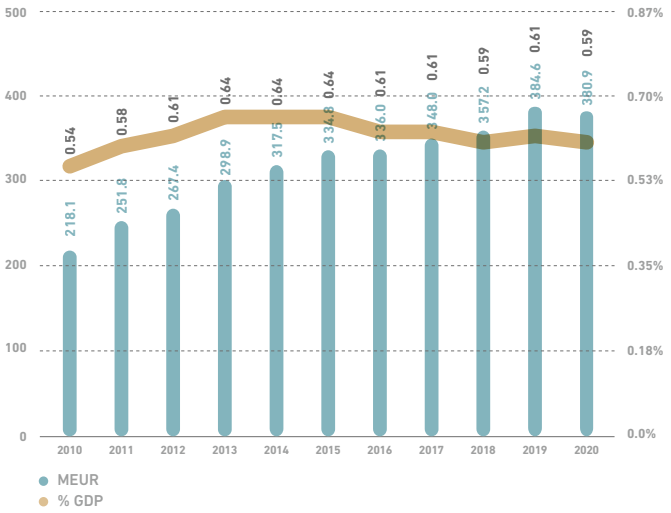


05

STATISTICS

LUXEMBOURG INVESTMENTS

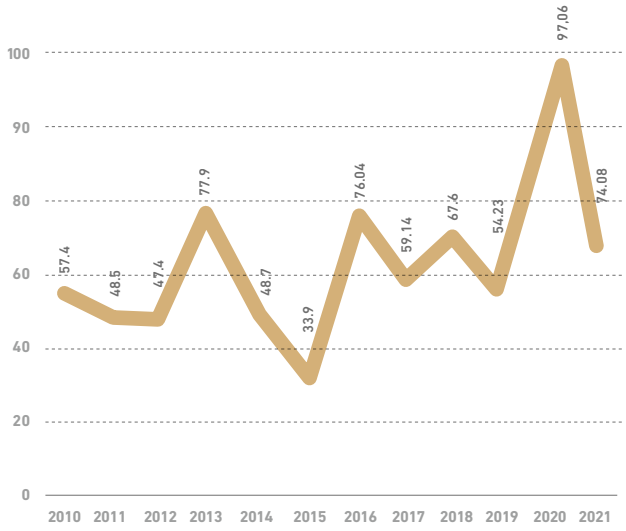
Luxembourg public investments in public and private R&D (MEUR)



At the time of writing, the final figures for 2021 were not yet available. These are expected to be published by STATEC in July 2021

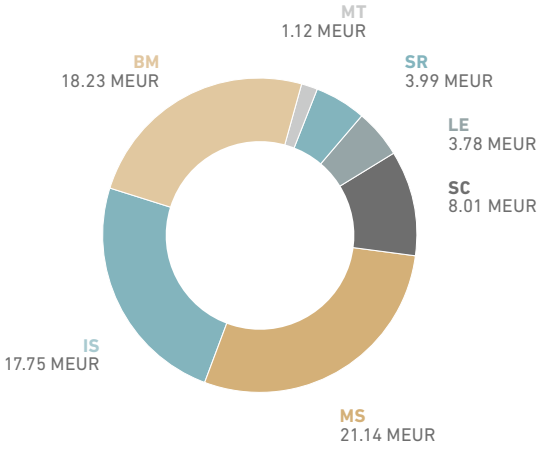
FNR FUNDING

FNR: Annual funding commitments (MEUR)



FNR NEW COMMITTED 2021:

per domain



MS New Functional and Intelligent Materials and Surfaces and New Sensing Applications

BM Biomedical Sciences/Regulation of Chronic, Degenerative and Infectious Diseases

SR Sustainable Resource Management in Luxembourg

IS Innovation in Services

SC Societal Challenges (LM+ID)

LE Law and Economics

MT Mathematics

FNR NEW COMMITTED 2021

137 FNR-funded projects	62.97 (MEUR)
50 CORE *Projects*	30.99
0 PEARL *Project*	0.00
2 ATTRACT *Projects*	3.99
0 NCER *Projects*	0.00
31 INTER *Projects*	12.13
12 JUMP (POC) *Projects*	3.10
0 JUMP (Pathfinder) *Projects*	0.00
5 KITS *Projects*	1.33
3 INITIATE *Projects*	0.73
4 COVID-19 Fast Track *Projects*	0.62
0 Matching Fund *Project*	0.00
3 OPEN *Projects*	1.31
3 OPEN ACCESS *Project*	0.05
20 BRIDGES (CORE PPP) *Projects*	5.95
0 IPBG *Projects*	0.00
4 FNR-MECO-LXI *Projects*	2.78

16 PSP | 9 INTER MOBILITY | 7 RESCOM | 7 AWARDS | 7 ART 3.5	3.20 (MEUR)
12 PSP *Classic*	0.54
4 PSP *Flagship*	1.67
9 INTER-MOBILITY	0.65
7 AWARDS	0.035
7 ART 3.5	0.03
7 RESCOM	0.28

43 Early Career Grants	7.91 (MEUR)
28 AFR *PhD Grants*	4.89
14 INDUSTRIAL FELLOWSHIP	2.82
1 AFR *Bilateral*	0.194
0 PRIDE	0.00

FNR NEW COMMITTED 2018-2021

548 FNR-funded projects	236.74 (MEUR)
173 CORE *Projects*	105.35
2 PEARL *Project*	6.45
7 ATTRACT *Project*	12.99
1 NCER *Project*	6.00
114 INTER *Projects*	46.67
38 JUMP (POC) *Projects*	9.01
42 JUMP (Pathfinder) *Projects*	1.63
6 KITS *Project*	1.68
7 INITIATE *Project*	1.29
59 COVID-19* Fast Track *Projects*	8,131
1 Matching Fund *Project*	0.200
12 OPEN *Projects*	6.24
6 OPEN ACCESS *Project*	0.0625
74 BRIDGES (CORE PPP) *Projects*	23.93
2 IPBG *Projects*	4.34
4 PUBLIC2 *Projects*	2.78

108 PSP | 37 INTER Mobility | 26 AWARDS | 31 ART 3.5 | 51 RESCOM	10.52 (MEUR)
100 PSP *Classic*	2.63
8 PSP *Flagship*	3.20
37 INTER-MOBILITY	2.51
26 AWARDS	0.13
31 ART 3.5	0.26
51 RESCOM	1.79

201 Early Career Grants	61.04 (MEUR)
118 AFR *PhD Grants*	20.96
71 INDUSTRIAL FELLOWSHIP	12.76
1 AFR *Bilateral*	0.19
11 PRIDE	27.12

* includes funding for CON-VINCE, Predi-COVID and CEPI

FUNDING INSTRUMENTS 2006-2021

(Statistics of ongoing instruments)

Launch date	Programme title	number of submitted proposals	number of FNR funded projets	number of finished projets	committed (MEUR)
2006	**ATTRACT** *Opportunities for Outstanding Young Researchers in Luxembourg*	86	23	11	**37.59**
2006	**INTER** *Promotion of International Cooperation*	1648	273	136	**101.71**
2008	**CORE** *Multi-annual Thematic Research Programme*	1687	509	282	**287.17**
2008	**AFR** *PhD Grants* + **BFR-AFR** *Transitions*	2378	1159	999	**135.17**
2008	**AFR** *Postdoc Grants*	756	346	258	**31.49**
2009	**PEARL** *Excellence Programme for Research in Luxembourg*	35	12	7	**50.36**
2012	**INTER Mobility** *Promotion of International Scientific Exchange*	215	101	75	**5.43**
2012	**RESCOM**	280	167	119	**3.95**
2012	**RESCOM** *International Scientific Conferences*	70	44	21	**0.65**
2012	**RESCOM** *Exploratory Workshops*	37	15	9	**0.16**
2012	**RESCOM** *Lecture Series*	32	40	11	**0.17**
2012	**RESCOM** *Summer Schools*	5	2	0	**0.07**
2012	**RESCOM** *Scientific Monographs*	65	24	22	**0.07**
2012	**PSP** *Promoting Science to the Public*	460	371	327	**6.09**
2012	**JUMP** *(POC) Proof of Concept*	99	66	35	**17.78**
2013	**OPEN** *Multi-annual Research Programme*	59	21	5	**10.77**
2015	**KITS** *Knowledge & Innovation Transfer*	15	14	6	**4.25**
2016	**PRIDE** *Research Intesive Doctoral Education*	113	22	0	**52.31**
2016	**AFR** *Bilateral*	33	14	17	**3.88**
2016	**IPBG** *Industrial Partnership Block Grant*	5	3	0	**7.02**
2016	**PSP-Flagship**	24	12	3	**4.83**
2016	**BRIDGES** *(CORE PPP)***	156	90	2	**30.68**
2016	**INDUSTRIAL FELLOWSHIP** *(AFR PhD PPP)***	153	67	24	**10.97**
2016	**INDUSTRIAL FELLOWSHIP** *(AFR PDR PPP)*	39	44	0	**8.67**
2017	**PUBLIC**[2]	7	3	1	**1.01**
2018	**OPEN ACCESS**	10	6	4	**0.06**
2018	**FNR AWARDS*****	187	26	0	**0.14**
2018	**ART. 3.5*****	31	31	7	**0.27**
2018	**JUMP** *(Pathfinder)*	77	42	40	**1.64**
2019	**NCER**	3	1	0	**6**
2019	**INITIATE**	8	7	2	**1.65**
2020	**COVID-19 Fast Track**	140	59	48	**8.13**
2020	**Matching Fund**	1	1	0	**0.2**
2021	**FNR-MECO-LXI**	8	4	0	**2.78**
TOTAL		8.922	3.619	2.471	833.12

*since 2010 | ** scheme renamed in 2018 | *** already existed before 2018

CORE

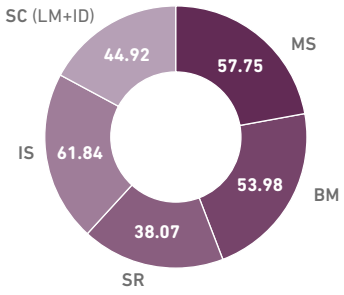
Sum of Committed Funding (in MEUR) / Domain

DOMAIN	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
MS_*New Functional and Intelligent Materials and Surfaces and New Sensing Applications*	3,4	3.40	4.50	2.90	2.00	6.90	3.32	3.92	4.60	6.17	4.10	4.92	7.62	5,26	57,75
BM_*Biomedical Sciences/Regulation of Chronic, Degenerative and Infectious Diseases*	3,2	1.90	5.40	2.80	6.60	3.40	3.42	3.99	4.12	4.50	3.71	4.69	6.25	6,74	53,98
SR_*Sustainable Resource Management in Luxembourg*	2,5	4.20	3.00	3.10	4.20	3.50	3.40	2.09	1.90	4.13	1.98	2.31	1.76	1,82	38,07
IS_*Innovation in Services*	2,4	3.30	2.70	3.80	3.80	3.80	3.86	5.69	3.82	7.11	6.88	6.98	7.70	9,73	61,84
SC_*Societal Challenges (LM+ID)*	2,6	1.40	3.80	2.90	4.20	3.10	2.98	2.10	3.91	2.47	4.94	3.74	6.79	7,45	44,92
TOTAL	14	14,4	19,3	15,5	20,8	20,7	16,98	17,78	18,35	24,38	21,61	22,64	30,12	31,00	256,56

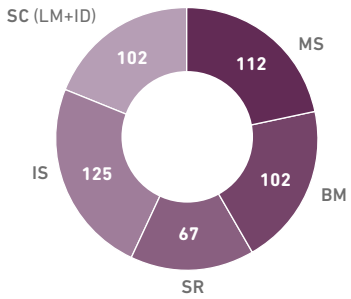
Projects by Domain

DOMAIN	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
MS_*New Functional and Intelligent Materials and Surfaces and New Sensing Applications*	7	8	8	5	4	10	7	7	8	10	7	9	13	9	112
BM_*Biomedical Sciences/Regulation of Chronic, Degenerative and Infectious Diseases*	7	3	8	5	9	7	7	6	8	8	6	9	9	10	102
SR_*Sustainable Resource Management in Luxembourg*	6	11	5	5	6	4	4	4	3	6	3	4	3	3	67
IS_*Innovation in Services*	8	10	6	7	8	6	8	10	6	11	9	11	10	15	125
SC_*Societal Challenges (LM+ID)*	6	4	9	6	9	5	4	4	7	5	11	7	12	13	102
TOTAL	34	36	36	28	36	32	30	31	32	40	36	40	47	50	508

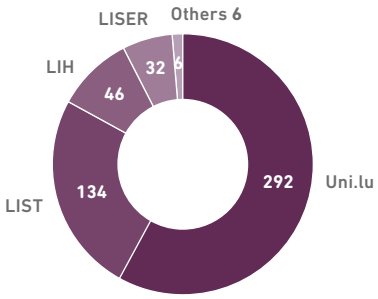
CORE: *Funding by domain, between 2008 and 2021 (MEUR)*



CORE: *Projects by domain, between 2008 and 2021*

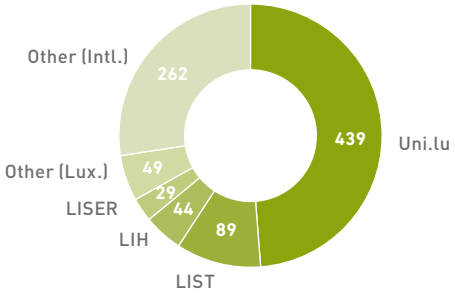


CORE: *Projects by institution, between 2008 and 2021*

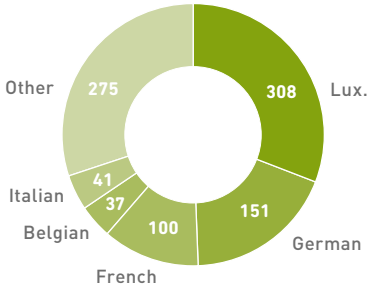


AFR PHD GRANTS

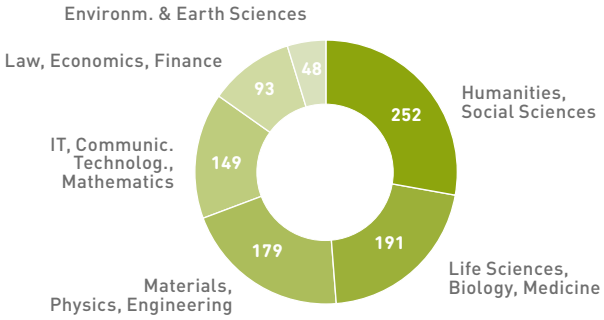
AFR: *PhD Grants per host institution (2008-2021)*



AFR: *PhD Grants by nationality (2008-2021)*



AFR: *PhD Grants by domain (2008-2021)*



FUNDING AND PROJECTS FIGURES 2021

657
PROJECTS SUBMITTED IN 2021

226
PROJECTS FUNDED IN 2021

34.40%
OVERALL PROJECT SUCCESS RATE

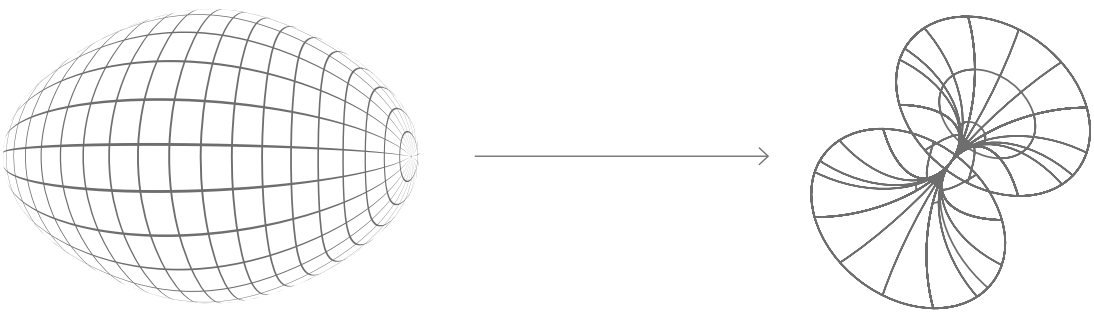
PUBLIC-PRIVATE PARTERSHIPS

BRIDGES*	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	TOTAL
National private partners	5	4	4	3	5	7	2	1	6	9	9	15	14	20	**104**
International private partners	5	4	2	1	2	3	2	2	0	1	7	2	7	6	44
TOTAL	10	8	6	4	7	10	4	3	6	10	16	17	21	26	148

*BRIDGES (former CORE-PPP)

IF*	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	TOTAL
PhD	1	12	1	10	13	9	7	9	9	15	15	9	6	13	**129**
Postdoc	1	1	0	2	1	1	3	4	7	9	9	6	12	1	**57**
TOTAL	2	13	1	12	14	10	10	13	16	24	24	15	18	14	186

*Industrial Fellowship (former AFR-PPP)



GENDER BALANCE IN RESEARCH

The view from Luxembourg

The Luxembourg public research system employs approximately 2,035 researchers, based on the statistics provided for 2017 by the Government. Based on the latest SHE Figures report from 2021 issued by the European Commission, around one in four researchers in Luxembourg is female, which places the Grand Duchy below the EU average of one in three. Luxembourg ranks below EU average and last among EU countries in the number of female PhD graduates at 35.6% (EU average: 48.1%). As we move up the ranks, the female representation dwindles further: Women make up 34.3% of Associate Professor-level academic staff (EU average: 40.3%). Cut this number in half to 17.7% and we have the proportion of women at Full Professor level (EU average: 26%). The SHE figures report highlights that it is more difficult for women in most countries to climb the academic ranks, and that significantly fewer women achieve Full Professor status during their career than their male peers. The reasons are manifold, and it is undeniable that many things need to change to even out these numbers.

As for the FNR's funding instruments, statistics show that the success rate for retained proposals is almost identical between male and female applicants (2007–2015, main FNR programmes). This shows that the evaluation procedure of the FNR does not have any significant distortions, which was also confirmed in a recent external and independent evaluation of the FNR's CORE selection procedure.

Also, there is a good gender balance in FNR's governing bodies, with 55% female members in the Board and 55% female members in the Scientific Council. 56% of the FNR Team members are female. The FNR expert panels are not yet as balanced (32.3% of 2020 panel members were female), but efforts are being made to increase female participation.

As a member of Science Europe, the FNR is committed to a detailed monitoring of gender statistics across its funding schemes. The FNR is doing well in terms of maternity and parental leave, since researchers funded in the framework of the FNR's various schemes all have employment contracts entitling them to the relatively generous Luxembourg maternity and parental leaves.

To fight the gender imbalance in research in Luxembourg, the Ministry of Higher Education and Research (MESR) has mandated the Luxembourg National Research Fund (FNR) to establish a concrete action plan. In 2020, the Luxembourg Gender Working Group (GWG) was set up, bringing together so far a total of 14 representatives of the Luxembourg Institute of Health (LIH), the Luxembourg Institute of Socio-Economic Research (LISER), the Luxembourg Institute of Science and Technology (LIST), the University of Luxembourg (UL), the Max Planck Institute Luxembourg (MPI) and the FNR.

of **AFR PhD** *grants awarded to women*

of **CORE** *grants awarded to women*

INTER MOBILITY *grants awarded to women*

PSP-CLASSIC *grants awarded to women*

ATTRACT *fellowships awarded to women*

of **INDUSTRIAL FELLOWSHIPS** *awarded to women*

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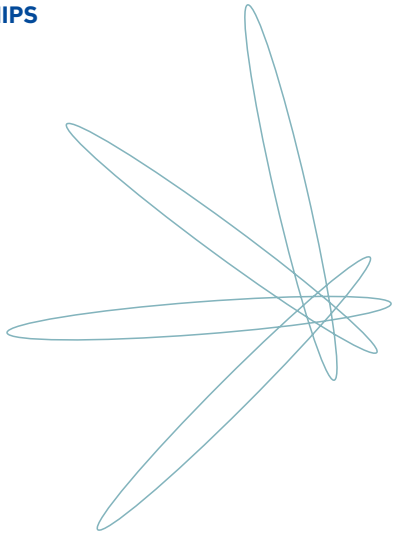


1 of 3

OPEN *grants awarded to women*

3 of 4

PSP-FLAGSHIP *grants awarded to women*

20%

of **BRIDGES** *grants awarded to women*

13%

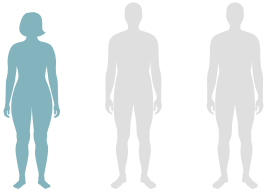
of **INTER** *grants awarded to women*

75%

of **MECO-FNR-LUXINNOVATION** *grants awarded to women*

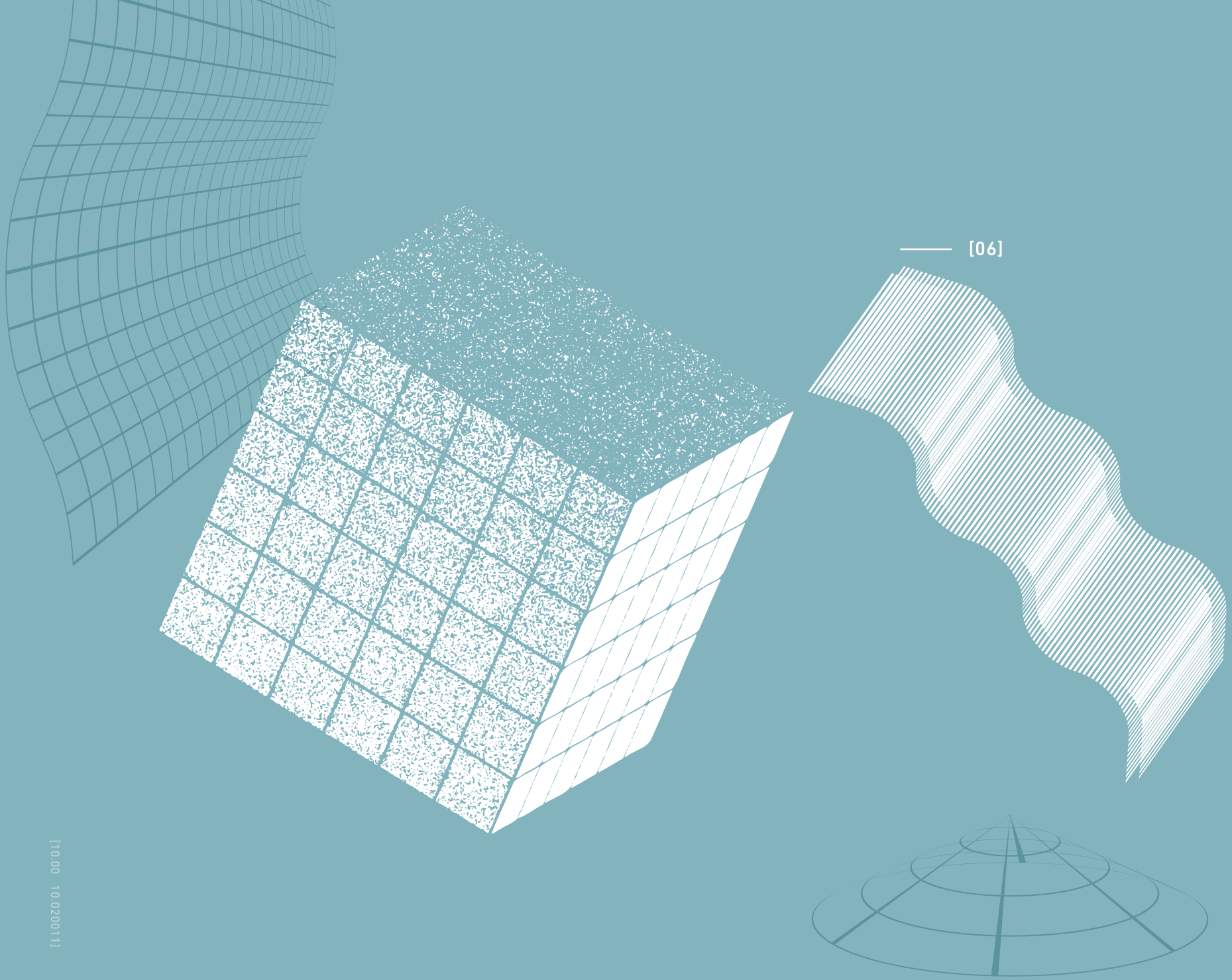
50%

of **RESCOM** *grants awarded to women*



1 in 3

FNR GRANTS AWARDED TO WOMEN IN 2021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The accounts have been audited by Grant Thornton Luxembourg (Audit & Assurance), société anonyme, and approved by the Board of Directors on March 19th, 2021. Only the original French version of the annual accounts and the audit opion is binding. For the complete annual report (in French), please refer to ***www.fnr.lu/annualreports***

BALANCE SHEET

As at 31 December 2021 (EUR)

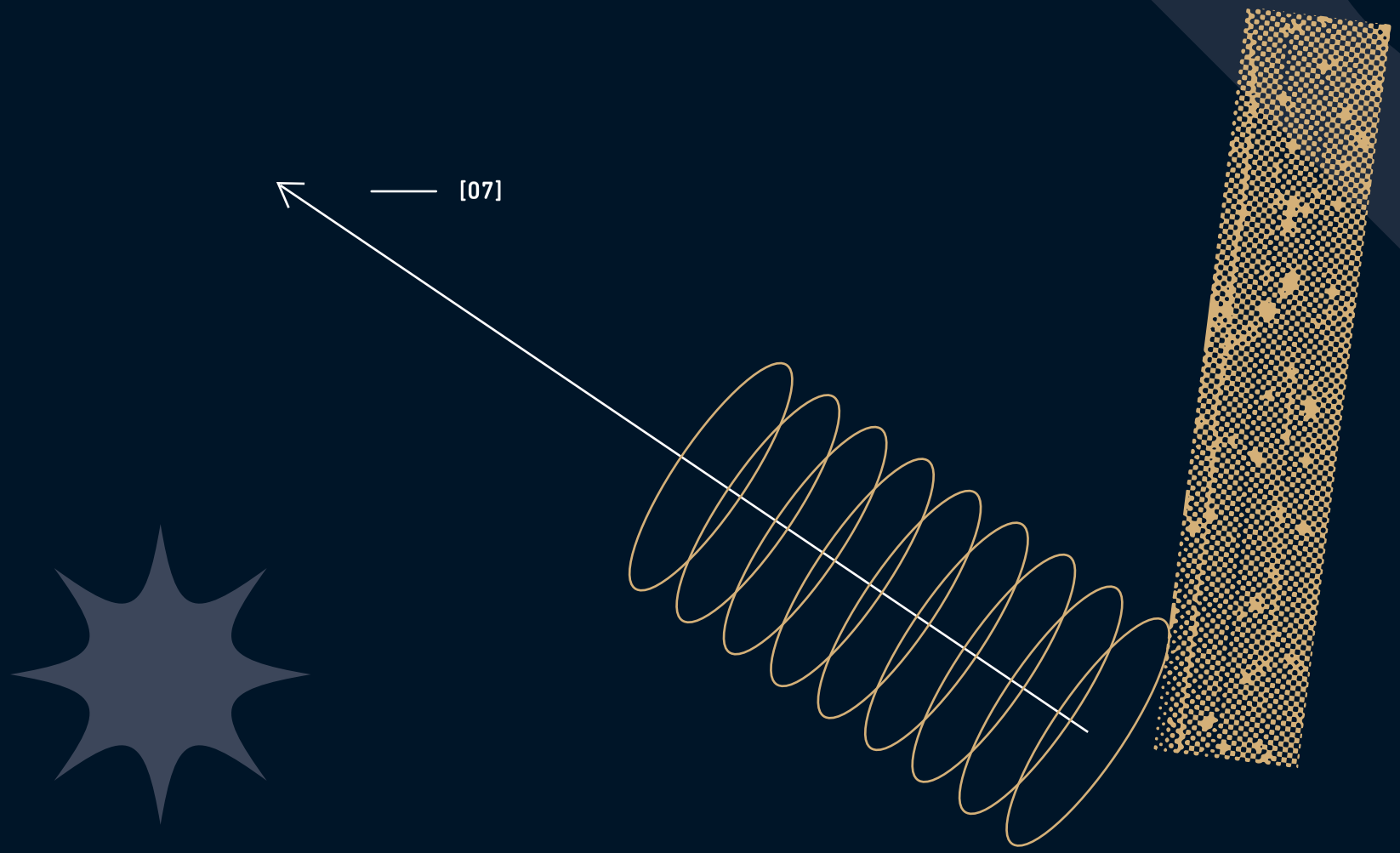
ASSETS	2021	2020
FIXED ASSETS		
Intangible fixed assets	29.212,64	62,020.58
Tangible fixed assets	56.834,11	77,466.54
CURRENT ASSETS		
Budgetary allocations to be received	121.000.158,40	152,888,760.61
with a maturity less than 1 year	69.530.000,00	67,830,000.00
Other receivables	190.274,27	387,339.30
Cash at bank	89.675.270,71	99,262,182.29
DEFERRED CHARGES	214.314,92	103,657.93
TOTAL ASSETS	**211.166.065,05**	**252,781,427.25**

LIABILITIES	2021	2020
CAPITAL AND RESERVES		
Reserves	5.608.871,89	5,514,003.39
Result for the financial year	116.159,33	94,868.50
CREDITORS		
Trade payables	1.358.164,15	729,976.97
Tax and social security debts	98.671,85	92,958.50
Amounts owed to beneficiaries	203.347.633,77	206,044,348.33
with a maturity less than 1 year	0.00	0.00
Other debts	626.614,06	391.063,82
DEFERRED INCOME	9.950,00	39,914,207.74
TOTAL LIABILITIES	**211.166.065,05**	**252,781,427.25**

PROFIT AND LOSS ACCOUNT

As at 31 December 2021 (EUR)

INCOME	2021	2020
Budgetary allocation	77.564.979,58	102,404,797.32
Other operating income	31.820,50	14,775.41
Commitments made	(70.850.709,59)	(97,059,739.73)
Operating costs (including staff costs)	(6.633.652,74)	(5,261,225.50)
Value adjustments on fixed assets	(79.925,37)	(84,210.15)
Interest receivable and similar income	84.338,83	80,575.69
Interest payable and similar charges	(691,88)	(104.54)
PROFIT FOR THE FINANCIAL YEAR	116.159,33	94,868.50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07

FUNDING INSTRUMENTS

STRATEGIC OBJECTIVE 1:
Strengthening the foundations

CORE

CORE is a traditional programme for the funding of research projects. Proposed projects are submitted by the research institutions (bottom-up approach) and are part of the national research priorities defined by the Government (top-down approach). The projects are selected based on their scientific quality.

INTER

The INTER programme's objective is to strengthen international cooperation and increase the impact of research activities in Luxembourg by promoting research projects that combine Luxembourg and foreign researchers. The programme is currently in three segments: (1) the international mobility programme, (2) bilateral cooperation, and (3) multi-lateral cooperation. The projects are selected based on their scientific quality.

OPEN

The OPEN programme allows researchers to submit research projects whose themes are not covered by the CORE programme fields and therefore make it possible to identify research groups that are competitive at the international level outside national priorities. The projects are selected based on their scientific quality.

PEARL

The PEARL programme aims to develop a truly critical mass and international visibility of Luxembourg's research priorities in quantitative and qualitative terms. The principal aim of PEARL is to offer a flexible and highly attractive tool to institutions to attract more experienced and established researchers who are recognised at the international level. These parties will transfer and develop their research programmes to Luxembourg and thereby contribute to accelerating the development of national priorities.

NCER (National Centre of Excellence in Research)

The NCER programme's objective is to support the development of public research in areas of strategic interest to derive a socio-economic return in the medium to long term. It aims to strengthen cooperation between institutions and concentrate on research activities based on a common scientific and socio-economic challenge. The programme's objective is to increase the critical mass of public research in Luxembourg and achieve greater visibility at the international level.

INITIATE

Through INITIATE, the FNR wishes to back and guide the early-stage development of high-risk/high-reward strategic project ideas, up to the point where a solid project proposal is formulated that can potentially be submitted to FNR's strategic programmes, such as NCER, PEARL, IPBG, a dedicated one-time call, or a bespoke "package" of funding instruments.

ATTRACT

The ATTRACT programme aims to strengthen the excellence of Luxembourg research by attracting researchers of an excellent scientific level who can draw upon recognised professional experience in research. The programme offers researchers not yet established in Luxembourg the opportunity to set up their own research in a public research body in Luxembourg, which is prepared to accommodate them with a jointly submitted project.

AFR (Aides à la Formation-Recherche) Individual

The AFR programme is one of FNR's longest-running funding schemes. It now serves the specific purpose of providing funding to the best researchers who are studying at doctorate levels. The AFR PhD grant scheme is divided into two sub-categories: AFR PhD in Luxembourg (AFR Incoming) and AFR PhD abroad (AFR Outgoing).

PRIDE

PRIDE is the FNR's new programme for funding doctoral research in Luxembourg. Under this programme, a block of PhD grants is awarded to a consortium of excellent researchers grouped around a coherent research and training programme. PRIDE is open to all domains of research and technological development. PRIDE aims at attracting excellent PhD candidates to Luxembourg and offering them high-quality, interdisciplinary research training. Compared to the AFR individual grant scheme for PhDs, PRIDE provides a greater advantage to institutions and PhD candidates, as institutions are able to immediately offer a full PhD grant to promising candidates without having to undergo a separate application and selection procedure at the FNR.

RESCOM (Support for Research Communication)

The RESCOM instrument's objective is to promote communication and exchange between researchers, notably by subsidising scientific events of international scope.

OPEN ACCESS FUND

The OPEN ACCESS FUND aims to promote free access to research results from FNR-(co)funded projects. The fund provides financial support to cover fees that may arise through the publication of peer-reviewed research results in Open Access.

STRATEGIC OBJECTIVE 2:
Shaping a shift in Luxembourg

Valorisation Programme (Proof of Concept, Knowledge & Innovation Transfer Support)

The purpose of the valorisation programme is to encourage the transfer of research results into economically viable innovations. The FNR can support feasibility studies and the realisation of prototypes and pilot systems for the purpose of projects with a high level of potential innovation. The project will be selected based on the economic potential of the innovation and the proposed exploitation plan. The FNR may also support people whose expertise is needed to reflect the transfer of the research results in economically exploitable innovative projects.

JUMP/Proof of Concept (PoC)

The JUMP/PoC programme is the FNR's facilitation programme for the commercialisation of research results to encourage the successful translation of high-impact research into commercially viable innovations.

BRIDGES & INDUSTRIAL FELLOWSHIPS

Bridges: Support applied research that meets the needs of industrial partners.
Industrial Fellowships: Support researchers who carry out their PhD or postdoc training in collaboration with a company in Luxembourg.

KITS

The Knowledge & Innovation Transfer Support programme provides competitive funding to public research institutions in Luxembourg that will allow them to attract and integrate highly skilled knowledge transfer professionals.

IPBG (Industrial Partnership Block Grant)

The IPBG programme aims to foster cooperation between Luxembourg based companies active in R&D and public research institutions in Luxembourg. The IPBG awards a block allocation of PhD and/or Postdoc

grants (AFR-PPP) in which Luxembourg-based industry partner(s) take the lead in arranging a research programme with a Luxembourg-based public research institution of their choice (in research relevant to FNR's strategic priority areas).

SIS (Science in Society)

The FNR wants to strengthen the link between sciences and society, which is why it promotes scientific culture as one of its priority areas. This promotion aims to create awareness among the whole population, decision-makers and young people alike who are the citizens and researchers of the future. The objective is to create acceptance and comprehension of the role of sciences and research as creators of knowledge, innovation and to spark enthusiasm among young people about scientific careers. For this reason, the FNR offers platforms to assist researchers in promoting their activities, organises its own promotion activities to increase the visibility of sciences and research, and provides financial support to researchers and scientific teachers/mediators.

PSP (Promoting Science to the Public)

The objective of the PSP funding instrument is to strengthen the exchanges between science and society. The programme supports projects that create awareness among the public about scientific topics and projects that make Luxembourg's research activities visible. PSP supports

- researchers so they can pass on their knowledge to pupils, students and the general public and enter into dialogue with these target groups.
- teachers, private individuals, and non-profit organisations can carry out projects for pupils, students, and the general public, giving them an overview of sciences and scientific work.

FNR AWARDS

The FNR allocates annual awards for outstanding results in four categories:

"Outstanding Promotion of Science to the Public"; "Outstanding Scientific Achievement"; "Outstanding PhD Thesis" and "Outstanding Mentor".

CORE 2021

PROJECT ACRONYM	PROJECT TITLE	PRINCIPAL INVESTIGATOR	HOST INSTITUTION	DOMAIN	FNR CONTRIBUTION IN EUR
ThermoQO	*Thermodynamics Of Non Linear Quantum Optics*	Ariane Soret	UL	MS	359.000,00
MIGDCM	*Modeling Migration Intentions Using Advanced Discrete Choice Models*	Michel Beine	UL	SC	480.000,00
NavSQM	*Navier-stokes Flows In Quantum Materials*	Eddwi Hasdeo	UL	MS	370.000,00
ORIGINS	*Social Origins And Intergenerational Persistence Of Socioeconomic Outcomes*	Konstantinos Tatsiramos	UL	SC	690.000,00
AstrAging	*Autophagy Modulation To Decrease Astrocyte Senescence In Lrrk2-g2019s Models*	Silvia Bolognin	UL	BM	602.000,00
PINK1-DiaPDs	*Pink1-related Molecular Mechanisms To Dissect The Connection Between Type 2 Diabetes And Insulin Resistance In Parkinson'S Disease*	Giuseppe Arena	UL	BM	673.000,00
LETTERBOX	*Making Shell Companies Visible. Digital History As A Tool To Unveil Global Networks And Local Infrastructures*	Benoit Majerus	UL	SC	610.000,00
FINCITY	*European Financial Centres In Transition*	Markus Hesse	UL	SC	848.000,00
GREEN	*Sustainable Finance And The Efficient Allocation Of Capital*	Roman Kräussl	UL	LE	495.000,00
READINGBRAIN	*The Reading Brain: Understanding How Neural Representations For Words Emerge And How They Are Shaped By Teaching Methods*	Aliette Lochy	UL	SC	600.000,00
HETERS	*Give Control Back To Users: Personalised Privacy-preserving Data Aggregation From Heterogeneous Social Graphs*	Sjouke Mauw	UL	IS	638.000,00
BUREU	*Bureaucracy By Design? Eu Office Interiors As An Interface Between Architectural "Hardware" And Managerial "Software", 1951-2002*	Andreas Fickers	UL	SC	634.000,00
INSIGHT	*Inducing Negative Strain States By Implanting Helium In Matter*	Constance Toulouse	UL	MS	385.000,00
ChemComplex	*Theory Of Chemical Complexity*	Massimiliano Esposito	UL	MS	720.000,00
1cFlex	*Understanding The Flexibility Of 1c Metabolism And Its Role During Metastatic Dissemination Of Cancer Cells*	Johannes Meiser	LIH	BM	794.000,00
DIOMEDES	*Deconvolution Of Heterogeneity In The Glioblastoma Cellular Ecosystem For Understanding Treatment Resistance And Improving Patient Stratification*	Anna Golebiewska	LIH	BM	510.000,00
Synapodia	*Novel Synaptic Filopodium-like Protrusions (Sfps) Protect Tumor Cells Against Cytotoxic Lymphocyte-mediated Killing*	Clément Thomas	LIH	BM	426.000,00
Th17 -ImmunoMet	*Characterization Of Key Metabolic Circuits In Th17 Cells And Their Influence On Th17 Cell Mediated Pathogenic And Protective Functions.*	Dirk Brenner	LIH	BM	762.000,00
TEMPORG	*The Implications Of Temperature For Social Interactions, Work Organization And Well-being*	Adrian Nieto Castro	LISER	LE	469.000,00
CRHOUSINQ	*Cross-border Mobility, Housing Market Developments, And Inequalities*	Frederic Docquier	LISER	LE	683.000,00
TELE-SIM	*Impact Of Teleworking On Urban Structures*	Paul Kilgarriff	LISER	SC	554.000,00
ReSAC	*Resilient And Secure Activity Control For Flexible Time-triggered Systems*	Marcus Völp	SnT (UL)	IS	610.000,00
ELITE	*Enabling Learning And Inferring Compact Deep Neural Network Topologies On Edge Devices*	Djamila Aouada	SnT (UL)	IS	749.000,00
COMOC	*A Concurrent Model Of Computation For Trustworthy Gpu Programming*	Pascal Bouvry	SnT (UL)	IS	387.000,00
SmartSpace	*Leveraging Artificial Intelligence To Empower The Next Generation Of Satellite Communications*	Eva Lagunas	SnT (UL)	IS	606.000,00
LightGridSEED	*Lightweight Collaborative Nanogrid Controllers For Global Greehouse Gas Emission Reduction*	Yves Le Traon	SnT (UL)	IS	767.000,00
ImPAKT	*Real-world Implementation And Human-centered Design Of Pake Technologies*	Peter Y. A. Ryan	SnT (UL)	IS	560.000,00

UL University of Luxembourg
LCSB Luxembourg Centre for Systems Biomedicine
SnT Interdisciplinary Centre for Security, Reliability and Trust
LIH Luxembourg Institute of Health
LIST Luxembourg Institute of Science and Technology
LISER Luxembourg Institute of Socio-Economic Research

BM Biomedical Sciences/Regulation of Chronic, Degenerative and Infectious Diseases
IS Innovation in Services
SC Societal Challenges (LM+ID)
MS New Functional and Intelligent Materials and Surfaces and New Sensing Applications
SR Sustainable Resource Management in Luxembourg

PROJECT ACRONYM	PROJECT TITLE	PRINCIPAL INVESTIGATOR	HOST INSTITUTION	DOMAIN	FNR CONTRIBUTION IN EUR
● CBD	*Cloud-based Computational Decision By Leveraging Artificial Ultra Intelligence*	Pascal Bouvry	SnT (UL)	IS	648.000,00
● FuturePass	*Transition Of Low-entropy Authentication Ciphersuites Into A Post-quantum World*	Marjan Skrobot	SnT (UL)	IS	780.000,00
● PABLO	*Privacy-preserving Tokenisation Of Artworks*	Gilbert Fridgen	SnT (UL)	IS	817.000,00
● REPROCESS	*Pre And Post Processing For Comprehensive And Practical Android App Static Analysis*	Jacques Klein	SnT (UL)	IS	597.000,00
● ARMMONY	*Ground-based Distributed Beamforming Harmonization For The Integration Of Satellite And Terrestrial Networks.*	Juan Merlano Duncan	SnT (UL)	IS	641.000,00
● TESTIFY	*Transmission System Security Enhancement Through Distribution System Flexibility*	Florin Capitanescu	LIST	MS	777.000,00
● VIRALERT	*Environmental-based Epidemiology For Preparedness And Early Detection Of Viral Epidemics*	Leslie Ogorzaly	LIST	BM	846.000,00
● Ferrodynamics	*Predictive Mesoscale Dynamics Of Ferroelectrics And Related Materials*	Jorge Iniguez Gonzalez	LIST	MS	712.000,00
● ReSurf	*Enhancing Remote Collaboration Across Interactive Surfaces With Awareness Cues*	Valérie Maquil	LIST	IS	548.000,00
● DEEPCELL	*Exploration Of The Potential Of Deep Eutectic Solvent - Physical Processing Driven Strategies In The Production Of Functional Nanocellulose Pickering Particles*	Christos Soukoulis	LIST	SR	557.000,00
● FLASHPOX	*Flash-lamp Assisted Growth Of Piezoelectric Oxides*	Sebastjan Glinsek	LIST	MS	708.000,00
● AIMSTHIM2	*Advanced Imaging Modalities Using Stationary And Scanning Transmitted Helium Ions For Materials Research*	Santhana Eswara	LIST	MS	662.000,00
● IMMEC	*Integrated Modelling Of Material Efficiency And Environmental Impacts Of Building Materials Cycles*	Thomas Gibon	LIST	SR	477.000,00
● CD8-library	*Identification Of Clinically Relevant Compounds For The Enhancement Of Cd8 T Cell Metabolism And Function*	Melanie Grusdat-pozdeev	UL	BM	603.000,00
● HifReg	*Hif-α Non-canonical Regulation By Ptms And New Interaction Partners*	Gunnar Dittmar	LIH	BM	751.000,00
● DIGISKILLS	*Digitalization, Change In Skills And Firms' Hiring Difficulties*	Morgan Raux	UL	SC	409.000,00
● FoMeSA	*Forgotten Memories Of Supranational Adjudication*	Michel Erpelding	UL	LE	466.000,00
● BIOFLICS	*Bio-sensing The Frugal Way With Liquid Crystal Spheres*	Jan Peter Felix Lagerwall	UL	MS	566.000,00
● ChilDev	*Investigating The Consequences Of Public Investments In Early Childhood Education And Care (Ecc) For Child Development*	Audrey Bousselin	LISER	LE	508.000,00
● SpotFlakes	*Spotting The Root Causes Of Flaky Tests*	Sarra Habchi	SnT (UL)	IS	743.000,00
● GTDebug	*Ground-truth Based Program Debugging*	Ezekiel Soremekun	SnT (UL)	IS	634.000,00
● PANSIMS	*Analysis Of Neuromelanins And Metals Involved In Neurodegeneration Of Parkinson'S Disease Using Novel High Resolution Sims Methods*	Antje Biesemeier	LIST	BM	774.000,00
● LUNAQUA	*Behaviour Of O And H Stable Isotopes Of The Water Molecule In Lunar Regolith*	Laurent Pfister	LIST	SR	781.000,00
TOTAL					**30.986.000,00**

For a detailed summary of each project as well as other information, please refer to *www.fnr.lu/core*

BRIDGES 2021

PROJECT ACRONYM	PROJECT TITLE	PRINCIPAL INVESTIGATOR	HOST INSTITUTION	DOMAIN	FNR CONTRIBUTION IN EUR
ACE5G	*Accelerated Cloud Edge In 5g*	Mats Brorsson	SnT (UL)	IS	399.916,88
CAMPHIBIAN	*Assessing The Value Of Underwater Camera Trap For Amphibian Monitoring*	Xavier Mestdagh	LIST	BM	176.000,00
CECOHA	*Electrocaloric Ceramics For Cooling And Energy Harvesting*	Emmanuel Defay	LIST	MS	400.000,00
CONNECT_	*Inorganic Interfacial Region In Ultrathin Copper Foil Supported By Copper Carrier: Resolving And Controlling Adhesion Mechanisms*	Frédéric Addiego	LIST	MS	375.000,00
CrAFT	*Cargo- And Aircraft-based Forecasting Tool For Turnaround Times*	Anne Lange	UL	SC	208.474,11
ELINLOSS	*Influence Of Electrode Properties On Insertion Loss Of Microwave Components Up To Mm-wave Frequencies*	Torsten Granzow	LIST	MS	396.000,00
FakeDeTeR	*Deepfake Detection Using Spatio-temporal-spectral Representations For Effective Learning*	Djamila Aouada	SnT (UL)	IS	399.897,50
FREE-3D	*Feature-based Reverse Engineering Of 3d Scans*	Djamila Aouada	SnT (UL)	IS	399.000,00
GRASS	*Gravimetry And Radar Earth Observation Data Assimilation Into A Hydrological Model For Improving Drought Prediction In Luxembourg And The Greater Region*	Patrick Matgen	LIST	SR	212.338,09
GREENSHAPEr	*Robotized Filament Winding Of Fibers And Bio-based Benzoxazine Vitrimers To Elaborate Reshapable 3d Composites*	Pierre Verge	LIST	MS	400.000,00
HELEN	*High-fidelity Testing Environment For Active Space Debris Removal*	Miguel Angel Olivares Mendez	SnT (UL)	MS	399.972,50
HPC4MP	*Smart Partitioning For High Performance Computing Of Multi-physics Digital Twins*	Bernhard Peters	UL	MS	187.338,00
LOWSKIM	*A Job Matching App Sustaining Mobility Of Low-skilled Candidates On A Disrupted Labour Market*	Ludivine Martin	LISER	LE	83.268,64
LuxemBERT	*Multilingual Nlp Coping With Luxembourg Specificities For The Financial Industry*	Jacques Klein	SnT (UL)	IS	392.458,89
MILAN	*Machine Learning For Astronomy*	Olivier Parisot	LIST	IS	110.840,86
OptiSimCVD	*Tackling Uncertainty And Multidimensionality In Industrial Coating Applications*	Stéphane Bordas	UL	MS	303.000,00
SIMSZERO	*Highest-sensitivity, High-speed, Ultimate Resolution Nanoscale Secondary Ion Mass Spectrometry Instrument*	Hung Quang Hoang	LIST	MS	400.000,00
TargetPatho	*Spatial Targeted Proteomics Using Pasef-prm*	Gunnar Dittmar	LIH	BM	129.000,00
TRICK-ALDH	*Assessment The Impact Of Selective Aldh1 Inhibitors On Tumor Infiltrating Lymphocytes And The Therapeutic Benefit Of Immune Checkpoint Blockers*	Guy Berchem	LIH	BM	182.508,00
UPTIME4.0	*Robust Predictive Maintenance For Industry 4.0*	Yves Le Traon	SnT (UL)	IS	398.000,00
TOTAL					5.953.013,47

For a detailed summary of each project as well as other information, please refer to *www.fnr.lu/bridges*

UL University of Luxembourg
LCSB Luxembourg Centre for Systems Biomedicine
SnT Interdisciplinary Centre for Security, Reliability and Trust
LIH Luxembourg Institute of Health
LIST Luxembourg Institute of Science and Technology
LISER Luxembourg Institute of Socio-Economic Research

BM Biomedical Sciences/Regulation of Chronic, Degenerative and Infectious Diseases
IS Innovation in Services
SC Societal Challenges (LM+ID)
MS New Functional and Intelligent Materials and Surfaces and New Sensing Applications
SR Sustainable Resource Management in Luxembourg

INTER-MOBILITY 2021

PROJECT ACRONYM	PROJECT TITLE	PRINCIPAL INVESTIGATOR	HOST INSTITUTION	DOMAIN	FNR CONTRIBUTION IN EUR
panRAFi-PB	*Rescuing The Raf-inhibitor Induced Paradoxical Mapk-signalling By A Galectin/ Raf Interaction-inhibiting Peptide*	Ganesh Babu Manoharan	UL	BM	35.180,00
2DOPMA	*Magneto-optical Properties Of 2d Materials*	Ludger Wirtz	UL	MS	118.386,00
SOCIO-MULTIMORB	*Longitudinal Effects Of Social Determinants On Health-related Behaviour And Multimorbidity Among Older Adults In Luxembourg: Exploring Health Inequalities*	Torsten Bohn	LIH	BM	16.022,00
CAinOR	*Advanced Machine Learning Tools To Study Neuronal Ca2+ Fluxes In Human Organoids*	Silvia Bolognin	UL	BM	41.700,00
Indinfcat	*Indirect Inference For Categorical Dynamic Panel Data*	Antonio Cosma	UL	LE	49.700,00
ESRMOIRE	*Electronic States And Responses In Moiré Heterostructures*	Christophe De Beule	UL	MS	101.700,00
CDSAUG-MOB	*Credit Default Swaps: Agency Conflicts, Market Structure, And The Pricing Of Risks*	Roberto Steri	UL	LE	24.400,00
PICARD-WB-VUA	*Scientific Visits Prof Pierre M Picard*	Pierre Picard	UL	LE	66.800,00
SUSTAININ	*Sustainable Infrastructure Investments*	Roman Kräussl	UL	LE	198.400,00
TOTAL					652.288,00

For a detailed summary of each project as well as other information, please refer to *www.fnr.lu/inter*

RESCOM 2021

PROJECT TITLE	PRINCIPAL INVESTIGATOR	HOST INSTITUTION	DOMAIN	FNR CONTRIBUTION IN EUR
Ai In Action – Joint International Scientific Conferences On Artificial Intelligence (Jiscai)	Leon Van Der Torre	UL	IS	43.417,00
Next-generation Of Multi-omics Research: Going To The Single Cell	Gunnar Dittmar	LIH	BM	20.000,00
Lecture Series in CANCER RESEARCH 2022	Simone Niclou	LIH	BM	72.000,00
Lecture Series in Infection & Immunity	Dirk Brenner	LIH	BM	72.000,00
Lunch Seminar of Department of Finance, FDEF (2021-2022)	Roberto Steri	UL	SC	27.700,00
Science of Science in the Spotlight	Jennifer Dusdal	UL	SC	12.000,00
LISER Research Seminar Series (RSS)	Aline Muller	LISER	SC	30.000,00
TOTAL				277.117,00

For a detailed summary of each project as well as other information, please refer to *www.fnr.lu/rescom*

INTER 2021

PROJECT ACRONYM	PROJECT TITLE	PRINCIPAL INVESTIGATOR	HOST INSTITUTION	DOMAIN	FNR CONTRIBUTION IN EUR
REACH	*Radiative Efficiency In Advanced Sulfide Chalcopyrites For Solar Cells*	Susanne Siebentritt	UL	MS	339.000,00
SWIPE	*Spectroscopy Of Spin Waves In Perovskite Excited States*	Mael Guennou	UL	MS	398.000,00
PLASMACOMP	*Plasma-polymerized Functional Bio-based Composite Coatings*	Kamal Baba	LIST	MS	321.000,00
DeeMa	*Deep-learning And Optimisation Enabled Material Microstructure Design*	Salim Belouettar	LIST	MS	500.000,00
SAFFIA	*Sustainable And Thermally Amplified Felts And Foams. Innovative Application Of Reactively Extruded Biobased Nanocomposites*	Vincent Berthé	LIST	MS	499.000,00
normal #verrückt	*Normal#Verrückt Zeitgeschichte Einer Erodierenden Differenz Normal#Mad Contemporary History Of An Eroding Difference*	Benoit Majerus	UL	SC	304.000,00
BarCePE	*Un Lien Entre La Chirurgie Bariatrique Et Le Cerveau ? Les Perturbateurs Endocriniens Au Banc Des Accusés*	Brice Appenzeller	LIH	BM	125.000,00
GlobalCDA 1	*Framework Proposal For The 2nd Three-year Phase Of The Dfg Research Unit Globalcda: Understanding The Global Freshwater System By Combining Geodetic And Remote Sensing Information With Modelling Using A Calibration/Data Assimilation Approach*	Tonie Van Dam	SnT (UL)	SR	359.000,00
SimKneeRep	*Virtual Reality Based Surgical Simulator For Meniscal Repairs*	Romain Seil	CHL	BM	194.688,00
TRICOLOR	*Tricolor Hafnia-based Thin Films: Enhanced Polar Materials By Construction*	Jorge Iniguez Gonzalez	LIST	MS	955.000,00
Bank-EU	*Banking On Europe*	David Howarth	UL	LE	263.000,00
GREENFIHOME	*Sustainable Intermediation In Credit And Housing Markets*	Diane Pierret	UL	LE	94.000,00
MechEpi-2	*Epileptogenesis Of Genetic Epilepsies*	Alexander Skupin	UL	BM	428.000,00
S-KELOID	*Understanding Keloid Disorders: A Multi-scale In Vitro/In Vivo/In Silico Approach Towards Digital Twins Of Skin Organoids On The Chip*	Stéphane Bordas	UL	MS	428.000,00
CancerProfile	*Cancerprofile: Predictive And Personalized Medicine Of Pancreatic Cancer*	Yong-jun Kwon	LIH	BM	347.000,00
GLAMOUR-VSC	*Global-local Two-level Multi-scale Optimisation Strategy Accounting For Process-induced Singularities To Design Variable Stiffness Composites*	Gaetano Giunta	LIST	MS	479.000,00
NANOLIT	*Nanocharacterization Of Li-ion Electrochemical Systems By Using Isotopic Tracing*	Jean-nicolas Audinot	LIST	MS	530.000,00
ADIS	*Early Diagnosis Of Alzheimer's Disease By Immune Profiling Of Cytotoxic Lymphocytes And Recording Of Sleep Disturbances*	Jean Georges	Alzheimer Europe asbl	IS	235.000,00
BANANA	*Brainsourcing For Affective Attention Estimation*	Luis Leiva	UL	IS	300.000,00
BIML-19	*Overcoming Bias And Data Inhomogeneity In Machine Learning: Covid-19 Imaging And Beyond*	Andreas Husch	UL	BM	408.000,00
ORACIA	*Home-based Rehabilitation Using An Artificial Companion For Aphasia*	Frédéric Dierick	Rehazenter	BM	292.150,00
AGAPE	*Active Ageing And Personalized Services Ecosystem*	Djamel Khadraoui	LIST	IS	318.985,00
Pattern-Cog	*Personalized Aging Pattern For Early Risk Detection And Prevention Of Cognitive Impairment And Dementia In Cognitively Healthy Individuals*	Jean Georges	Alzheimer Europe asbl	BM	184.500,00
CYTOMARK	*Development Of A Personalised Non-invasive Diagnosis Of Endometrial Cancer*	Gunnar Dittmar	LIH	BM	300.000,00

PROJECT ACRONYM	PROJECT TITLE	PRINCIPAL INVESTIGATOR	HOST INSTITUTION	DOMAIN	FNR CONTRIBUTION IN EUR
STAQS	*Shortcuts To Adiabaticity For Quantum Computation And Simulation*	Aurélia Chenu	UL	IS	361.345,00
MAGMA	*Magnetic Topological Insulators For Robust Majorana Bound States*	Thomas Schmidt	UL	MS	433.579,00
REMEDIS_	*Regulatory Solutions To Mitigate Online Disinfomation*	Gabriele Lenzini	SnT (UL)	IS	747.000,00
Minabat	*Micro-to Nanoscale Investigation Of Interfacial Processes In Solid-state Batteries With Hybrid Electrolytes To Elucidate The Lithium Transport*	Jean-nicolas Audinot	LIST	SR	540.000,00
SUMO	*Sustainable Design Empowered By Materials Modelling, Semantic Interoperability And Multi-criteria Optimization*	Salim Belouettar	LIST	MS	665.000,00
INFINITE	*3d Printing Of Innovative Ion-gels For Flexible Solid-state Strain Sensors*	Alexander Shaplov	LIST	MS	594.000,00
TECHONEY	*Development Of A Blockchain-based Ecosystem That Allows An Improved Positioning Of Small Producers Of Honey On Local And International Markets.*	Christoph Stahl	LIST	IS	185.531,00
TOTAL					**12.128.778,00**

For a detailed summary of each project as well as other information, please refer to *www.fnr.lu/inter*

INITIATE 2021

PROJECT ACRONYM	PROJECT TITLE	PRINCIPAL INVESTIGATOR	HOST INSTITUTION	DOMAIN	FNR CONTRIBUTION IN EUR
E21	*Education 21*	Pedro Cardoso-Leite	UL	SC	250.000,00
LuxTIME	*Luxembourg Time Machine*	Sean Takats	UL	SC	226.000,00
NCTCR	*National Centre of Translational Cancer Research*	Simone Niclou	LIH	BM	250.000,00
TOTAL					**726.000,00**

For a detailed summary of each project as well as other information, please refer to *www.fnr.lu/initiate*

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OPEN 2021

PROJECT ACRONYM	PROJECT TITLE	PRINCIPAL INVESTIGATOR	HOST INSTITUTION	DOMAIN	FNR CONTRIBUTION IN EUR
HDSA	*Topics In High-dimensional Stochastic Analysis*	Giovanni Peccati	UL	MT	490.000,00
HypSTER	*Hyperbolic Surfaces: Their Euclidean Renderings*	Hugo Parlier	UL	MT	224.000,00
HEMPHASE	*Production Of High Added Value Phenolics In Cannabis Sativa Via Salinity Eustress: Focus On Plants And Cell Cultures*	Gea Guerriero	LIST	BM	597.000,00
TOTAL					1.311.000,00

For a detailed summary of each project as well as other information, please refer to *www.fnr.lu/open*

ATTRACT 2021

PROJECT TITLE	PRINCIPAL INVESTIGATOR	HOST INSTITUTION	DOMAIN	FNR CONTRIBUTION IN EUR
Quantum Open Mesoscopic Physics For Emergent Technologies	Aurélia Chenu	UL	MS	1.989.966,00
Development Of Advanced 1-d, Non-perturbative, Laser Based Diagnostics Of Neutral And Charged Species, Using Frequency Agile Optical Lattices	Alexandros Gerakis	LIST	MS	1.996.041,00
TOTAL				3.986.007,00

For a detailed summary of each project as well as other information, please refer to *www.fnr.lu/attract*

AWARDS 2021

DOMAINE	ACTION	SOCIETE	FNR CONTRIBUTION IN EUR
SC	AWARDS-PSC	*Stefan Krebs - Viktoria Boretska - Maxime Derian - Julia Harnoncourt - Irene Portas Vazquez - Daniel Richter - Lars Tschacher - Jens van de Male*	5.000,00
SC	AWARDS-PHD	*Christa Birkel*	5.000,00
MS	AWARDS-PHD	*Bengasi Giuseppe*	5.000,00
BM	AWARDS-ASCA	*Simone Niclou - Anna Golebiewska*	5.000,00
MS	AWARDS-ASCA	*Emmanuel Defay - Alval Torelló Massana - Pierre Lhéritier - Youri Nouchokgwe - Mathieu Gérard - Olivier Bouton*	5.000,00
SC	AWARDS-AM	*Andreas Fickers*	5.000,00
BM	AWARDS-AM	*M. Pablo Elias Morande*	5.000,00
TOTAL			35.000,00

For a detailed summary of each project as well as other information, please refer to *www.fnr.lu/awards*

VALORISATION FUNDED 2021

ACTION	PROJECT ACRONYM	PROJECT TITLE	PRINCIPAL INVESTIGATOR	HOST INSTITUTION	DOMAIN	FNR CONTRIBUTION IN EUR
KITS	KITS-PaKTTO	*Kits-partnership And Knowledge Transfer*	Christophe Haunold	UL	SC	250.000,00
KITS	CATALYST-LU	*Catalysing A New Paradigm Shift In Biomedical Research Translation In Luxembourg*	Pranjul Shah	UL	BM	150.000,00
KITS	BioHealthInc	*Biohealth Incubator*	Jérémie Langlet	LIH	BM	499.958,00
KITS	KITS SnTIPmgt	*Kits Sntipmgt*	Carlo Duprel	SnT (UL)	IS	350.000,00
KITS	LIST Ventures	*List Ventures*	Asier Sesma	LIST	IS	80.000,00
TOTAL KITS						**1.329.958,00**
JUMP	CUTSinPD	*Compound Upgrade To Treat Mis-splicing In Pd*	Rejko Krüger	UL	BM	449.000,00
JUMP	REMEDIS	*Remedis - A Secure Medication Dispenser*	Christoph Dr Schommer	UL	IS	249.000,00
JUMP	OWL	*Online Work(It)Out Platform*	Antonio Ken Iannillo	SnT (UL)	IS	240.000,00
JUMP	SecuBox	*Security As A Box*	Jacques Klein	SnT (UL)	IS	250.000,00
JUMP	CityWatch	*Web-based Solution To Map Urban Settlements Over Specific Areas And Fixed Time Periods Using Earth Observation Data.*	Marco Chini	LIST	IS	250.000,00
JUMP	NANOSENS	*Nano-enhanced Qcm Sensor*	Sivashankar Krishnamoorthy	LIST	BM	341.000,00
JUMP	PLUME	*A Plan-build-run Solution For Iot-based Smart Waste Management*	Sébastien Faye	LIST	IS	249.000,00
JUMP	ACCEDE	*Upscaling And Validation Of A Technology Aiming To Produce An Apple Cell Suspension Culture-based Cosmetics Ingredient*	Sylvain Legay	LIST	BM	245.000,00
JUMP	Multisilva DSS	*Multisilva Decision Support System For Multi-functional Forest Management*	Claudio Petucco	LIST	SR	247.000,00
JUMP	EMC2	*A Novel Energy-efficient Biogas-to-methane Upgrading Bioprocess With Co2 Capture*	Jimmy Roussel	LIST	SR	249.000,00
JUMP	PROVIS	*Modular Processing And Visualisation Software For Hyperspectral Microscopy Data*	Patrick Philipp	LIST	MS	250.000,00
JUMP	DAPROCADE	*Data Protection Capability Determination*	Stéphane Cortina	LIST	IS	73.000,00
TOTAL JUMP						**3.092.000,00**

For a detailed summary of each project as well as other information, please refer to *www.fnr.lu/jump*

FNR-MECO 2021

PROJECT ACRONYM	PROJECT TITLE	PRINCIPAL INVESTIGATOR	HOST INSTITUTION	DOMAIN	FNR CONTRIBUTION IN EUR
DIGICOG	*Monitoring "Long-covid" Impact On Cognition Via Digital Neuropsychological Assessment, Short Title: Digital Cognition*	Magali Perquin	LIH	BM	699.000,00
GAITORING	*Gait & Activity Monitoring Solution For Patients With Orthopaedic Conditions*	Laurent Malisoux	LIH	BM	693.000,00
Care4Asthma	*Advancing Diagnosis And Treatment Of Paediatric Asthma By Digital Technology And Deep Immunophenotyping*	Christiane Hilger	LIH	BM	699.000,00
QTrobot	*Qtrobot - A Digital Therapeutic Device For In-home Therapy Of Children With Autism*	Manon Gantenbein	LIH	BM	691.000,00
TOTAL					**2.782.000,00**

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INDUSTRIAL FELLOWSHIP 2021

TYPE	NAME	PROJECT TITLE	PROJECT DOMAIN	HOST INSTITUTION	COLLABORATING INST.	FNR CONTRIBUTION IN EUR
Postdoc	Marie Miot	*Multiscale Numerical Modeling Of Snow For Advanced Technological Application In Tire Performance Prediction*	Goodyear S.A.	MS	INRAE (France)	143.458,00
TOTAL						**143.458,00**
PhD	Jennyfer Fortuin	*Impact Of Microalgal Proteins On The Adhesion Properties, Release Profile And Biological Activity Of Microporous Scaffolds Hosting Probiotic Living Cells*	LIST	BM	Pm International	208.066,00
PhD	Farouk Damoun	*Federated Learning And Graph Neural Networks For Retail Banking*	UL	IS	Banque Et Caisse D'épargne De L'état	157.612,00
PhD	Albert Garcia I Sanchez	*Onboard Pose Estimation Of Uncooperative Spacecraft Through Ellipsoid Modeling*	UL	IS	Lift Me Off (Lmo)	208.066,00
PhD	Alireza Barekatain	*A Combined Machine Learning Approach For The Engineering Of Flexible Assembly Processes Using Collaborative Robots*	UL	IS	Rotarex S.A.	208.066,00
PhD	Robbert Victor Jacobus Reijnen	*Generalizable And Understandable Self-learning Approaches For Dynamic, Large-scale Resource Management Optimization Problems*	Eindhoven University of Technology	IS	Goodyear S.A.	208.066,00
PhD	Alfredo Romero Guzman	*Steel-timber Composite Beams*	UL	MS	Prefalux Construction Sa	208.066,00
PhD	Kuldeep Rambhai Barad	*Modular Vision For Dynamic Grasping Of Unknown Resident Space Objects*	UL	MS	Made In Space Europe	208.066,00
PhD	Svonko Galasso	*Machine Learning-based Marker-less Gait Analysis System For Clinical Assessment Of Human Motion*	LUNEX University	BM	Rehazenter - Centre Nat. De Rééducation Fonctionnelle	213.610,00
PhD	Hélène De Franco	*Personalized Food Response Models*	LIH	BM	Nium	213.110,00
PhD	Maxime Gautier Louis Hubert Delisle	*Design Of A Capturing, Absorbing, Securing System For Active Space Debris Removal*	SnT	IS	Spacety Luxembourg S.A.	213.110,00
PhD	Nesryne Mejri	*Unsupervised Multi-type Explainable Deepfake Detection*	SnT	IS	Post Luxembourg	213.110,00
PhD	Florent Mauret	*An Advanced Simulation Model For Transition Towards Enhanced Blast Furnaces With High Hydrogen Load And Low Co2 Emissions*	Paul Wurth	MS	Åbo Akademi University - Process And Systems Engineering	213.110,00
PhD	Mohammad-hossein Norouzian	*Developing And Online Monitoring Of Laser Welding Between Hard Metal And Steel Based On Artificial Neural Network Feedback*	UL	MS	Ceratizit Luxembourg S.A.R.L	213.110,00
TOTAL						**2.685.168,00**

AFR PhD 2021

FIRST NAME	LAST NAME	HOST INSTITUTION	DOMAIN	PROJECT TITLE	FNR CONTRIBUTION IN EUR
Félicia	Jeannelle	LNS	BM	*Deterioration Of The Locus Coeruleus- Hippocampus Axis In Alzheimer'S And Parkinson'S Disease Dementia: A Translational And Transversal Investigation Of The Impact Of Dysfunction Of The Noradrenergic System On Neurodegenerative Disorders.*	190.298,00
Leonardo	Mastrella	UL	BM	*One Enzyme, Two Diseases: Unveiling The Molecular Basis Of Two Congenital Disorders Of Glycosylation Caused By Defects In Gdp-mannose Pyrophosphorylase*	190.798,00
Julie Jia-yuan	Jiang	Free University of Brussels	BM	*Development Of Planar Extended Ligand-based Ruthenium(Ii) Complexes For The Detection Via Light-up Effect And Covalent Photo-addition To G-quadruplexes*	78.250,00
Michelle	Modert	Albert-Ludwigs University Freiburg	BM	*Peltate Leaf Unfolding: Analyses Of Functional Morphology And Kinematics As Bioinspiration For (Un)Folding Of Structures In Space*	190.298,00
Tom	Schreiner	Stiftung Tierärztliche Hochschule Hannover	BM	*Morphologic Examination Of Ciliated Epithelia In Upper Respiratory Airways With Special Consideration Of Olfactory Epithelium After Sars-cov-2-infection*	98.274,00
Lis	Albert	University of Heidelberg	BM	*A Novel Cellular Response To Endoplasmic Reticulum Damage*	190.298,00
Hanane	Baidarjad	LIH	BM	*Roles Of Neil3 Dna Glycosylase In Telomere Dynamics And Dna Demethylation In Glioblastoma: From Molecular Insights To Preclinical Target Validation.*	190.298,00
Md Arman	Hossen	UL	IS	*Design And Optimization Of Intelligent Tactile Internet Systems Over 5g And Beyond Wireless Networks*	190.298,00
Jingjing	Xu	UL	IS	*Investigating Graph Neural Networks For Open-domain Question Answering*	190.298,00
David	Marguerit	LISER	LE	*Artificial Intelligence, Automation And Job Content: The Implication For Wages, Job Mobility And Training*	190.298,00
Neeraj Kumar	Podichetty Thribhuvan	UL	LE	*Reducing Carbon Emissions By Increased Collaborative Vessel Utilization*	190.298,00
Maxence	Paoletti	UL	MS	*Load Introduction For Steel-concrete Composite Columns Using High-performance Materials*	190.298,00
Michael Philipp	Adams	UL	MS	*Magnetic Neutron Scattering Of Nanoparticles: Analytical Theory And Experiment Beyond The Superspin Model*	190.298,00
Katrin	Schelski	UL	MS	*Composite Fiber Sensors For Monitoring Volatile Organic Compounds At High Sensitivity, High Selectivity, And No Energy Consumption*	190.298,00
Massimo	Bilancioni	UL	MS	*Hybrid Stochastic Thermodynamics Of Chemical Reaction Networks*	190.548,00
Adil	Kabylda	UL	MS	*Navigating Chemical Reaction Space With Machine Learning*	191.548,00
Déborah	Feller	Heinrich-Heine Universität	MS	*Towards Plasmonic Quasicrystals: Self-assembly Of Soft Colloids Into Non-periodic Superstructures*	190.298,00
Ben	Weber	Imperial College London	MS	*Material Modelling, Validation And Optimisation Of Wire And Arc Additively Manufactured Stainless Steel Structures*	78.250,00
Viola	Giovannini	UL	MT	*Rigidity Questions In Hyperbolic Geometry*	190.548,00
Richard Henry John	Schmoetten	University of Edinburgh	MT	*Formalising Haag-kastler Nets In Higher-order Logic*	190.548,00
Eve-anna	Caristan-lentin	Catholic University of Louvain	SC	*E-justice: An Analysis Of New Criminal Justice Dynamics*	190.298,00
Mahdi	Mowlaei Aghblagh	UL	SC	*Children'S Experiences Of Multilingualism In Luxembourg At Home, School And Social Media*	191.548,00
Gary	Wagener	UL	SC	*Video Game Effects On Stress Levels And The Moderating Role Of Personality Factors*	190.298,00
Luca Tullio	Forgiarini	Utrecht University	SC	*The Promise Of Science – Building International Scientific Cooperation In Post-wwii Europe, 1945–1975*	190.298,00
Tom	Zago	University of Cambridge	SC	*Imperial Perimeters: Sovereignty And Territory In Early Modern Trans-imperial Spaces*	58.500,00
Andjela	Micanovic	UL	SC	*The (Un)Intentional Collapse Of Europeanization: The Eu And The Rise Of Authoritarianism In Southeast Europe*	191.048,00
Parisa	Shafiei	UL	SR	*Cubesats For Gravity Recovery*	191.548,00
TOTAL					**4.886.176,00**

For a detailed summary of each project as well as other information, please refer to *www.fnr.lu/afr*

PSP 2021

DESCRIPTION	DOMAIN	SOCIETE	FNR CONTRIBUTION IN EUR
Pits experimentelle Reise durch die Welt der Naturwissenschaften	SC - OVERALL	Déi Kleng Fuerscher asbl	59.991,71
Olympiades luxembourgeoises dans le domaine des sciences naturelles	SC - OVERALL	Olympiades Lux. des Sciences Naturelles	50.291,24
50ème édition du Concours national Jonk Fuerscher et 11ème édition de l'Expo-Sciences Luxembourg	SC - OVERALL	Fondation Jeunes Scientifiques Luxembourg	120.000,00
Future Digital Leaders	SC - OVERALL	Luxembourg Tech School	120.000,00
Lge-csi: Esch, Cool Science Investigations - 4th Edition	SC - OVERALL	Lycée de garçons dEsch	14.970,00
Science Of Decarbonisation: Increasing Carbon Numeracy Of Luxembourg Students	SC - OVERALL	LIST - Luxembourg Institute for Sci and Tech	22.900,00
Viruses - An Interactive Exhibition And Workshops About The Corona Virus	SC - OVERALL	Kulturhaus Niederanven	50.000,00
Exalt: Exercise Gaming For Elderly And Telehealth	BM - OVERALL	LUNEX asbl	23.395,00
Classified Mathematics	MT - OVERALL	Université du Luxembourg	26.300,00
Discover The Inside Of Your Colon: Boosting Cancer Prevention	BM - OVERALL	Université du Luxembourg	34.962,00
Artificial Intelligence (Ai) And Health Technologies – Prosthetics And Medical Image Processing	BM - OVERALL	Lycée Technique pour Profes-sio Lycée Technique pou	10.500,00
Élèves Chercheurs Au Lrsl 2022	MS - OVERALL	Voyages scientifiques LRSL	10.500,00
TOTAL			**543.809,95**

Minett Nature And Environment Learning Laboratory	SR - OVERALL	Le syndicat PROSUD	385.000,00
The Gg Is On The Road Again! De Gg Ass Erëm Ënnerwee!	SC - OVERALL	LISER	399.000,00
Become A Computer Scientist	IS - OVERALL	Université du Luxembourg	397.000,00
Research Goes Public	BM - OVERALL	Luxembourg Science Center Groussgasmaschin	490.000,00
TOTAL			**1.671.000,00**

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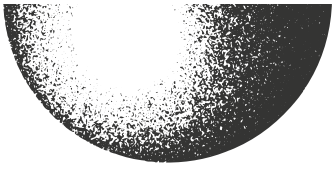
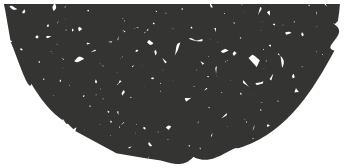
OPEN ACCESS 2021

HOST INSTITUTION	FNR CONTRIBUTION IN EUR
UL	28.468,78
LIH	12.639,36
LISER	6.056,63
TOTAL	**47.164,77**

SUBVENTION ARTICLE 3.5

PROJECT TITLE	PRINCIPAL INVESTIGATOR	DESCRIPTION	FNR CONTRIBUTION IN EUR
Fulbright	31/03/2021	Fulbright	4.000,00
WAC21	21/04/2021	WAC21 (BNL)	5.000,00
STEM STUDENT CH	21/06/2021	Goddyear STEM Student Challenge	2.500,00
LINDAU	21/06/2021	Lindau Meeting	500,00
DSSM	31/09/2021	EuADS - Summer School 2021 Data Science for Social Media	9.000,00
PHD WELCOME DAY	06/09/2021	PhD Welcome Day 2021 (UL)	2.825,00
ABG	20/10/2021	Cross-border PhD Career Workshop 2021	2.040,00
TOTAL			**25.865,00**





COVID 2021

PROJECT TITLE	PRINCIPAL INVESTIGATOR	HOST INSTITUTION	DOMAIN	FNR CONTRIBUTION IN EUR
● *Implementation Of A Digital Observatory From Web-based Sources (Social Media & Search Engines) To Monitor Vaccine-related Adverse Drug Reactions And Fight Vaccine Hesitancy In Luxembourg*	Guy Fagherazzi	LIH	BM	124.000,00
● *A Rapid And Specific Detection Of Sars-cov-2 Variants Of Concern In Wastewater: A New National Indicator*	Leslie Ogorzaly	LIST	BM	254.000,00
● *The Psychological And Neuropsychological Syndrome Associated With Long-covid*	Charles Benoy	Centre Hospitalier Neuro-Psychiatrique Luxembourg	BM	124.000,00
● *Epidemic Risk Classification Of Sars-cov2 Variants By Molecular Dynamics*	Alexander Skupin	UL	BM	121.000,00
TOTAL				**623.000,00**

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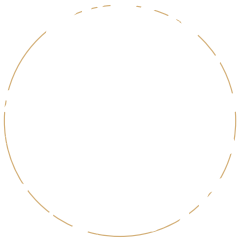

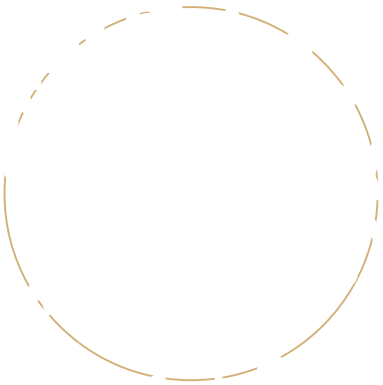

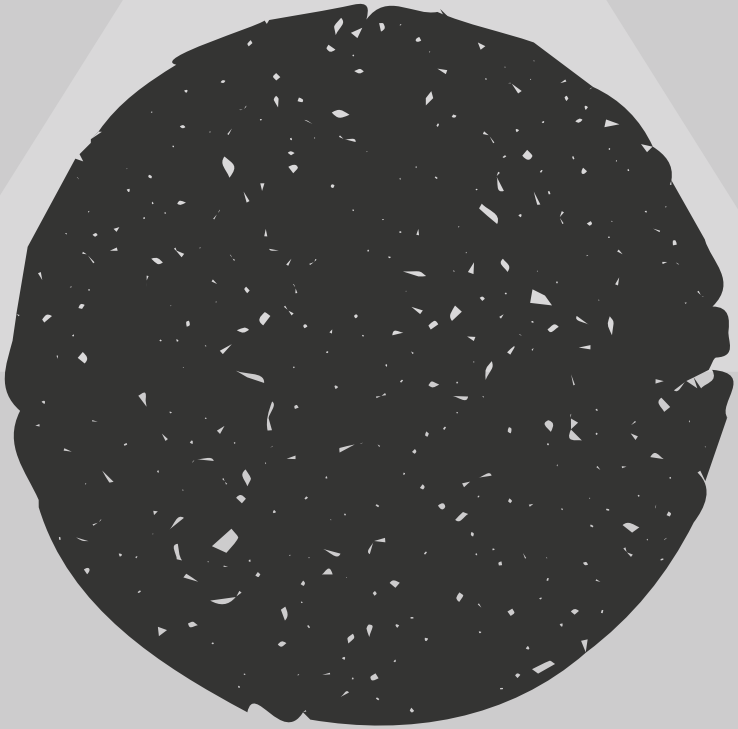

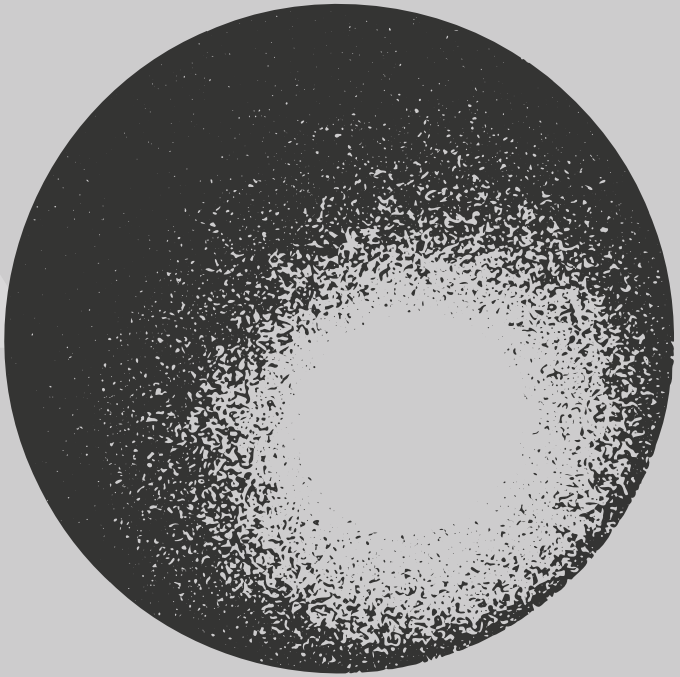

08

ORGANISATION

The FNR is a public institution created by statute (Law of 31 May, 1999) and enjoys legal capacity and full administrative and financial autonomy. Our overall strategy is laid down in a four-year contract with the Luxembourg Government, which also defines our budget appropriation.

THE BOARD

Our Board supervises the organisation and approves the overall policies and strategic priorities of the FNR. It is appointed by the government and is composed of nine independent directors active in industry, business and the civil society. The members of the Board act in full autonomy.

Chair

Martine REICHERTS, Head of the Directorate - General for Education and Culture (2015-2018). Member of the board of Directors of the Banque Centrale de Luxembourg.

Vice-Chair

Thierry WOLTER, Member of the Executive Board and the Supervisory Board of CERATIZIT

Members

Anouk HILGER, Head of Renewable Energies at Enovos Luxembourg S.A.

Richard SEDRANI, Executive Director at the Novartis Institutes for BioMedical Research (Basel, Switzerland)

Yves FROMES, Professor and associate researcher at the Paris Institute of Myology

Jean-Marc FANDEL, Board and C-level Advisor, Meraki Management SARL

Isabelle SCHLESSER, Director ADEM

Stéphanie DAMGÉ, Director Jonk Entrepreneur Luxembourg asbl

Tania BRUGNONI, Director 1535° Creative Hub

Ex-officio (non-voting) members

Marc SCHILTZ, Secretary General of the FNR

Romain MARTIN, Government Commissioner (since 04/19)

Nadine C. MARTIN, Chair of the Scientific Council of the FNR

BOARD
from left to right: Isabelle Schlesser, Richard Sedrani, Jean-Marc Fandel (sitting), Anouck Hilger, Stéphanie Damgé (sitting), Nadine C Martin (sitting), Marc Schiltz (Secretary General), Thierry Wolter (Vice Chairman of the Board, sitting), Martine Reicherts (Chair of the Board), Romain Martin (Government Commissioner, sitting), Yves Fromes. **Not in the picture:** Tania Brugnoni

THE SCIENTIFIC COUNCIL

Our Scientific Council acts as an advisory body to the FNR. Appointed by the Government, it is composed of international experts. The current Scientific Council was appointed by ministerial decree in June 2015.

Chair

Nadine C. MARTIN,
Siten-insel AG (Switzerland)

Vice-Chair

Mrs Gabriele DOBENECKER,
Empa, Dübendorf (Switzerland)

Members

Yves COCARD,
Universities of Berne and Lucerne, Switzerland

Patrycja PARUCH,
University of Geneva, Switzerland

Burckhard STILLER,
University of Zurich, Switzerland

Nicolas GENGLER,
University of Liege, Belgium

Rachel CHAMBERS,
University College London, Great Britain

Jane ELLIOTT,
University of Exeter, Great Britain

Georges THIELEN,
Goodyear Innovation Center, Luxembourg

EXECUTIVE OFFICE

The Secretary General of the FNR is the chief executive of the organisation. He heads the Executive Office, implements the strategy, oversees programme development and manages all running activities. He is appointed by the Board of the FNR, subject to approval from the Government. The Executive Office is composed of more than 33 committed collaborators, who are experienced and highly-qualified professionals with a strong track record in science and research management or in the field of science communication.

[01]_ *Florencia BALBASTRO*
[Programme Manager]

[02]_ *Jean-Paul BERTEMES*
[Head of Unit – Science in Society]

[03]_ *Olivier BUCHHEIT*
[Digital Transformation Manager]

[04]_ *Dr Helena BURG*
[Head of International Relations]

[05]_ *Sophie BROQUARD*
Programme Support and Grant System Manager

[06]_ *Angelina CLEMENS*
[Programme Support Manager]

[07]_ *Patricia DRIMEYER*
[Programme Support Manager]

[08]_ *Didier GOOSSENS*
[Head of Corporate Communication]

[09]_ *Emily IVERSEN*
[Digital Communication Manager]

[10]_ *Hélène JACUSZIN*
[Marketing & Communication Coordinator for Research Luxembourg]

[11]_ *Tom JAKOBS*
[Head of Data Management and Digital Transformation]

[12]_ *Christiane KAELL*
[Head of Research Programmes]

[13]_ *Sylvie KRIER*
[Executive Assistant to the CEO]

[14]_ *Cindy LOPES-BENTO*
[Head of Science of Science and Innovation Policy]

[15]_ *Patrizia LUCHETTA*
Project Coordinator Esch 2022

[16]_ *Marie-Claude MARX*
[PhD, Programme Manager]

[17]_ *Dr Andreea MONNAT*
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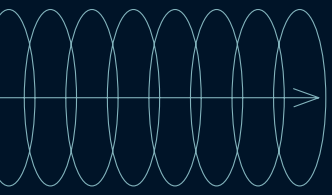

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