

NOVA SCIENCE

Interdisciplinarity and Impact

2023



50 YEARS OF EXCELLENCE
IN RESEARCH

RECENT ACHIEVEMENTS
AND FUTURE HORIZONS

RESEARCH
IMPACT

INTERDISCIPLINARY
RESEARCH

NOVA R&D
UNITS

Content

NOVA
SCIENCE

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1. 50 years of Excellence in Research and Innovation 4

2. Research at NOVA: Recent Achievements and Future Horizons 6

Research Facts & Figures 8

3. Research Impact 12

NOVA Research Impact Narratives 14

INTERVIEW
Insights from a Triple ERC Grant Awardee 38

Collaborative R&D Agendas for Business Innovation 40

4. Interdisciplinary Research 42

NOVA Institute for Medical Systems Biology 44

NOVA Interdisciplinary Research Community in Sustainable Energy Systems 48

NOVA Interdisciplinary Platforms 50

5. Eutopia Alliance Research Initiatives 58

6. Impact at NOVA R&D Units 62

Agricultural Sciences 64

Engineering & Technology Sciences 66

Humanities 70

Medical & Health Sciences 76

Natural Sciences 80

Social Sciences 86

50 years of Excellence in Research and Innovation

João Sàágua
Rector of NOVA University Lisbon

“NOVA’s interdisciplinary research has proven to be a powerful approach for tackling complex problems in an effective way, fostering innovation, and driving positive societal impact”

In recent decades, excellent research has become less associated with the traditional practice of ‘creating new knowledge for knowledge’s sake’ – something that can, perhaps, be measured by normalized academic impact alone – and more associated with creating new knowledge for society’s sake. This shift doesn’t undermine the importance of scientific curiosity, which is as critical now as it was then, but gives this curiosity a focus: to contribute with scientific results to solve big global challenges, be them environmental, social, or others. Renewable energies, carbon capture, cleaning the oceans, preservation of ecosystems, inequalities of all sorts, war, radicalism, fake news, pandemics, cancer, chronic diseases, economic development, food for all, water management, are good examples of big global challenges without exhausting the list.

All big global challenges are deep, complex, and (very) difficult to tackle.

They require insights from multiple fields, global value chains of knowledge. Thus, they call for strategic collaboration among research groups, academic and non-academic institutions, public or private. Today, with the evolving needs of society and the increasing interconnectedness of the academic, public, and private sectors, it is not unusual to find, e.g., research teams composed by life scientists and social scientists, or health professionals and engineers, or even a combination of them all working together to find solutions for concrete problems in society.

This is how research is evolving globally, and most particularly in the EU (just consider the Horizon Europe Program). This is how research at Nova University Lisbon (NOVA) is supposed to evolve. Actually, a very significant progress in that direction is already visible at NOVA. Of course, there are still ‘many rivers to cross’.



In any case, NOVA’s interdisciplinary research has proven to be a powerful approach for tackling complex problems in an effective way, fostering innovation, and driving positive societal impact. The success that we are having, together with our partners, is clearly visible in the way we championed research competitive money from Horizon Europe, in our participation in 12 collaborative laboratories (CoLabs), and, more recently, in our participation in the “Agendas Mobilizadoras” of the Portuguese Resilience and Recovery Plan (PRR), where we are among the Portuguese Universities involved in a diverse range of projects.

At the same time, we have been putting a lot of effort in developing an innovation ecosystem that can facilitate the translation of research into real-world applications, which has led to the growth of new startups, technology transfer offices, and incubators. Hence,

interdisciplinary research at NOVA has also been fuelling innovation by harnessing the collective expertise of diverse disciplines to address complex challenges and drive advancements that benefit society as a whole.

This year we celebrate our 50th anniversary. It is fair to say that, in Portugal, NOVA has been a driving force for positive change over the last 50 years. We compromise to be a driving force for positive change for the next 50, even at European level, of course, together with our partners.

Universities of excellence are universities driven by research and innovation that can make a difference in society, not only maximizing what is good, but also minimizing damages and inequalities. And NOVA, as a global and civic university, is strongly committed to the sustainable development of society.

Research at NOVA: Recent Achievements and Future Horizons

Isabel Rocha

Vice Rector of Research, Innovation and Value Creation of NOVA University Lisbon

Even for the high standards that we had in previous years, the last 12 months have revealed extraordinary regarding Excellence and Impact in Scientific Achievements @ NOVA, as can be seen in the Facts and Figures Section. Besides a significant increase in the number and size of projects secured by NOVA researchers, our leadership has also increased significantly. For the first time, NOVA is leading a Teaming (Widening – Horizon Europe (HE)) project and our scientists have attracted funding from the ERC for 5 projects, while leadership in Collaborative projects was also strengthened. In fact, NOVA is the Portuguese Higher Education Institution that has attracted more funds (normalized for its size) in the Horizon 2020 program and this performance has been kept in HE. This past year also saw a relevant diversification in the sources of funding captured. As a recognition of our excellent science, NOVA is also participating in 19 Innovation projects within the Capitalization and Business Innovation (C5) from the Recovery and Resilience Plan (PRR), with a total funding of 32.8 Million Euros. Given these achievements, the future looks bright regarding research impact.

This year, we decided to give the floor to the members of our community who excelled in the past 12 months in both this publication and on the Science Day. Therefore, we invited for the Science Day the Principal Investigators of the largest new projects with NOVA's leadership, as well as the main authors of the publications with the highest impact, to celebrate their achievements and share their experience with the NOVA community. We believe that Innovation with Impact goes hand in hand with Excellent Science, and so, for the first time, the Innovation and Science at NOVA come together in the same event, to allow for an increased participation and interest.

Regarding this years' topic on Interdisciplinarity and Impact, we highlight our Interdisciplinary platforms, and the newcomers NOVA Interdisciplinary Research Communities (NIRC) and Research Impact Narratives. Regarding the NIRC on Sustainable Energy Systems, we will have a lot more to comment in one year from now, since it is just now being launched, while the Research Impact Narratives will close the first edition during the Science and Innovation Day. I believe this was a



very successful and pioneering initiative that motivated many scientists to think about the impact of their projects. It will also allow a significant visibility and accountability towards society. We will launch a new edition in 2024 strengthening the possibilities of training for researchers on how to write an impact narrative.

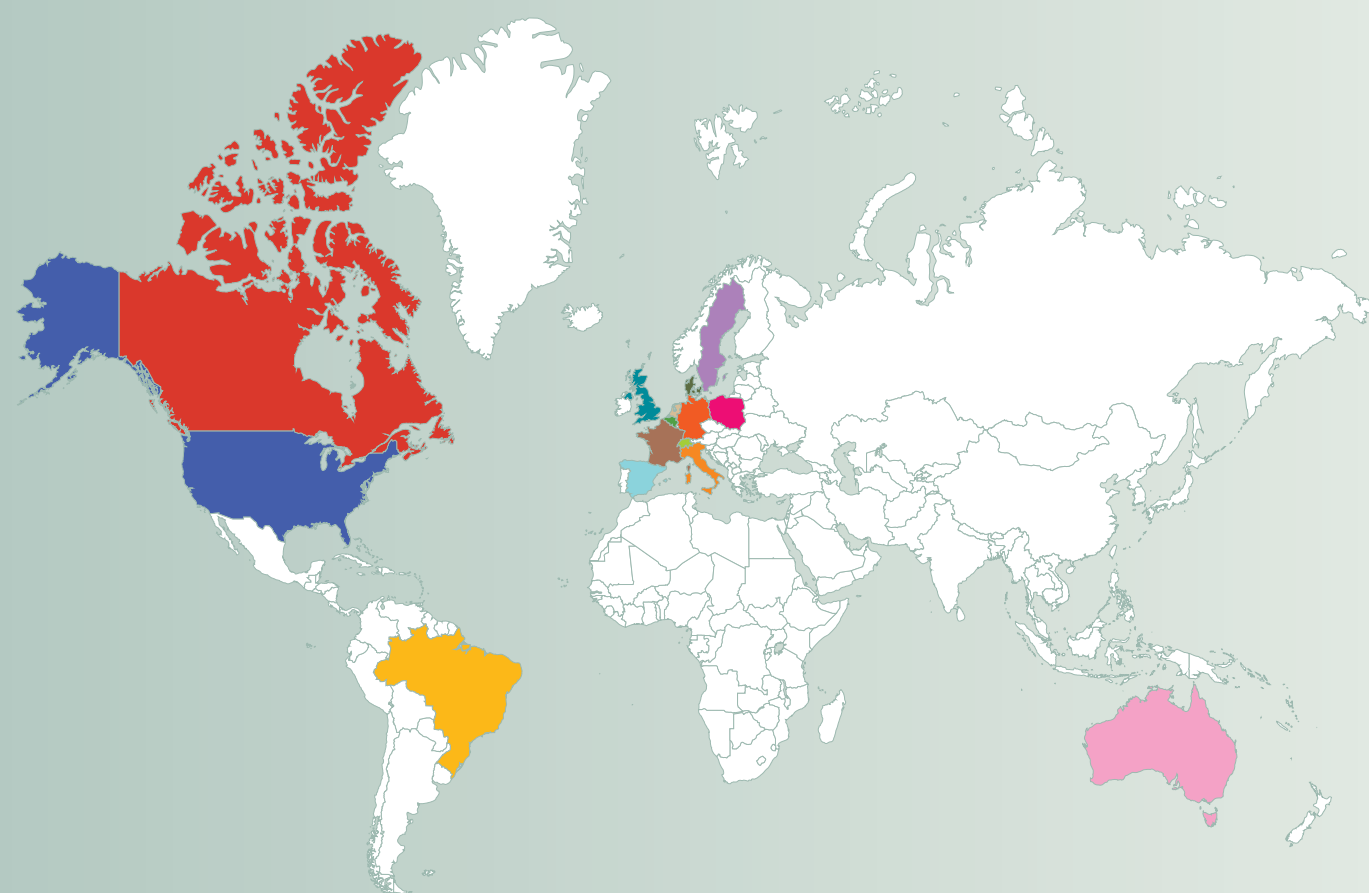
Although the future looks bright in many aspects, as a reflection of the dedication of our scientists and supporting staff, there is a variety of challenges ahead of us. A significant part of our researchers still have temporary contracts. The national budget for the Universities in Portugal still does not include any budget for research, and therefore NOVA will have to make a significant effort to change the panorama of precarity by applying to the FCT Tenure program and by directing a variety of its own funds to human resources. Scientists are the core of scientific research and NOVA is committed to retain and attract talent. Instrumental to this is the evaluation of researchers according to our Regulation

published this year, but a complete framework is required and will be published during 2024, including a new regulation for incentives to researchers, a new regulation for scientific careers, including research managers and other science support activities, among others, and the creation of virtual and physical helpdesks to support researchers with issues in their careers. NOVA is at the forefront regarding this topic of research careers and researchers' evaluation, having organized a national workshop in 2023 (from which the report with the main conclusions will be available soon), participating in an European Project on the topic for piloting new instruments (SECURE project) and participating in other international discussions on the topic within YERUN and CoARA.

Being aware that NOVA has a very strong and dedicated community to deal with those and other challenges, it is with great confidence in our future that I wish you all the best for the next year.

Research Facts & Figures

TOP 15 COLLABORATION PER COUNTRY 2022



SPAIN	1864	SWITZERLAND	579
UNITED STATES	1704	BELGIUM	558
UNITED KINGDOM	1652	DENMARK	541
BRAZIL	1467	AUSTRALIA	538
ITALY	1279	SWEDEN	492
GERMANY	1275	POLAND	486
FRANCE	1095	CANADA	474
NETHERLANDS	902		

SOURCE: SciVal

STAFF 2022

Nr. TEACHING & RESEARCH STAFF	1 697
% TEACHING & RESEARCH STAFF (WOMEN)	48%
Nr. Ph.D. STUDENTS	2 287
Nr. GRADUATES	8 494
Nr. MASTER STUDENTS	13 888

PROJECTS AND FUNDING 2022

10 ASSOCIATED LABORATORIES FUNDED IN 2022	€ 11,5 M
TOTAL RESEARCH INCOME 2022	€ 56,5 M
HORIZONTE EUROPE 2022* New Projects: 64 <small>*includes NOVA's Interface Institutes</small>	€ 40,3 M
500+ ONGOING R&D PROJECTS 2022	€ 180 M
Active National Projects: 362	€ 126 M
Active European Projects: 116	€ 48,7 M
Other International Projects: 30	€ 5,4 M
39 RESEARCH UNITS 2007-2022	€ 75,5 M

PUBLICATIONS 2022

INDEXED PUBLICATIONS SCOPUS & WEB OF SCIENCE	3411	% OF ALL PUBLICATIONS WITH INTERNATIONAL COLLABORATION	49.7%
% OF NORMALIZED IMPACT SCOPUS PUBLICATIONS 2021 (26% ABOVE WORLD AVERAGE)	1.26%	% OF ALL PUBLICATIONS IN TOP 10% OF MOST CITED WORLDWIDE	12.9%

Research Highlights



5 NEW ERC GRANTS IN 2023:

- ITQB NOVA Researcher Mariana Gomes de Pinho **has won an ERC Advanced Grant**
- NOVA FCSH Researcher Susana Viegas **has won an ERC Consolidator Grant**
- **2 more Proof-of-Concept Grants** for NOVA FCT Researchers: Ana Rita Duarte and Luís Pereira; and **1 more Consolidator Grant** to be announced
- **NOVA is part of the Science Journalism Initiative** with the project FRONTIERS: with António Granado (NOVA FCSH) and Ana Sanchez (ITQB NOVA)

ERC GRANTS 2007-2023: **32 GRANTS | € 42,5 M**



NOVA stands out in Horizon Europe as the leading Portuguese University in securing Horizon Europe Research Funding (per capita): € 63,12 M across 116 projects, including 37 (almost 1/3) as project coordinator.

ENVISIONING EXCELLENCE: Spotighting NOVA's Leadership in Horizon Europe Projects Funded at over 500K€ by November 2023

NOVA Institute for Medical Systems Biology (NIMSB), Teaming of Excellence € 15 M

António Jacinto, NMS

GLYCOTwinning, Twinning € 750K

Paula Videira, Angelina Palma e Filipa Marcelo, NOVA FCT

EvaMobs, Research and Innovation Action (RIA) € 3,4 M

Cláudio Soares, ITQB NOVA

EQUALNovaERA, ERA Chair € 2,5 M

Adeline Delavande & Pedro Vicente, NOVA SBE

CryoEMatNOVA, ERA Chair € 2,5 M

Hartmut Luecke, NOVA FCT

FILM AND DEATH, ERC-COG € 1,7 M

Susana Viegas, NOVA FCSH

Missing Links, ERC-COG € 3 M

Mariana Pinho, ITQB NOVA

Research Facts & Figures



NOVA is currently engaged in 19 ongoing research and innovation projects from the Capitalisation and Business Innovation (C5) PRR component, with a combined funding of **€ 32,8 M**.

NOVA's involvement in these PRR projects demonstrates a strong commitment to contributing to Portugal's economic competitiveness through R&D and innovation.



- **6 Active Projects in 2022**, funded by *la Caixa Foundation*, with an associated funding of **€ 2M**

- Researchers Ana Pina, Mónica Serrano, and Guadalupe Cabral were awarded *la Caixa Impulse* grants to develop promising projects in the fields of health and life sciences. **NOVA received half of the funding awarded to Portuguese Institutions** within this highly-competitive funding.



NOVA is part of SECURE, an EU-funded project implemented by a consortium of 18 organisations. **This project will focus on improving research careers and reducing career precarity**, through the development of a Research Career Framework offering a suite of options to support organisations in the recruitment, employment, training, development, progression, and mobility of researchers.

World's Top 2% Scientists

78 researchers from NOVA among the most quoted scientists in the **World's Top 2% Scientists List 2022**

Crowdhelix

NOVA joined Crowdhelix innovation platform to **foster collaborative research and networking**



In 2023 NOVA recognized **11 impactful narratives** from different scientific fields



NOVA has a **partnership with FCCN and Elsevier** in the interoperability development between the NOVA CRIS system (Pure) and two national-level platforms: Ciência Vitae and the SciProj project database.

Research Impact

NOVA Research Impact Narratives

Award-winning narratives 2023 16

Honourable mentions 2023 28

INTERVIEW

Insights from a Triple ERC Grant 38

Collaborative R&D Agendas
for Business Innovation 40



NOVA
**Research
Impact
Narratives**

In 2023, NOVA University Lisbon launched the “Research Impact Narratives Challenge,” inviting teachers and researchers affiliated with any of the University’s Academic Units to translate the profound impact of their research projects into engaging narratives.

Both at the national and European levels, research and innovation funding agencies have increasingly emphasized the measurement of research impact. The adoption of more qualitative, robust, and integrated assessment methodologies has become paramount. It is imperative that society at large comprehends and appreciates the results of research activities.

The Research Impact Narratives Challenge has emerged as a must to equip NOVA’s researchers with the skills and motivation to communicate the impact of their research in a language accessible to all.

This section explores eleven narratives from different scientific domains, selected by the jury of this challenge for effectively demonstrating the profound influence of research on our world, transcending barriers to understanding, and illuminating the path toward a brighter future.

Monastic History Impact from Academy to Community

Person responsible for the application:

Catarina Fernandes Barreira

NOVA FCSH
Institute for Medieval Studies (IEM)

Main Scientific Area:
Humanities

Types of Impact:
**Academic, Cultural, Educational, Social
and Technological**

SDGs:
4, 5, 8, 10, 11 and 17

SDGs Targets:
4.4, 4.5, 5.5, 8.9, 10.2, 11.4, 11.a, 17.16

> Detailed study and analysis of the liturgical books produced in the Monastery of Alcobaça.

> Discover of new insights in the Monastery of Alcobaça History, relations, and changing rituals.

> Creation of training courses for Tourist Guides.

> Enhancement of guided tours of the Monastery, offering to almost 5000 visitors in 3 years, the latest scientific discoveries and a richer experience.

The Monastery of Alcobaça has been listed as UNESCO World Heritage since 1989. Unfortunately, at the time, the candidacy only involved the building, and excluded what is one of the largest surviving Cistercian libraries in Europe. With the aim of bringing university research to bear on cultural tourism and tourism of Cistercian architectural heritage, the NOVA FCSH project *Cistercian Horizons* intended to deepen the largely overlooked understanding of the Cistercian world (the daily life of Alcobaça, its abbots and monks, liturgical performance, and performance in monastic spaces) and the centrality of its books.

The purpose of the project was to study and analyse the illuminated liturgical manuscripts produced in the Monastery of Alcobaça, the largest and most visited Cistercian Monastery in Portugal, between the end of the 12th and the 16th century. The study of these manuscripts, operated as repositories of memory and considered the monasteries' most prized possessions, involved examining (i) material aspects (pigments used in illuminated decoration, and bookbinding materials and methods); and (ii) ritual and content. The project

revealed new insights into the internal life of the community, its relations with other monasteries, and especially the liturgical functions of the monastic spaces and how they changed over centuries.

Clearly, the foregoing is ample reason for the books and library of this monastery to be included in the circuit on sightseeing visits. Therefore, this information was applied in three training courses for Tourist Guides (2020, 2021 and 2022), with the collaboration of several researchers in the project and the coordination by Catarina Fernandes Barreira.

Running the courses and collaborating closely with the Tourist Guides was important for sharing the scientific knowledge resulting from the research, and substantially augmenting their knowledge. Moreover, with this knowledge, Tourist Guides were able to update and diversify the development and planning of tours on topics such as: Cistercian heritage sites and monasteries; the relationship of the monasteries with their local surroundings; the "memory" of the spaces regarding buildings modifications, adaptations and enlargements; the approach, in a contextualized way, of aspects related to architecture, liturgy and its performance; and the relationship of monastic spaces with liturgical practice. The diversification of contents enriched Guided Visits of the Monastery of Alcobaça, both for national and international tourists who simply want to know a little of the Monastery, and for more erudite visitors.

Tours are now accessibly informed by the latest scientific discoveries, going well beyond usual visitor discourses.

The impact of this project relies on the 96 Tourist Guides that enrolled in the three courses. If each tour guide took, at least, one group of 30 visitors to the Monastery of Alcobaça, in 2020 and 2021, and 3 groups in 2022, a total of 4,950 visitors, from national and international origins, experienced the new knowledge produced on the Monastery at the end of the 3 years, accounting for a significant extension of the project impact.

On the increase in tourism in Alcobaça: it is known that in 2022 the Monastery of Alcobaça received 193 881 visitors, a very significant number compared to the previous two years (and even when compared to the last decade).

Fortunately, the tour guides will continue to use the information and new skills received, in combination with new developments as they emerge, which means that this knowledge will continue to have impact long into the future.

As for the sustainability of this impact in the future, two important aspects deserve mention. Firstly, in the current year, we have successfully introduced Tour Guide training at another Cistercian monastery, specifically Lervão. This initiative is part of an ongoing funded project that shares a similar approach centered in liturgical books, libraries, and around questions like female agency. Secondly, we have plans to further expand our vocational training efforts by continuing providing training at both Alcobaça and Lervão monasteries and extending this training program to other Cistercian monasteries.

Regarding the dissemination of this impact among other audiences, from the beginning of the project it became evident that the knowledge we were acquiring had the potential to reach a broader audience, particularly children and schools. With this goal in mind, we organized workshops for students ranging from 5 to 18 years old, spanning various educational levels. These workshops took place not only at the Monastery of Alcobaça but also in different schools, encompassing a diverse array of activities tailored to the specific ages and educational backgrounds of the participants. Some of these workshops were conducted as part of the Programa Cientificamente Provável/Scientifically Probable Programme.

Research Impact Research Impact Narratives

These educational initiatives garnered enthusiastic responses from all parties involved, including the young students, educators, and the schools themselves, because they played a pivotal role in reshaping perceptions of monasteries and the Middle Ages in a positive manner.

Both workshops and vocational training of tourist guides shed light on the significance of medieval libraries and the role of books, especially liturgical ones, as well as the importance of liturgical rituals in comprehending monks' daily lives. The project also contributes to a societal shift in how medieval books, monastic libraries, and the cultural ambiance of monasteries are perceived. This extends to a broader comprehension of the Middle Ages and the contemporary relevance of Medieval Studies.

"On behalf of Agic and myself, I would like to thank you for the excellent training you gave us this year; my colleagues loved it and even more so because we had the opportunity to go to Alcobaça, a fantastic day in a place where we always learn so much. I'd also like to take this opportunity to thank all the speakers who, once again, spoke to us about topics that interest us and that we can always use in a professional context."

Paula Fernandes, AGIC: Portuguese Association of Tourist Guides and Tour Managers



"São Bento" - Drawing from a workshop with children.

Reviving non-conformist modern culture

Person responsible for the application:

Luís Crespo de Andrade

**NOVA FCSH
CHAM - Centre for the Humanities**

Main Scientific Area:
Humanities

Types of Impact:
**Academic, Cultural, Educational, Social
and Technological**

SDGs:
4 and 11

SDGs Targets:
4.3, 4.7, 11.4

> The RIC Portal (Revistas de Ideias e Cultura) provides universal and indexed access to influential magazines of the 20th century.

> RIC has over 100,000 users and has received the Ler+ Award, as a testament of its significance in promoting modern cultural heritage and research in the humanities.

> The portal emphasizes open and user-friendly information access, attracting institutional partnerships in Portugal and Brazil, and promoting new forms of reading.

Back in 1993, Zília Osório de Castro created the “Seminário Livre de História das Ideias” (Free Seminar of History of Ideas) also known as the Seminar. The Seminar, constituted by an autonomous research and publication team formed by scholars with various academic affiliations, whose research is part of the CHAM – Centre for the Humanities of NOVA FCSH, had the aim of choosing an annual topic of common interest for discussion in monthly presentations by its members. At the turn of the century, the choice fell on the Dreyfus Affair, which made the group focus on the history of intellectual movements and on the magazines that provided their identity. However, the foremost problem of twentieth-century Portuguese cultural historiography soon emerged: the difficulty in accessing, consulting, and analysing numerous, complex, and sometimes extensive periodicals, often missing, or truncated in many leading cultural heritage institutions.

Starting from the intuition that only information technology could solve this problem, the Seminar decision was made

to follow the digital route. The seminar started first by the selection of magazines to be published according to their cultural relevance and the academic interests of the researchers involved; then, the digital scanning of complete collections of selected titles, after locating or reconstituting them; and finally, the creation of a database, the publication of one website per magazine and the dissemination of websites at events, news in the media and mailing lists. These websites provided users with open access to the magazines’ complete collections, along with the tools to search them over eight indexes, original studies, and a documentary dossier organized by the specialists who edit and curate them. The collaborative work between the Seminar team, the National Library of Portugal, the Mário Soares and Maria Barroso Foundation, the FCT, I.P. the Calouste Gulbenkian Foundation, the National Culture Centre, the Museum of Neo-Realism, the University of São Paulo (USP) and the State University of São Paulo resulted in the creation of “Revistas de Ideias e Cultura (RIC)” Portal. RIC provides a universal and indexed access to the magazines that moulded the thinking and causes of the twentieth century and constitutes a turning point in the diffusion of the periodicals that shaped modern reasons and values.



In October 2022, the climax of recognition for RIC’s impact took place with the Ler+ Award, conferred by the National Reading Plan. This prize is inseparable from the 100,000 users and the 2,300,000 pageviews, between September 2015 and May 2023, 23% originating outside Portugal. A second milestone was also achieved in 2022 with the first six websites of RIC Brazil. They resulted from the interest of senior Brazilian researchers in replicating the model, in 2019, at a scientific meeting at Casa de Rui Barbosa, as well as from the agreement signed between NOVA and USP. Notably, several types of impacts are present, with emphasis on open and friendly access to information, the attraction of institutional partnerships in Portugal and Brazil, and the appreciation of modern cultural heritage associated with research in the humanities and new forms of promoting reading.

The current researchers of the Seminar believe that, today RIC exerts a very significant political and academic impact on the study and community appropriation of the nonconformist legacy of modern Portuguese culture. Furthermore, in 2023, RIC will feature thirty-five websites and the prospect of reaching, in 2030, more than one hundred published websites. This occasion will signify a second climax in the general mapping of contemporary Portuguese culture, which will be furnished with heuristic and hermeneutic navigation instruments allowing users to ask questions and receive answers. Thus, the impact of RIC will follow a classic narratological arc.

“Newspapers made politics and magazines wove culture.”

Luís Andrade, in *Público*, March, 24, 2020

Recovered voices, newfound questions: erasing archival silences, building a plural History

Person responsible for the application:

Maria de Lurdes Pereira Rosa

NOVA FCSH
Institute for Medieval Studies (IEM)

Main Scientific Area:
Social Sciences and Humanities

Types of Impact:
Academic, Cultural, Economic, Educational, Social, Fostering Open Science

SDGs:
4, 8 and 16

SDGs Targets:
4.4, 4.6, 4.7, 4.b, 4.c, 8.2, 8.3, 8.5, 8.9, 16.6; 16.7, 16.a

In contrast to the situation in most European countries, family archives in Portugal were scarcely described and studied, or had a very limited expression in local or private archives. Moreover, they were not used in in-depth historical research, or studied according to updated, interdisciplinary parameters. History suffered from this absence. Archival heritage was unknown and threatened, and Historical Archivists were unknown in Portugal. The absence of family archives in the construction of historical explanations about the functioning of pre-modern Portuguese society drove Professor Maria Pereira Rosa to create, in 2008, a research and teaching program in NOVA FCSH - «Family Archives, Community Archives: archives, history, cultural heritage».

The Program was born from post-doctoral research of primarily scientific scope, and aimed to study a rich family archive, which contained documents from the 14th century onwards. The research sought to address the problem of how to reach the direct voice of individuals and families who lived in

> “Family Archives, Community Archives” had immediate impact on the availability of previously unknown precious archives.

> The program gained international scale, and the impact resulted on high-level scholarships, namely in the US and France, as well as research projects, culminating in an ERC Grant.

those centuries, and who, in Portuguese historiography, had been mainly studied through Crown and Church archives. In a broader perspective - to understand how families and individuals were structured in a corporate society, using their own devices to endure and resist those stronger institutions. In a theoretical scope - to apply non-anachronistic models to the study of pre-French Revolution society, through historical anthropology.

Looking to address these problems, Prof. Rosa team have discovered a large amount of unpublished documents – studied it in MA and Ph.D. theses; researched ten new archives, some with thousands of documents; made available online ancient inventories (INVENTARQ website, online since 2015) and published seven books and more than 30 articles and book chapters (ARQFAM website).

Furthermore, Prof. Rosa team worked extensively in outreach actions. In the project, rare documents were recovered, made available and studied - restoration of five documents of enormous importance in private or public archives (two in peripheral regions - Madeira and Cape Verde); and funded the recovery of thousands of folios of documents in the Regional Archive of Madeira. The team carried out different cultural dissemination

actions – free online DIY book; monthly articles about local history; exhibitions, free courses, training actions, open meetings; school competition (2023). Articles were published in two leading weekly magazines (Observador, 2020; Expresso, 2023) and in several other newspapers, as well as a report on RTP Madeira. Besides researchers and students, key publics / stakeholders are private archive owners; public archives; local communities – including peripheral and undeveloped areas.

Curiously, Prof. Rosa's previous research and sporadic contacts with family archive owners indicated the documents' existence, but these owners' relationship with the academy was almost non-existent. The turning point came with the inclusion of archival owners, as direct speakers, in the first scientific meetings of the program. From 2009, meetings were held with archival owners, historians and archivists collaborating as peers to discuss common problems. Over the years, the program gained international recognition and impacted society (researchers, students, private archive owners, public archives and local communities) through: 1) scientific meetings; 2) teaching and tutoring doctoral courses at universities and scientific institutions abroad; 3) promoting science communication meetings fostering local history and heritage knowledge; 4) writing manuals for the general public; 5) publishing books and articles; 6) obtaining public scientific funding and private sponsoring, namely high-level scholarships, in the US and France, and an ERC Grant; 7) implementing a new PhD in Historical Archival Studies at NOVA FCSH, unique in Europe; 8) gaining media presence, with articles published in two leading weekly magazines and in several other newspapers, as well as a report on RTP Madeira and an invitation to present results



Research Impact Research Impact Narratives

at the Sustainable Value Creation Summit (NOVA.SBE, 2023); and 9) the presence in local communities. In fact, research was always accompanied by science communication actions, fostering local history and heritage knowledge (exhibitions at Torre do Tombo in 2016 and Biblioteca Nacional in 2021-2022; “Entail of the month” initiative, now with 30 editions, mostly by local archive owners and historians).

Overall, the program has opened research paths, brought the voices of forgotten protagonists, and enabled new and plural visions of the past. In a pioneering way, it has deeply impacted past and present, and it is the researchers' aim to make it deeply impact the future!

“Maria de Lurdes Rosa's work on the protection of private archives since 2009 is to her great credit: she has raised awareness among archive owners, organised study days and international conferences and published a manual on the protection of family archives.”

Christine Nougaret (Emeritus Professor at the École Nationale des Chartes (Paris), Director of the Private Archives Section at the Archives Nationales de France from 1999 to 2006)



An Artificial Intelligence System for Online Gambling Addiction Detection and Prevention

Person responsible for the application:

Mauro Castelli

**NOVA IMS
MagIC**

Main Scientific Area:
Engineering and Technology Sciences

Types of Impact:
Academic, Economic, Health, Social and Technological

SDG:
3

SDGs Targets:
3.5, 3.4 and 3.8

> Identified common behavioural patterns in approximately 1500 Portuguese online gamblers.

> The AI-system detects actions representing risky behaviour in online gambling and enables continuous control of gambling activities.

> Successfully integrated the AI-system with the existing gambling control authority's infrastructure.

Europe represents the largest international market for online gambling, with a Gross Gaming Revenue (GGR) that reached €24.9 billion in 2020. To wit, online gambling is a major industry in every European country, generating billions of Euros in revenue for commercial actors and governments alike. Despite such evidently beneficial effects, online gambling is ultimately a vast social experiment with potentially disastrous social and personal consequences that could result in an overall deterioration of social and familial relationships.

In 2012, the European Commission released a statement highlighting the need for regulatory policies to aid in the detection of pathological gambling behaviours, citing "a responsibility to protect those citizens and families who suffer from a gambling addiction." In Portugal, the Gambling Inspection and Regulation Service is "responsible for the control and regulation of gambling

activities in casinos and bingo halls, as well as online gambling and betting."

This authority receives, on a daily basis, all data related to online gambling activities (the amount of money spent, the deposits made, the number of discrete login events, the amount of minutes spent online, the hour of each access event, and the type of gambling activity selected (i.e., slot machines, poker, soccer, or other sporting events)) pursued by every user on every online platform with services that are accessible to Portuguese citizens. Despite this prodigious collection of data, the authority was lacking appropriate tools for identifying gambling addicts and acknowledged a profound scarcity of actionable data regarding the actual scope of gambling addiction and a consequent lack of expertise about how best to deal with this problem.

To tackle this problem, Mauro Castelli and his team from NOVA IMS developed and implemented an AI (Artificial Intelligence)-based system that capitalizes on the vast amount of data collected every day by the online gambling

providers operating in Portugal and, from its analysis, models the behaviours associated with addicted gamblers and allows for their early detection. The team proposed a system based on state-of-the-art machine learning methods including, but not limited to, the use of evolutionary-based algorithms and deep neural networks. The proposed system provided a transformative effect on the operations of the Portuguese gambling authority. In particular, the system allowed to compare and characterize the behaviours of online gamblers and to dynamically adapt its output based on the behavioural pattern observed every day for all the users in Portugal.

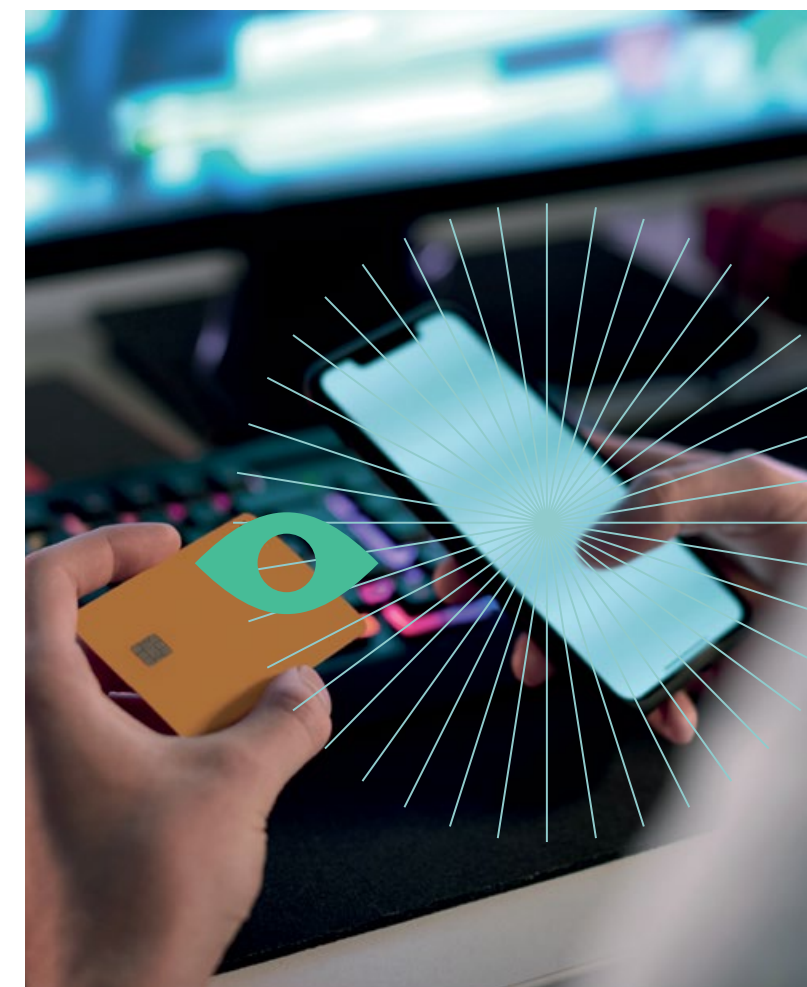
The Portuguese authority is currently using the proposed system, having today constant information concerning online gamblers, receiving automatic alerts when a user is moving toward a "dangerous" behaviour (i.e., indicating a possible addiction), and taking actions to protect citizens at risk of developing serious addiction by designing prevention actions.

As a result of this project, the team produced 3 Ph.D. theses, 4 master theses, 32 journal publications, and 22 conference publications. Remarkably, despite being developed and tested in Portugal, it would be possible to extend the project adoption to all the EU countries where the same regulations concerning the control of gambling activities exist. To sum up, the social impact of the project is enormous, given its inherent capacity to reduce the socio-economic and health-related costs associated with gambling addiction.

To provide an initial idea concerning the impact of the project, after the training phase of the machine learning algorithms, using historical data from 2019, we were able to identify approximately 1500 users corresponding to pathological players.

"With this system, the gambling control authority can effectively perform its controlling role. In this way, it can better protect citizens from the detrimental effects of pathological gambling."

Mauro Castelli



SMART REGION – Building communities and promoting territorial cohesion with analytics

Person responsible for the application:

Miguel de Castro Neto

**NOVA IMS
MagIC**

Main Scientific Area:

Exact Sciences, Natural Sciences and Social Sciences

Types of Impact:

Academic, Cultural, Economic, Educational, Environmental, Political, Social and Technological

SDGs:

3, 4, 8, 9, 10, 11, 12, 13, 15 and 16

SDGs Targets:

3.6, 4.4, 8.3, 8.9, 9.2; 9.3, 10.4, 10.6, 11.2; 11.3; 11.4, 11.6, 11.a, 11.b, 12.5, 12.b, 13.2, 13.3, 13.b, 15.9, 16.6, 16.7, 16.10, 16.b

In a context of fast changing technological environment, the possibility to use data to create value for society and apply analytical knowledge and discovery processes to data-driven public policies could have a huge impact on regional planning. Smart Region project, made visible in the Oeste Region (Portugal), is a territorial analytical integrated platform designed to change the paradigm of how local authorities will manage public policies leveraged by data-driven decision-making.

Smart Region project from NOVA IMS conceived and tested a framework that could foster data-driven local public policies in their different stages, where interventions are grounded on facts using data and processing capacities integrated in an analytical platform, with automatic updating. This platform integrates data from multiple sources, namely from municipalities and external entities,

> Smart Region is a territorial analytical integrated platform designed to change the paradigm of data-driven public policies.

> Intermunicipal Community of Oeste is the Smart Region proof of concept for real-time monitoring of territory dynamics and policy impacts.

> Smart Region utilizes business intelligence, data science, and geographic information systems, combining diverse data sources.

> Oeste mayors can monitor, in real time, the territory dynamics and the impact of public policy interventions.

that allows presently the adoption of an analytical approach in regional planning, along with the creation of new products and services for citizens of the 12 municipalities of the Intermunicipal Community of Oeste (CIM Oeste). Leveraged by the integrated data infrastructure that was built, it was possible to develop several dynamic reports and dashboards to produce a deeper understanding of the region metabolism and use that knowledge to identify the opportunities and challenges faced by the local authorities, with the information regarding economic, social and environmental impact, aligned with the Sustainable Development Goals. All these reports were then embedded in the Smart Region platform where access can be granted to mayors, municipal technical services, and citizens in general.

Amongst the possibilities using the Oeste Smart Region pilot is the ability to analyse how much money was spent over time and space, in what activity, and by whom or how the public transport system of Oeste CIM is performing. Moreover, information about companies, local accommodation for tourists, waste collection,

“The emergence of the dual green and digital transition, alongside the pursuit of well-being and quality of life for people, which are the focus of local government action, impose a new model for designing, executing, monitoring, and evaluating public policies that the digital twin of the Oeste, developed within the ‘Smart Region’ project, has placed at the service of our community, thus making an unquestionable contribution to the construction of territorial cohesion.”

Paulo Simões, Executive Secretary of Intermunicipal Community of Oeste

and greenhouse gases (GHG) emissions per municipality is also available in reports contributing to the understanding of the business fabric, pressure of local accommodation, waste management and climate changes in the region. In this project, the local authorities involved received training that increased their knowledge regarding data governance, the management of geographic information data infrastructures, and analytical capabilities to guarantee sustainability and resilience after the funding period is over. The most relevant and direct impact of the project was the capability of delivering a

platform, that can support the creation of new information products and services, both for politicians and technical staff, which has led to a change on how public interventions were designed and evaluated, improving efficiency in resources usage, leading to higher levels of wellbeing for people, and bigger opportunities for economic development.

Being true that at national level the impact is very significant, which is confirmed by the alignment of the approach with the national strategy for smart territories, and also by the fact that other CIMs have already engaged with NOVA Cidade – Urban Analytics Lab to apply the Smart Region model, Smart Region team is now also going international, since they are in the process of signing a cooperation agreement to take it to Brazil. This international recognition is also confirmed by the ESRI SAG Award that NOVA Cidade – Urban Analytics Lab is going to receive in ESRI Annual World Conference, in San Diego next July, an event that brings together more than 40 thousand people from all over the world and showcases what are the leading trends and success stories in the field. Altogether, based on a combination of business intelligence, data science and geographic information systems, Smart Region project empowered Oeste mayors to monitor, in real time, the territory dynamics and the impact of public policy interventions.



“The ‘Smart Region’ arises from the experience in building smart and sustainable cities gained by NOVA Cidade - Urban Analytics Lab in recent years, which allowed us to design a digital twin model capable of addressing the new challenges of territories and communities, and we tested it with unquestionable success in the Oeste region.”

Miguel de Castro Neto, the project coordinator and Director of NOVA IMS

Contributing to the improvement of the legal framework of Sexual and Gender-Based Violence in Portugal

Person responsible for the application:

Tatiana Morais

**NOVA School of Law
CEDIS**

Main Scientific Area:
Social Sciences and Humanities

Types of Impact:
Political and Legal

SDGs:
5, 10 and 16

SDGs Targets:
5.1, 5.2, 5.c, 10.3, 16.3

Survivors of Sexual Violence face diverse socio-legal obstacles and false myths, perpetuated by the legal narrative. Across two projects conducted over the last decade, Dr. Morais has undertaken cutting-edge, innovative research to forge a feminist progressive agenda. The research developed by Morais as a member of UMAR project (2012-2014) and in collaboration with and based on the expertise of members of APJM (2016) identified crucial findings: the need to expand the legal definition of sexual harassment; the need to encourage the companies to adopt a code of conduct to prevent sexual harassment in the workplace and establish a mechanism/procedure to receive and investigate complaints of sexual harassment; and the need to change the legal definition of rape which focused on violence instead of lack of consent, hence, perpetuating a patriarchal and misogynistic message which hindered the advancement of survivors' human rights and protection from sexual violence.

> Introduction of legal reform in the Portuguese Labour Code to address sexual harassment in the workplace through code of conduct adoption.

> Redefinition of stalking, sexual offences, and rape.

> Positive impact on survivors of sexual harassment and rape by providing them with greater protection.

During 2012-2014, Morais as a member of UMAR team developed a comparative legal study to examine the Canadian, Brazilian, French, Spanish, and Portuguese Labour and Penal Codes regarding sexual harassment under the project "Assédio Sexual: Quebrar Invisibilidades. Construir uma cultura de prevenção e de intervenção", which gave rise to a collection of data that provided evidence of the Portuguese legal framework's insufficiency towards the prevention and protection against sexual harassment in the workplace. Based on this evidence, recommendations and amendments to the Labour and Penal Code were drafted and part of them were included in the Law no 73/2017, 16/08, which established the need for employees to adopt a code of conduct to prevent and address sexual harassment in the workplace, and the Law no 83/2015, 05/08, which introduced stalking as an autonomous crime on the Portuguese Penal Code (Article 154-A) and expanded the definition of sexual offences (Article 178) to include some behaviours typically perceived as sexual harassment.

Additionally, in 2016, Morais developed an empirical socio-legal study under the supervision of Professor Teresa Beleza, with five semi-structured interviews with key informants (four of them members of APJM) and



systematic analysis of Court decisions, focusing on the legal definition of rape in the Portuguese penal code. The collection of the data enabled the development of a legal analysis regarding the Portuguese legislator decision related to the legal definition of rape and its impact on Court decisions as well on the patriarchal socio-legal message sent to the society. This study led to recommendations to foster legal reforms related to the legal definition of rape and the structure of Article 164 of the Portuguese Penal Code, while acknowledging that the lack of consent should be the primary requirement to consider a behaviour a rape. Part of these recommendations were included in the Law no 101/2019, 6/09.

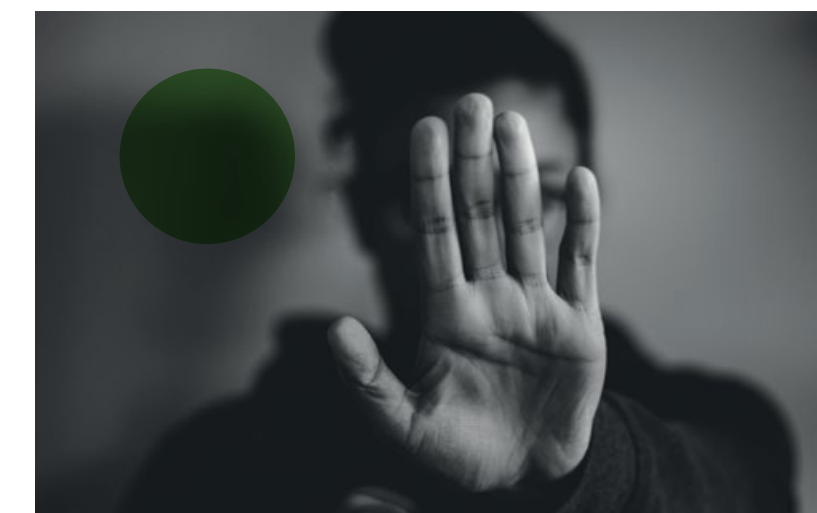
The reforms underpinned by Morais' research have a positive impact on survivors of sexual harassment and rape by providing them with greater protection, while fulfilling Portugal's international obligations under the Istanbul Convention. Furthermore, before the legal reform Portuguese authorities received 431 reports of rape cases (2019), while in 2022 the number of cases reported increased up to 519. Companies also benefit from the legal reform which foresees a legal mechanism to establish a code of conduct to prevent and address sexual harassment in the workplace, fostering a safer and healthier work environment. Findings stemming from both projects have been published in peer-reviewed journals and presented on II Congress CICOT 2013, Women's Human Rights Summit, Lisbon University, 2018 and on the European Feminist Research Conference, Gottingen University, 2018.

Research Impact Research Impact Narratives

Outstandingly, at a time of increasing awareness of Portugal's international obligations under the Istanbul Convention, the body of research developed by Dr. Morais as a member of UMAR project (2012-2014) and in collaboration with and based on the expertise of members of APJM (2016) has contributed directly to the meaningful improvement of the Portuguese legal framework to foster the advancement of human rights, in particular, protection against sexual and gender-based violence in Portugal.

"State-created categories matter. They determine who is included and excluded from legal protection, and which behaviours are considered a crime. However, the law per se is not enough; the law is just one element of a very complex socio-legal-economic-political message sent out to the society which ought to declare in unison that 'there is no room for Sexual and Gender-Based Violence in our society!'"

Tatiana Morais



Enhancing vector-borne disease research and control: the impact of VIASEF

Person responsible for the application:

Carla Alexandra Sousa

NOVA IHMT
Global Health and Tropical Medicine

Main Scientific Area:
Natural Sciences; Medical and Health Sciences

Types of Impact:
Academic; Educational; Health; Technological

SDGs:
3, 4, 9, 13 and 17

SDGs Targets:
3.3; 3.b; 3.c; 3.d; 4.b; 4.c; 9.5; 9.b; 13.1; 13.2; 13.3; 17.6; 17.7; 17.17

> VIASEF has made significant contributions to vector-borne disease research and control.

> Achievements include innovations like a bloodless mosquito diet and a spatial repellent for malaria control.

> VIASEF has improved disease surveillance, diagnostic tools, and knowledge transfer, improving public health and societal well-being.

VIASEF is a biocontainment infrastructure of Global Health and Tropical Medicine (GHTM) from NOVA IHMT, designed to facilitate research and development activities with invasive, exotic, or transgenic arthropods and human/animal pathogens transmitted by them that may pose biosecurity risks. VIASEF was designed to be a convertible infrastructure, able to address different types of public health emergencies. This was evidenced when, within the first six months of its inauguration, VIASEF focused its research on SARS-CoV-2, while establishing mosquito colonies of medical importance. Although in an early operational stage, VIASEF innovative research projects are laying the groundwork for innovation on vector-borne diseases and its control and have the potential to make an impact on public health outcomes, both locally and globally.

This infrastructure is involved in research projects focused on 1) the development of novel vector control strategies; 2) disease surveillance systems, facilitating early

detection and response to vector-borne diseases; and 3) sustainable vector control strategies. Remarkably, their research in innovative vector control strategies, within the framework of insecticides, repellents, and trapping methods have shown enhanced efficacy in reducing vector populations and disease transmission. Moreover, VIASEF has contributed for the testing of innovative compounds as mosquito repellents/ or larvicides and it is part of an innovative project led by the University of California Malaria Initiative (UCMI) in São Tomé and Príncipe, involving field research on malaria mosquito vectors and capacity building on transgenic technologies as a novel tool to eliminate malaria transmission in the region. Also, it is involved in developing an artificial diet (bloodless mosquito diet) as an alternative to vertebrate blood which is traditionally used to feed mosquitoes. This innovative approach is currently being tested in various African countries to assess its applicability and sustainability.

Furthermore, VIASEF acts as a hub for high education teaching through training programs, workshops, and collaborations with local communities and healthcare professionals, fostering knowledge transfer and capacity building. This has allowed individuals and institutions to effectively manage

vector-borne diseases, leading to improved prevention and control. The UCMI in São Tomé and Príncipe is an example of this, involving field research on malaria mosquito vectors and capacity building on transgenic technologies. This project not only enhances local capabilities in managing malaria but also facilitates the exchange of knowledge and expertise among partners. In addition, VIASEF provides an exceptional environment for the development of MSc and PhD theses. To date, VIASEF provided support to three MSc theses and is supporting two ongoing PhD theses. The findings originated from these theses have informed public health policies at both regional and national levels.

The impact achieved through VIASEF is a proof of their collaborative efforts, significant funding, partnerships with various stakeholders (academic institutions, public health agencies, community organizations, and industry partners) and dissemination through scientific publications and conferences.

Overall, VIASEF, the only one of its kind in Portugal, has changed vector-borne disease research and control, leading to significant advancements in vector control strategies, disease surveillance, diagnostics, and policy influence. Their work has had a far-reaching impact, supporting advanced training (MSc/PhD students), benefiting healthcare professionals, local communities, public health agencies, and policymakers at local, national, and international levels, ultimately contributing to improved public health and societal well-being.

“The potential for the next vector-borne pandemic is real. The research conducted in high-containment laboratories is crucial for preventing and mitigating future threats.”

Carla Sousa



Collaborative research spearheading Europe's fight against Energy Poverty

Person responsible for the application:

João Pedro Gouveia

**NOVA FCT
CENSE - Center for Environmental and
Sustainability Research & CHANGE -
Global Change and Sustainability Institute**

Main Scientific Area:
**Engineering and Technology Sciences;
Social Sciences**

Types of Impact:
**Academic; Economic; Educational;
Environmental; Political; Social**

SDGs:
1, 3, 7, 10, 11, 13 and 17

SDGTargets:
**1.1, 1.4, 3.9, 7.1, 7.3, 7.a, 10.2, 10.3, 11.1,
11.6, 13.2, 13.3, 17.6, 17.17**

Energy poverty (EP) is a complex and persistent scourge affecting well over 35 million Europeans, potentially reaching more than 100 million due to its multidimensionality. It is manifested by the inability to access adequate levels of energy services such as heating and cooling, resulting from low energy efficiency buildings, high energy prices, and low incomes. Working for its eradication, NOVA FCT team at the Energy Poverty Advisory Hub (EPAH) has conducted scientific research, technical work, and collaboration with expert partners to bring EP to the forefront and drive just energy transitions in Europe at a critical moment of climate and energy crisis, where energy systems' deep transformation is a top priority.

The NOVA team at EPAH has conducted rigorous research and analysis on more

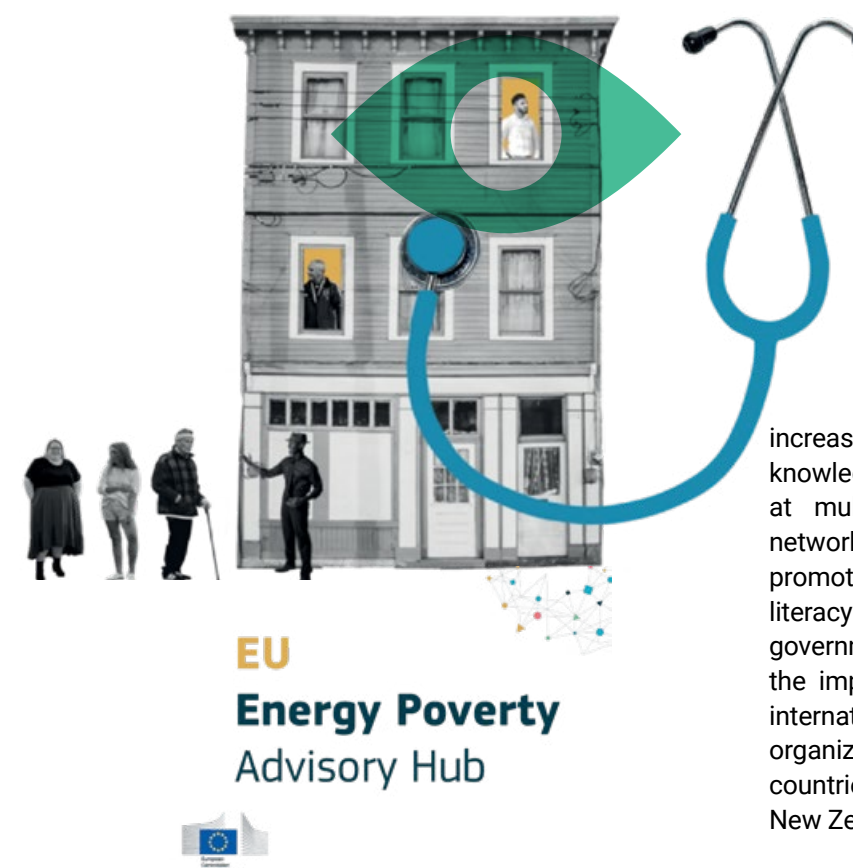
> Energy poverty affects over 35 million Europeans, leading to economic, environmental, and social consequences.

> The Energy Poverty Advisory Hub (EPAH), a European Commission initiative, aims to eradicate energy poverty through knowledge exchange and collaboration.

> NOVA's research team played a pivotal role in the project by providing resources on diagnosis, planning, education materials, and direct assistance to municipalities.

> Their work links scientific knowledge with practical actions, enhancing energy poverty literacy and promoting a sustainable and equitable energy transition.

than 30 EP indicators to improve diagnosis in the EU and at the national level for the 27 Member States and an additional 13 countries. These indicators and the respective analysis were displayed in a novel, user-friendly online dashboard to enhance awareness and knowledge among multiple agents and support policy development. The team also conducted a scientific review of about 50 regional EP indicators and data collection methods to draw valuable insights for local governments who aim to conduct EP diagnosis in their territory. Another key contribution by EPAH was the collection of worldwide examples of local-scale measures and projects to mitigate EP in 4 continents (Africa, Oceania, America, and Europe) in a unique global atlas with over 250 cases. The Atlas is continuously updated and a catalyst of change by spotlighting inspiring and innovative projects. These initiatives were analysed to identify 24 inspirational practices, e.g., buildings renovation, behavioural practices, and advice points to inform and guide stakeholders in their efforts to EP. Overall, EPAH online pages were visited over 95.000 times during the first half of 2023.



Various stakeholders have benefitted from the EPAH's contributions, including the European Union, national and local governments, civil society organizations, and, most importantly, citizens and communities affected by EP. NOVA team has directly given inputs to developing European EP recommendations and several national/regional EP strategies (e.g., Portugal). They have also played a role in creating guidelines for diagnosing EP at the local level through collaboration with the Covenant of Mayors, a network of over 10.000 municipalities in Europe, and supporting step-by-step guiding handbooks. They have also actively partnered with local experts from academia and the third sector as antennas in their respective countries to provide support and guidance to 53 local projects tackling EP across the EU in more than 12 countries with collaborative efforts from 85 local authorities, civil society organizations, and other local stakeholders, and experts.

The impact achieved by EPAH is a direct result of the extensive research work performed by the NOVA team, which culminated in three valuable scientific reports downloaded over 1,500 times, educational materials and online tools (e.g. two online courses) that have been viewed, and used by over 6,000 persons to drive the aimed transformation – 1)

Research Impact
Research Impact Narratives

increase awareness of EP; 2) improve knowledge of EP diagnosis and planning at multiple scales; 3) form stakeholder networks for increased cooperation; 4) promote community empowerment and literacy improvement; and 5) support of local governments and initiatives. Furthermore, the impact of EPAH extends from local to international levels, with collaboration with organizations and individuals from various countries, including the USA, Mexico, and New Zealand.

In a nutshell, the EPAH's research initiatives and outputs have played an essential role in promoting EP on the energy policy landscape in the EU, moving from data to knowledge to action, fostering communities' empowerment, sustainable energy practices, and EP reduction. Meaningfully, the work developed promotes social justice, quality of life, and environmental protection, paving the way for a more sustainable and equitable energy future!

“To combat energy poverty is not only a moral imperative; it is a strategic necessity for our collective future and a fundamental pillar of public policies aligned with energy transition and decarbonization. Furthermore, the journey to eradicate energy poverty should involve collaborative efforts from politicians, local entities, universities and research centers, private companies, and NGOs in order to create synergies and amplify the impact.”

João Pedro Gouveia

Whales Around Us. Environmental History and Blue Humanities for new narratives on oceans, people and other animals

Person responsible for the application:

Nina Vieira

NOVA FCSH
CHAM – Centre for the Humanities

Main Scientific Area:
Humanities

Types of Impact:
Academic; Cultural; Educational; Environmental; Social

SDGs:
4,11 and 14

SDGs Targets:
4.4, 4.7, 11.4, 14.1, 14a

> Recovering histories of whaling and of whales, through written documents and material remains, has impacted on how people relate to the sea and non-human life.

> Under the ERC Synergy Grant 4-OCEANS, two significant projects were undertaken: 'The Whale in Atouguia' in March 2023, and the Massive Open Online Course 'Whale Hunting and the Portuguese' in December 2022."

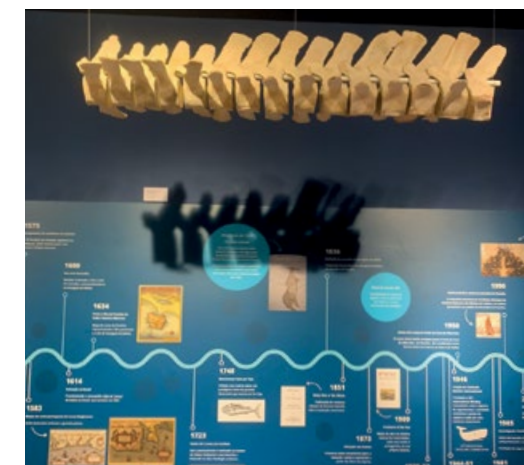
In Atouguia da Baleia, the whale is a founding myth perpetuated in the name of a town that was an important maritime and fishing Portuguese medieval port and that is now five kilometres from the coast. The whale is part of the collective identity, memory, and imaginary of its inhabitants. Remains of these ancient whales resurface and reach our days through bones that are now being found with intriguing regularity in the village and in the municipality of Peniche. Whaling on this coast is witnessed in historical documents from medieval and modern times and the animal itself has been a creative inspiration and an element of construction of knowledge about the natural world. Both in Portugal mainland as within the context of the Portuguese Expansion overseas, whaling was conducted along centuries with strong impacts on the natural populations of North and South Atlantic, not to say at a global level.

The research work of Nina Vieira and Cristina Brito, researchers from CHAM – the Centre for the Humanities of NOVA FCSH, respond to social and environmental questions and contributed to cultural and natural heritage preservation. It evokes regional and national changes by rescuing collective memory about an activity (whaling) and an animal (whales), through the study of history and material remains. Together with the technicians of the municipality of Peniche, the researchers have been collecting and analysing historical data for the last two decades, conducting new archive research for novel documentary materials about whaling in the village and in Portugal mainland. Together, the researchers understand that everything about the whale must be preserved – stories of its past, material traces for the future and the species that inhabit the ocean in the present while still recovering from interactions with people. Under the funding of the ERC Synergy Grant 4-Oceans, so far, the only one for the Humanities in Portugal, the researchers have been developing narratives about human and non-human historical realities that were materialized

in the two initiatives, the exhibition 'The Whale in Atouguia' and the open access online course (MOOC) 'Whale hunting and the Portuguese'.

The research team was invited to participate in the research and curatorship process of the exhibition launched on March 31st, 2023, at Centro Interpretativo de Atouguia da Baleia. Outstandingly, up to 15 June it had already 1709 visitors! During that period, more than 20 visits organised by Raquel Janerinho and accompanied by municipal technicians and/or researchers from NOVA FCSH were organised. Additionally, the MOOC, led by Gonalo Melo da Silva, researcher of IEM, was launched on December 13th, 2022, and run until May 31st. During that period, 453 participants from 10 different countries were counted. Both activities aimed not only the public at large but also scholars and teachers, and professionals linked to heritage management, whale watching and other creative industries. Transfer of knowledge about the long-lasting relationships between humans and marine animals, collaboration with communities through whale bones' identification, sharing oral histories, and actions of safeguarding the oceans' cultural and natural heritage were promoted. Similarly, the exhibition and the MOOC assumed environmental drivers as relevant as economic, social and political ones, addressed marine concerns in relation to past extinctions and the degradation of habitats, and advocated the ocean literacy. As such, societal changes are expected – a more informed society at local, national, and international levels; one that is sensible to current day environmental and climate challenges, and to the conservation of natural populations; one that values the importance of history, heritage, and memory.

Overall, understanding the role of people and whales, and their entangled interactions, shows the direct contribution of the Humanities (and, particularly, History) to the current global environmental challenges. Through the researchers personal and scientific lens, people and whales are seen as co-protagonists of historical narratives and of ecological processes, reinforcing the importance of these animals for the regional identity and culture.



Photographs taken in the exhibition at the "A Baleia em Atouguia".



The photograph Whale bone wall Atouguia was kindly provided by the Museological Network – Municipality of Peniche.

“ – What is the first word that comes to your mind when you think of WHALE? – My grandfather's backyard.”

Anonymous visitor of the exhibition 'A Baleia em Atouguia'

Knowing underwater cultural heritage for its preservation, management and dissemination

Person responsible for the application:

Patrícia Carvalho

NOVA FCSH
CHAM – Centre for the Humanities

Main Scientific Area:
Humanities

Types of Impact:
Academic, Cultural and Political

SDGs:
11, 14 and 17

SDGs Targets:
11.4, 14.5 14.7, 14.c, 17.6

> Global underwater cultural heritage faces challenges as salvage companies explore and sell artifacts, leading to dispersed collections, unknown excavation contexts, and the loss of history and heritage.

> The CONCHA Project in Cape Verde manages underwater heritage, advancing shipwreck research, supporting UNESCO ratification, collaborating with authorities, and raising local awareness.

Cape Verde, an archipelago with 10 islands located in the Atlantic Ocean, was one of the Atlantic ports of call for the ships on the routes between Africa, Europe and America and a major slave entrepot between the 15th and 18th centuries. This strategic position resulted in an important and diverse underwater archaeological record, with several shipwrecks from different historical periods lost around the islands. Only accessible by ship until the 20th century, the recording and study of the underwater cultural heritage (UCH) of Cape Verde constituted a major source for the study of the occupation and development of the archipelago.

In 2018 started the project “CONCHA: The construction of early modern global Cities and oceanic networks in the Atlantic: An approach via Ocean’s Cultural Heritage”, with NOVA FCSH as coordinator, Cultural Heritage Management Institute of Cape Verde (IPC), and EVEHA International consortium partners. The project aimed to study the development of port cities around

the Atlantic. Different stages of navigation in the Atlantic were represented by archaeological artifacts in National Archaeological Museum: pottery vessels, navigation instruments, weapons, cargo containers, elephant tusks, pocket watches, among other artifacts. Despite this diversity, IPC lacked georeferenced location of the explored archaeological sites, and their current preservation conditions – fundamental information for managing UCH. After CONCHA, three underwater archaeological sites were relocated and surveyed. The documentation of the sites launched the basis for the construction of a georeferenced inventory of Cape Verde UCH, an essential managing instrument for adopting protective and monitoring measures towards the preservation of this heritage. Site recording was made through photogrammetry, based on the systematic and extensive photo coverage of the remains (2418 photographs in Cidade Velha, 2078 photographs in São Francisco Wreck, and 1742 photographs in Urânia wreck). This method has a large potential that goes beyond research, allowing mapping; dissemination on digital interfaces; support to visitation itineraries for economic and touristic development; and data comparison from periodical monitorization to assess their evolution and determine risk of loss or menace by environmental factors or human actions.

Research results of the surveys allowed the identification of the remains of one wooden vessel in Cidade Velha anchorage site, previously unknown, and two areas with coherent groups of archaeological remains that suggest different archaeological deposits. Also, the initial study of São Francisco wreck and artefacts suggest a ship from Spanish origin involved in the Atlantic slave trade and the deposition model of Urânia remains allowed to new interpretations about the wrecking.

CONCHA project has contributed for 1) supporting the creation of management tool for Cape Verde UCH, 2) the development of shipwreck and anchorage sites knowledge and research, 3) supporting Cape Verde ratification of the UNESCO Convention on the Protection of Underwater Cultural Heritage, engaging with maritime authorities, and raising awareness activities with local schools, reaching about 100 students, and the community to engage with the protection of underwater heritage. Moreover, at an international level, the project results contributed to the increase of knowledge about the ships that landed Cape Verde, important in comparative studies with other Atlantic islands.



Photo of the activity – Suzilene Andrade (IPC)
Underwater photo – José Bettencourt (NOVA FCSH-CHAM)

Research Impact Research Impact Narratives

The impact and the changes obtained by CONCHA project resulted from a joint effort among NOVA FCSH, IPC and EVEHA, with the support of National Coast Guard and Maritime Police during the field surveys, and Emanuel Charles de Oliveira, a well-known local and international supporter of Cape Verde UCH that shared its knowledge and experience about the archaeological sites. The research impact started in Academic forums and has been developed until 2023. To sum up, CONCHA actions supported the recognition of Cape Verde UCH importance, safeguard with legal instruments, and engage with of local communities in its protection.

“The beautiful task of making the inhabitants of the planet aware that what we call Earth is, fundamentally, Water”

Juan Marchena Fernández
Full Professor on Universidad Pablo de Olavide de Sevilla



Archaeology research changes attitudes towards the past and improves local heritage management

Person responsible for the application:

Sara Prata

NOVA FCSH
Institute for Medieval Studies (IEM)

Main Scientific Area:
Social Sciences and Humanities

Types of Impact:
Academic, Cultural, Educational, Social

SDGs:
4, 5, 11 and 15

SDGs Targets:
4.4, 4.5, 4.7, 5.5, 11.4, 11a, 15.4

The Early Middle Ages, the time after the dismantlement of the Western Roman Empire and before the formation of the Portuguese Kingdom, is still one of the least known periods in History. Written sources are scarce, and they mostly reveal dynamics occurring in urban areas, the main stages for political powers. To understand what was happening in the countryside, research needs to look into material remains. Sara Prata, an archaeologist in the Institute for Medieval Studies (IEM – NOVA FCSH), focuses her research on early medieval rural landscapes (5th to 8th centuries). In 2014, she promoted a Scientific Cooperation protocol between NOVA FCSH and the Municipality of Castelo de Vide, which allowed her to carry out numerous fieldworks and gather a large set of empirical data. This is now one of the territories of the Iberian Peninsula for which there is a greater amount of quality information concerning early medieval rural settlements.

> Archaeological works in Castelo de Vide revealed an intricate network of early medieval farmsteads.

> Sara Prata's research considers the needs and interests of the local community, promoting discussions and outreach activities which make archaeological findings accessible to non-specialized audiences and creating links between past and present.

Archaeological works in Castelo de Vide revealed an intricate network of early medieval farmsteads. These helped to understand how rural communities could have persisted, particularly in peripheral areas, after the Roman administration ceased to function. Many large Roman villas, which reflected a centralized production model, were abandoned, or transformed, and new smaller settlements developed, evidence of a shift in production scale, but also in social and economic relationships. Products that previously would have been made in professional workshops (i.e. ceramics for everyday use) were now fabricated at the household level. Such findings proved the resilience of local communities in the countryside. This findings allowed to shift the attention from traditional historical narratives, focused on a limited number of key players and locations, and inquire about the daily lives of rural families and communities. This promotes a truly inclusive approach to the past, which considers all members of society and questions how social groups traditionally considered subaltern, such as peasants, could truly reshape landscapes in times of uncertainty.



Photo Credits: Sara Prata

Sara Prata's research considers the needs and interests of the local community, promoting discussions and outreach activities which make archaeological findings accessible to non-specialized audiences. She is committed to teach the next generation of archaeologists, fostering training opportunities within her research.

Research Impact Research Impact Narratives

The outcomes of this approach are clear. 1) Heritage awareness – by excavations that exposed the ruins of small family-owned farmsteads, reinforcing the relevance of archaeological remains and creating links between past and present. 2) Outreach and tourism – with open days at the excavations promoted every season, where visitors were given a tour of the site and learned about the ongoing research. Over the years, about 50 visitors came, and 10 people participated in the excavation and associated tasks. Additionally, 6 offseason archaeological guided tours were offered. Lectures and open classes about archaeology were held in the village, 17 in total, hosting over 200 participants over the years. Also, 3 archaeology exhibitions were organized, showcasing photographs, drawings, and artifacts, receiving an estimate of 500 visitors. 3) Heritage management – with the project Nova Carta Arqueológica do território de Castelo de Vide commissioned by the Municipality, which reflects the impact of academic research in the development of Heritage managing tools such as: an open access database with a cartographic project, a tool designed to handle, protect, and communicate archaeological remains thoroughly; and a science book aimed at the general reader. 4) Education and training – with over 50 vacancies for hands-on training offered to BA, MA, and PhD students, from NOVA University Lisbon and several other European institutions, as well as 2 MA dissertations and 1 PhD thesis carried within this research.

Exceptionally, Sara Prata's research is a true example of "Think global, act local". She has showed how decentralized research can build bridges between universities and local governments, and how students, farmers, tourists, municipal workers, administrators, and researchers can be brought together to rethink the role of past societies.

Tackling Antibiotic Resistance: Insights from a Triple ERC Grant Awardee

Mariana Gomes de Pinho
Microbiologist and Researcher



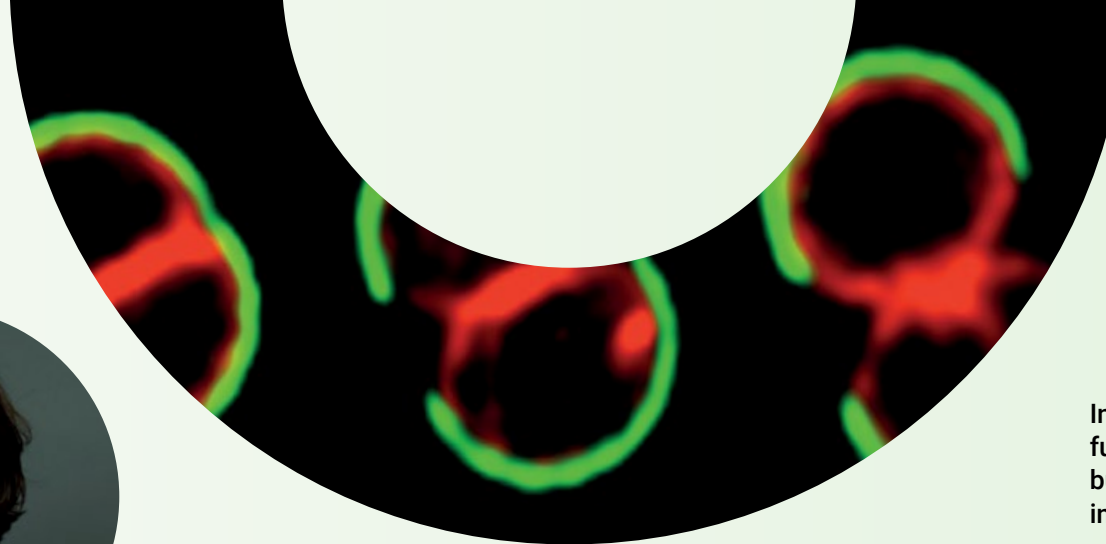
ITQB NOVA Researcher Mariana Gomes de Pinho has won an ERC Advanced Grant in 2023. The 3M€ funding will be invested in one of the most significant health problems of our time: antibiotic resistance. This is the third time Mariana Pinho has been selected by the European Research Council, ensuring continuous funding since 2013, in a total of 7M€ distributed by three grants, highlighting the importance of this critical global challenge.

Can you start by telling us a bit about yourself and your academic background?

*I studied Applied Chemistry at the NOVA School of Science and Technology (FCT). There I met Prof. Hermínia de Lencastre who introduced me to the extremely relevant field of antibiotic resistance. So I joined her and Prof. Alexander Tomasz, at the Rockefeller University in New York, for a PhD in that area. When I was finishing my PhD, the field of bacterial cell biology was emerging as an exciting area of research. I decided I wanted to bring a new cell biology approach to the study of antibiotic resistance, and joined the group of Prof. Jeff Errington at the University of Oxford, one of the few groups in Europe at the time working on bacterial cell biology. Four years later, I returned to Portugal and established my own research group at ITQB-NOVA, where we study how the bacterial pathogen *Staphylococcus aureus* grows and divides, as well as how it resists various antibiotics, using advanced microscopy techniques.*

Congratulations on receiving the three different types of ERC grants – Starting Grant (StG), Consolidator Grant (ConG), and Advanced Grant (AdvG). ERC grants often support cutting-edge, innovative research. Can you discuss some of the key discoveries or advancements that have emerged from your work funded by these grants?

*Thanks to the ERC Starting and Consolidator grants, we've been able to make significant progress in understanding the cell cycle of *Staphylococcus aureus*. We were able to explore some essential questions, such as how the division machinery assembles, how chromosomes are accurately segregated or how cell wall synthesis takes place in this bacterium. However, the research done under ERC funding goes beyond these fundamental aspects. We are equally committed to applying the knowledge and tools acquired from these studies to better understand how *S. aureus* resists different antibiotics and how new antimicrobial molecules can effectively combat these bacteria. This is particularly important given that *S. aureus* is currently one of the major causes of death by antibiotic resistant infections.*



The cell cycle of *Staphylococcus aureus*

S. aureus COL cells were labelled with periplasmic cell wall dye WGA-488 (green), washed, stained with membrane dye Nile Red and grown on the microscope slide.

Can you explain how these grants have contributed to your research career and the research landscape at NOVA University Lisbon?

ERC grants can truly be a game-changer for your career. Not only do they provide substantial funding to pursue your research goals with all the necessary resources, allowing you to be internationally competitive, but they are also considered a "quality stamp." This is especially crucial when you're starting to build your research group and need international visibility to succeed. Additionally, ERC grants have a 5-year timeline, instead of the 3-year duration of many other grants. This longer timeframe is much more compatible with the true pace of scientific research. It allows you to focus on the actual research work, rather than constantly writing grant applications every other year. And, perhaps most importantly, it provides the financial resources and recognition needed to assemble a strong research team, which is critical to conduct cutting-edge scientific research.

Collaboration and teamwork often play a vital role in research projects. Could you tell us about any collaborations or partnerships that have been instrumental and impactful to your work along the years?

The most important partnership for my career has been with my husband. He is also a scientist, so he fully understands not only the science but also the demands of our job. Without him, it would not be possible to raise three daughters and maintain a competitive lab. But if we speak of work partnerships, I agree that having a strong network of colleagues all over the world with whom you can exchange ideas and collaborate in areas outside your expertise is crucial.

Research Impact INTERVIEW

In your opinion, what is the significance of ERC funding not only for individual researchers but also for the broader scientific community in Portugal and Europe?

The mission of the ERC is to support investigator-driven frontier research, based only on scientific excellence. So it really allows individual researchers to explore their innovative ideas, and conduct high-risk, high-reward projects, without some of the constraints associated with other funding sources. This helps to accelerate science and retain talent in Europe and is particularly important in countries like Portugal where there are no national grants of similar values.

Finally, your achievement of receiving all three ERC grants is quite unique in Portugal. What advice would you give to young researchers, especially women, who aspire to achieve excellence in their fields and pursue competitive research grants like the ERC?

My main advice would be this: if you believe you have a good idea (that's essential), don't be afraid to try. I think many people are hesitant to try because they are afraid to fail. Or, in the case of many women, because they think they are not as good as the competition. However, the worst that can happen is that you remain in the same situation as you are now. I failed before I got the ERC Starting and learned from it. Hopefully the time invested in preparing an ERC proposal will lead to securing the grant. But even if that does not happen, you'll be in a better position to apply for other funding sources or to the ERC again. From a more practical standpoint, I would say – think thoroughly about what you want to do, about what you are truly passionate about. Then block enough time in your calendar to write a well-structured proposal. Writing an effective proposal requires time and multiple revisions to make it perfect. Your proposal must persuade the experts (the reviewers) but, even before that, it must appeal to the panel members who may not come from your specific field. Therefore, write in a way that any scientist can understand.

Collaborative R&D Agendas for Business Innovation

NOVA University Lisbon is playing an important role in Portugal’s ambitious Recovery and Resilience Plan (PRR). This nationwide initiative, spanning until 2026, is a comprehensive program geared towards instigating profound reforms and strategic investments. The ultimate aim is to stimulate sustained economic growth and foster closer alignment with Europe’s trajectory over the next decade. Central to the PRR’s philosophy is a deep-rooted commitment to sustainability, drawing inspiration from the United Nations Sustainable Development Goals (SDGs), which is also completely aligned with NOVA’s vision.

The PRR is organized into three overarching dimensions: Resilience, Climate Change, and Digital Transition. As of October 2023, NOVA has already secured around 65 million euros under all dimensions of the PRR, including for teaching, R&D, social services or infrastructure projects or initiatives.

In this section, we spotlight NOVA’s notable engagement in R&D and innovation projects (Agendas Mobilizadoras) within the Resilience dimension of the PRR. Specifically, we delve into NOVA’s Research Units active involvement in the Capitalisation and Business Innovation component (C5), one of the nine pivotal components within this dimension. This area not only represents a significant portion of NOVA’s participation but also commands half of the total funding secured under PRR, reinforcing the University commitment to accelerate technology transfer and its contribution towards a knowledge-based economy.

INCREASING THE COMPETITIVENESS AND RESILIENCE OF THE PORTU- GUESE ECONOMY BASED ON R&D AND INNOVATION

NOVA is actively participating in 19 projects under the Capitalisation and Business Innovation (C5) component in areas as diverse as Bioeconomy, Health, Agriculture, Energy, Tourism, Space, Mobility, ICT or Production Technologies. These projects involve dozens of partner institutions, including companies, research entities, government bodies, and social sector organizations, with a total funding of 32.8 million euros. The primary goal of the C5 component is to enhance Portugal’s economic competitiveness through research and development (R&D), innovation, diversification, and specialization in productive structures.

These projects are set to unfold over the coming years and exemplify NOVA’s unwavering commitment to boosting Portugal’s economic competitiveness through R&D and innovation. The University’s extensive involvement underscores its readiness to make a substantial impact, driving progress in various sectors and ultimately leading to increased productivity, technological advancements, and the development of high-value products and services. In doing so, NOVA is poised to elevate Portugal’s global competitiveness and economic resilience, contributing to positioning the country as a pioneer in innovation and sustainable development on both European and global stages.

Project Acronym	Project Title	Scientific Domain	Academic Unit(s) involved	Total Funding for NOVA
+ValorCer	<i>Valuing the organization of cereal production in Portugal</i>	Agriculture and Forestry	NOVA IMS, NOVA FCSH, NOVA SBE	€ 256 503
Agri-Plast	<i>Organization of Production and Innovation for the Reduction of Agricultural Plastics</i>	Agriculture and Forestry	NOVA FCT ITQB NOVA	€ 745 207
Agricultura 4.0	<i>Agriculture 4.0 - Augmented Agriculture and Sustainability</i>	Agriculture and Forestry	NOVA IMS	€ 288 010
Transform	<i>Digital Transformation of the Forestry Sector for a Resilient and Low-Carbon Economy</i>	Agriculture and Forestry	NOVA FCT	€ 689 346
Neuraspace	<i>Neuraspace - AI Fights Space Debris</i>	Automobile, Aeronautics, and Space	NOVA FCT	€ 801 262
New Space	<i>Agenda New Space Portugal</i>	Automobile, Aeronautics, and Space	NOVA SBE	€ 678 505
Bio-economia Azul	<i>Pact for the Blue Bioeconomy</i>	Bioeconomy	NOVA FCT, ITQB NOVA, NMS, NSL	€ 2 970 182
BE@T	<i>Bioeconomy for Textiles and Apparel to Strengthen the National Bioeconomy</i>	Bioeconomy	NOVA FCT	€ 329 993
M-ECO2	<i>Industrial cluster for advanced biofuel production</i>	Energy	NOVA FCT	€ 2 180 000
HfPT	<i>HfPT - Health from Portugal</i>	Health	NOVA FCT	€ 282 614
Blockchain.pt	<i>Decentralize Portugal with Blockchain</i>	Information and Communication Technologies	NOVA SBE NOVA IMS	€ 4 249 314
Drivolution	<i>Transition to the Factory of the Future</i>	Production Technologies and Process Industries	NOVA FCT	€ 1 712 585
NGS	<i>New Generation Storage</i>	Production Technologies and Process Industries	NOVA FCT	€ 3 369 293
F2F	<i>Fossil to Forest (F2F)</i>	Production Technologies and Product Industries	NOVA FCT	€ 1 114 065
InsectEra	<i>InsectEra - The Era of the Insect Industry</i>	Production Technologies and Product Industries	NOVA FCT	€ 1 202 883
PRODUTECH R3	<i>Mobilizing Agenda for the Production Technologies Sector for Reindustrialization</i>	Production Technologies and Product Industries	NOVA FCT	€ 483 608
R2UTechnologies	<i>R2U - Technologies Modular Systems</i>	Production Technologies and Product Industries	NOVA FCT	€ 1 831 728
STONE	<i>Sustainable Stone by Portugal</i>	Raw Materials and Materials	NOVA FCT	€ 951 055
ATT	<i>ATT Agenda - Accelerate and Transform Tourism</i>	Tourism	NMS, NOVA SBE NOVA IMS	€ 6 758 480
BE.Neutral	<i>Mobility Agenda for Carbon Neutrality in Cities</i>	Transports, Mobility and Logistics	NOVA FCT	€ 2 210 497

Interdisciplinary Research

This chapter explores the exciting world of interdisciplinary research, showcasing the diverse platforms within NOVA University Lisbon where this dynamic exchange of knowledge thrives. It also introduces a new strategic platform (NIMSB) and an emerging interdisciplinary research community on Sustainable Energy Systems, demonstrating how these collaborative efforts are shaping the future of research and innovation.

**NOVA Institute for Medical
Systems Biology**

44

**NOVA Interdisciplinary Research Community
in Sustainable Energy Systems**

48

NOVA Interdisciplinary Platforms

50

NOVA

Institute for Medical Systems Biology

NOVA UNIVERSITY
LISBON

The NOVA Institute for Medical Systems Biology (NIMSB) is the latest strategic platform of NOVA. NIMSB is a partnership between the NOVA University Lisbon and the Max Delbrück Center for Molecular Medicine (Berlin, Germany) supported by the European Union (Teaming for Excellence – Horizon Europe), the Portuguese Government and the Municipality of Oeiras. NIMSB was awarded a total funding of 32.75M€, of which 15M€ come from European funding (Horizon Europe), 15M€ from national government co-financing, and 2.75M€ from FCT, I.P. The project will have a duration of 6 years and has just started in September 2023. This is the first Teaming project coordinated by NOVA, having Professor António Jacinto from NOVA Medical School as its principal project coordinator.

NOVA

Institute for Medical Systems Biology

NOVA UNIVERSITY
LISBON

Precision Medicine

Artificial Intelligence, Single Cell Omics, Organ on a Chip

Could you please start by telling us a bit about your background and the reasons that led you to apply for a teaming opportunity?

This project has its roots in NOVA Health, the NOVA University interdisciplinary platform, which was created to promote research and innovation on health topics involving multiple NOVA faculties and institutes and associated healthcare units. In 2018, Prof. José Fragata, at the time coordinator of NOVA Health, promoted discussions, involving several NOVA Academic Units, to drive joint efforts in topics related to Precision Medicine. The application of emergent technologies to develop new Precision Medicine approaches was identified as a potential unifying topic, bringing together biomedical researchers, medical doctors, healthcare specialists, engineers, and information technologists. The next step was looking for funding and partnerships to develop this concept. The Horizon Europe – Teaming for Excellence programme was selected as a promising funding source. We started preparing the application for this call more than two years ago, and it is only now, in 2023, that we are starting the implementation. It takes perseverance and time to make ambitious projects like this happen.

Can you please provide us with an overview of the NIMSB project and its main objectives?

The NOVA Institute for Medical Systems Biology (NIMSB), which will be located in Oeiras, aims to be a leading international centre of excellence in the development, integration and application of state-of-the-art systems biology approaches to medical and biomedical research and innovation. This new research centre will use emergent single-cell and spatial omics technologies, together with human derived micro-physiological systems, and Artificial Intelligence methods to study disease mechanisms and to develop early diagnostics and advanced therapeutic solutions to deliver Precision Medicine to patients. In the long run, we expect that the NIMSB will contribute to improve the quality of life and to reduce mortality, to train a new generation of researchers and health care professionals in advanced digital-transformation technologies, and to have a positive impact on the economy and in the society.

The NIMSB project involves a collaboration between NOVA University Lisbon and the Max Delbrück Center for Molecular Medicine (MDC). Could you elaborate on the nature of this partnership and how it came to be?

The Teaming for Excellence programme requires a partnership with a leading research institution in Europe. The Max Delbrück Center (MDC), in Berlin,

was identified as the ideal partner not only because it is an excellent biomedical institution, but also because it has established within its scope a new research institute that is based on the same concepts that we wanted to base the new project in Portugal: the Berlin Institute for Molecular Systems Biology (BIMSB). The NIMSB is inspired by the BIMSB not only in the name, but also in the application of systems biology approaches to medical research challenges. The initial contacts between NOVA and MDC were followed by great enthusiasm from the MDC leadership to participate in the project. The MDC has been extremely supportive at all phases of the process, and it will also be crucial for the implementation, helping to set-up advanced technologies in the NIMSB, increasing the NIMSB international visibility, and collaborating in research projects, scientific exchange, training and joint educational programs.

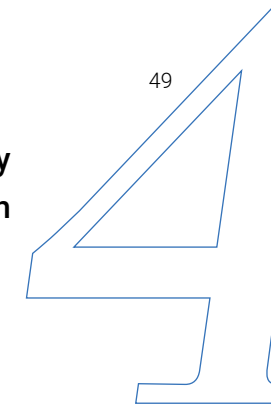
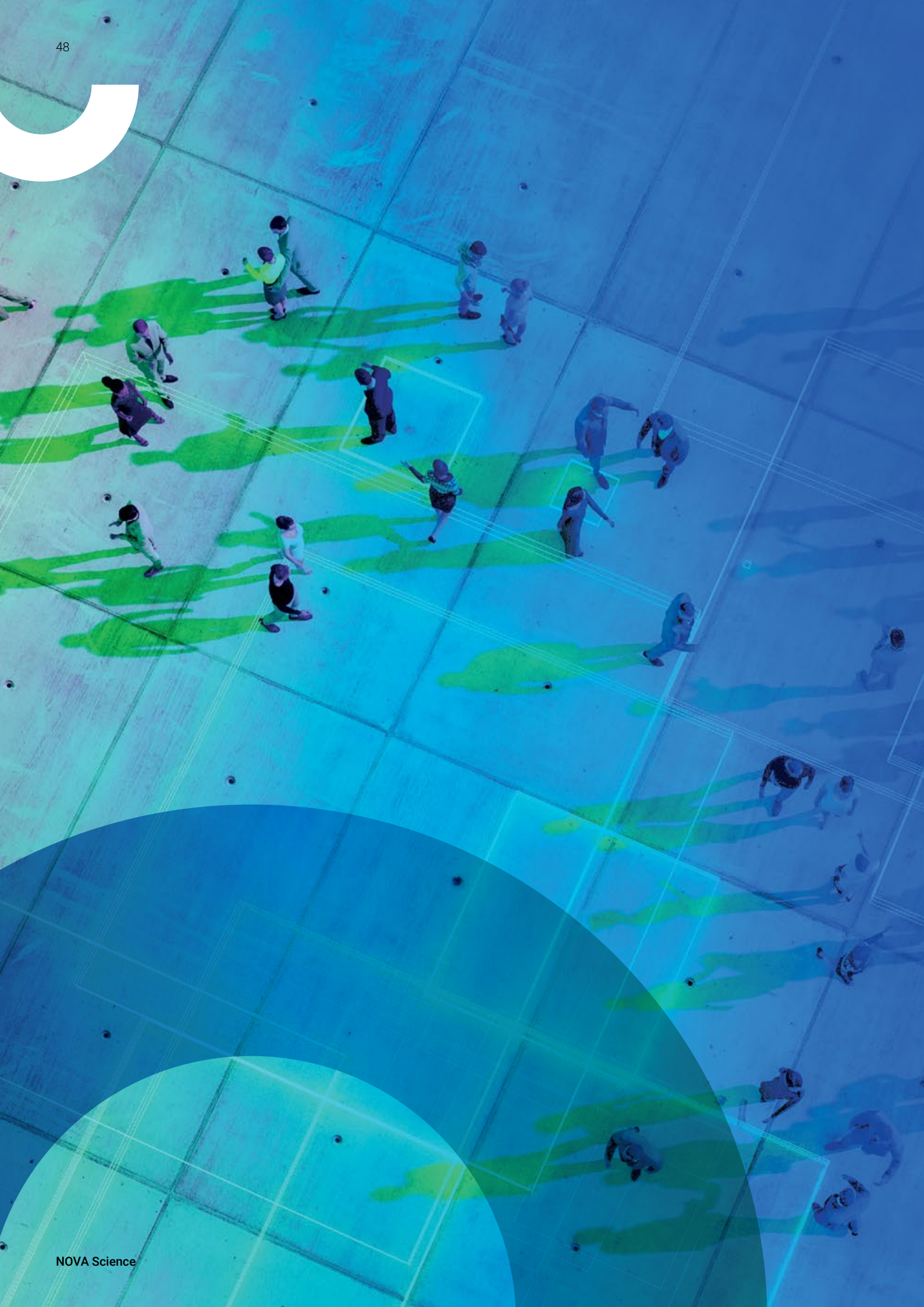
How do you envision the NIMSB project impacting NOVA University Lisbon in terms of research capabilities, academic programs, and the overall scientific landscape?

I expect that the NIMSB will have a very significant impact. Research facilities and technologies that do not exist yet at NOVA will be accessible to all NOVA researchers, providing the opportunity for NOVA research groups to collaborate more and to carry out projects that are more ambitious and have more impact than what is possible today. There will be an opportunity to expand exiting Master's programmes and to create PhD programmes specialized in systems biology applied to medicine. We envisage that all NIMSB contributions to educational programs will be developed in collaboration with NIMSB NOVA Organic Units (UOs). Overall, I anticipate that the scientific impact will be felt in the production of more interdisciplinary research at NOVA, with the use of more advanced computational methods, with a strong emphasis on research addressing human health problems. I also expect NIMSB to stimulate more collaboration between UOs and at the international level, increasing NOVA's visibility and competitiveness.

Precision medicine has the potential to revolutionize healthcare and is the key focus of the NIMSB project. Can you explain how the NIMSB project intends to contribute to this field, and what are the expected societal benefits for the local community and beyond?

The research focus on early disease detection, creating physiologically relevant patient-derived disease models, and discovering and validating novel therapeutic strategies. We want to answer questions such as: Which is the first type of cell that becomes diseased within a complex organ? What are the molecules and pathways that first become deregulated as cells deviate from health? Discovering the causative changes that occur at the onset of disease will reveal the vulnerabilities that should be targeted by pharmacological, biological or cellular therapies. This will create unforeseen opportunities for new therapies to stop disease, as early as possible, tailored made for each individual, and acting even before irreparable damage occurs. These therapies will be tested and validated in advanced patient-derived disease models, such as organoids and organ-on-a-chip, and their response to treatment characterized using single-cell approaches that will inform AI-driven predictive tools. Ultimately, we expect that the NIMSB technology and research capacity together with the experience in clinical research of our healthcare partners will lead to a real impact in Precision Medicine: better stratification of patients and more precise treatments, leading to improved quality of life and less mortality. NIMSB is also strongly committed to play an important part in the local innovation ecosystem, fuelling the growing biotech and IT sectors, creating jobs, and contributing to regional and national socioeconomic development.

Interdisciplinary
Research
INTERVIEW



NOVA Interdisciplinary Research Communities

**Sustainable
Energy
Systems**

Amidst a landscape of challenges and possibilities, NOVA is launching its first Interdisciplinary Research Community (NIRC) under the theme of **Sustainable Energy Systems**.

The rationale behind focusing on **Sustainable Energy Systems** is underscored by the complex issues dominating contemporary global energy dialogues. It is a response to the imperatives of the European Green Deal and the Mission Climate, as decarbonizing the EU's energy infrastructure is imperative for meeting the 2030 climate objectives and achieving carbon neutrality by 2050. Moreover, the research community is glimpsing beyond 2050, envisioning carbon-positive energy systems that actively remove carbon dioxide from the atmosphere.

Recognizing the pivotal role of energy system transformation in achieving Sustainable Development Goals, NOVA advocates for the necessity of technological innovation, novel policy frameworks that engage diverse stakeholders, inventive financing models to meet substantial investment requirements, and social agreements to embrace innovation at economically viable costs. The interdisciplinary approach is deemed crucial, spanning areas such as efficient energy utilization, mobility, buildings, centralized and decentralized energy production, energy harvesting, storage, and more, integrating technological, socio-economic, regulatory, and political facets.

The **NOVA Interdisciplinary Research Community (NIRC) in Sustainable Energy Systems** envisions a future where energy is sustainable for all. This community aspires to unite individuals affiliated with NOVA across diverse academic disciplines, fostering collaboration to confront the intricacies of energy systems. By consolidating "energy-related researchers" into a cohesive community, NOVA aims to encourage systemic thinking and holistic approaches to complexity. The inclusion of NOVA students in specific programs and events further enhances the interdisciplinary nature of this initiative. This NIRC is supported by Galp.

The overarching goal of this endeavor is to propel interdisciplinary research in **Sustainable Energy Systems** through concrete programs and initiatives, nurturing a collaborative mindset, and supporting research and innovation opportunities. It also aims to contribute to the formulation of new public policies in the energy domain. The Interdisciplinary Research Community on Sustainable Energy Systems stands as a testament to NOVA's commitment to sustainability, bringing together experts from diverse academic backgrounds to unravel the intricacies of energy systems. The collaboration with Galp adds strength to this collective pursuit of a sustainable energy future.

NOVA

Art & Technology

NOVA UNIVERSITY
LISBON

Two schools of NOVA – the School of Science and Technology (FCT) and the School of Social Sciences and Humanities (FCSH) – formed a joint venture to create the Institute of Art and Technology (NOVA IAT), working together to foster art-based research and research-based art in different creative fields. NOVA IAT has been building on a critical mass existent in several research centers, from both Schools, rated as excellent by external panels. Their investigation covers areas from computer science to musical aesthetics, anthropology, philosophy, communication to art history and cultural heritage conservation. They are involved in establishing the grounds for interdisciplinary research and artistic creation with a strong technological component and envisioning a wide societal impact. However diverse and scientifically robust NOVA's background is, there are opportunities to increase IAT's impact by turning it into a Center of Excellence for Arts and Technology.

The world faces societal challenges related to diversity and inclusion, currently threatening democracies. Throughout the centuries, the power of the arts as a common ground for representation, communication, and debate of new and old ideas makes it clear how indispensable it is for us, as a society, to address these issues. Enabling artistic creation through science and technology is to empower the artists of our times.

Most of the activities carried out so far were done in the scope of the European project T-Factor. T-Factor is a Horizon 2020 project that seeks to unlock the transformative potential of temporary use in urban

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regeneration. It gathers together cities, universities, businesses and grassroots organizations committed to creating new knowledge, tools and approaches to temporary urbanism that can contribute to inclusive and thriving futures in cities. IAT carried out activities related to art and technology for community outreach and impact, including podcasts on local themes, seminars, art installations, community kiln, a documentary, and an art+tech residence. Beyond T-Factor, these projects and new initiatives will continue to develop in a makers training program within a FabLab, an entrepreneurship program and a Digital Media Festival.

A major initiative starting now is the digitization of the collections of Portuguese museums and monuments to make it available online in multiple forms. Research projects using this underlying infrastructure are expected to lead to advancements opening new ways of digitally engaging and enjoying cultural content through co-curation, co-design, and empowering public participation. The research will emphasize the interaction between in-depth knowledge and research in different digital technologies (AI, analytics, IoT, Gaming, 2D/3D, and VR/AR/XR) with other areas such as social and heritage sciences and arts.

IAT will offer a comprehensive and transdisciplinary Education and Training program to ensure upskilling and reskilling along the possibilities of technology. The curriculum will implement complementarity and interchange between its scientific units and the ones on digital and cutting-edge technologies, techniques and artistic practices, heritage and communication, and entrepreneurial and business skills. At the post-graduation level, IAT will collaborate with NOVA schools to expand the curriculum. It will promote new courses at different academic levels, including short courses, Master and PhD degrees, planned as a critical response to contemporary challenges and opportunities posed by technology.

Interdisciplinary
Research



NOVA UNIVERSITY
LISBON

Tourism and Hospitality are key drivers of the Portuguese economy and society. In order to keep and reinforce their competitiveness and sustainability, innovation and qualification are a must, and NOVA wants to provide a decisive contribution in this progress.

Therefore, the NOVA Tourism&Hospitality Platform (TOHO) aims to foster innovative and interdisciplinary solutions to tackle the challenges that Tourism&Hospitality are facing.

TOHO is supported by all of the NOVA Schools, operates in close collaboration with private and public leading entities, and is harnessing the outstanding talent pool available at NOVA, which boasts a diverse community of over 25,000 students and 1,700 Faculty Members.

TOHO primary value proposition lies in its commitment to interdisciplinary collaboration in order to develop Tourism&Hospitality innovation, research, qualification or entrepreneurial projects in co-creation and collaboration with partners.

TOHO brings together all the knowledge and expertise available across NOVA, including the following clusters, taking into account the present Tourism&Hospitality trends, perspectives and prospective views: Gastronomy, Heritage, Digital Transformation, Health, and Sustainability.

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SAMPLE OF INNOVATION PROJECTS

In the realm of sustainability, we are proud to highlight the projects conducted by TOHO in close partnership with industry leaders, such as Turismo de Portugal (development of a Neutrality Carbon guideline for hotels) or EGEAC (waste management solutions for cultural facilities).

Regarding health, TOHO was involved, through the NOVA Medical School and in partnership with NEST, in the development of the "Clean and Safe" guidelines and seal, a framework that helped to face the covid-19 pandemic.

TOHO has also been and is strongly involved in initiatives aimed at supporting new tourism business ideas, startups and entrepreneurs, in partnership with NEST and Beta-i.

In its pipeline, TOHO is working together with some well-known private hotel chains and public agencies, including important possible future flagship projects, dealing for instance with heritage, new technologies and/or sustainability.

Under EUTOPIA, the European University alliance to which NOVA belongs, several international collaborations and joint projects are also being designed or waiting for possible approval.

SAMPLE OF MULTIDISCIPLINARY TRAINING PROGRAMS

Another critical success factor for the present and future of Tourism&Hospitality in Portugal relates to human capital and the need to assure that proper talent is created, hired, retained, continuously updated and qualified.

Through TOHO, NOVA is leveraging the efforts of its Schools and Professors, by building and promoting a global, integrated, diversified and customizable portfolio of interdisciplinary training offers and modules, aimed at the development of the leaders, managers and skilled professionals for Tourism&Hospitality.

As a specific example, involving TOHO, together with PRR funding, under the scope of the Tourism International Academy (Turismo de Portugal), we have a project in partnership with ESHTe and Universidade Aberta. From the side of NOVA, this resulted in a training portfolio that comprises over 60 short or long term options, covering many different areas that are relevant for Tourism&Hospitality, such as: brand strategy, digital transformation, gastronomy, heritage, management and sustainability. This modular offer can provide customized solutions to different kinds of organizations and individuals (ranging from young enthusiasts to experienced tourism professionals).

Interdisciplinary Research

So far, over 1,000 students have already completed or are attending one of these offers, launched very successfully in 2023, which provides NOVA credits to the participants.

Other training initiatives are being planned and will be made available soon, including collaborations under the context of Campus Sul (joint initiative of NOVA, Universidade de Évora and Universidade do Algarve), such as Tourism PhD seminars.

The NOVA Tourism and Hospitality Platform stands as an excellent example of interdisciplinary collaboration, involving all of the nine NOVA Schools, as well as of partnership and co-creation between NOVA and relevant external private or public organizations, therefore innovating and building a sound future for Tourism&Hospitality in Portugal.



NOVA UNIVERSITY
LISBON

NOVA for the Globe (N4G) is an interdisciplinary platform with representatives from the nine schools, social services and rectory, organized around two councils - academic and operational – aiming to take sustainability into NOVA activities, through a strategic and operational perspective, respectively. Moreover, each council includes one student to ensure the university's agenda for sustainability takes the youth's expectations. N4G adopts a whole-institution approach, considering the integration of sustainability in education, research, innovation and value creation, as well as in infrastructures, services and operations, as approved in NOVA Sustainability Policy.

The N4G Academic Council members, mostly professors with differentiated scientific backgrounds, bring together the knowledge with impact on the SDG carried out at NOVA schools, to discuss, propose and expand the integration of sustainability in NOVA activities, ensuring coherence and boosting its impact. The Operational Council members, mostly staff related with infrastructures' operations and services, work together to advance towards green campus, meaning to introduce or expand high sustainability standards in components, such as energy, water and resources use to waste management, to green public procurement, sustainable mobility options and green areas, to name a few.

Each NOVA school may decide, based on its administrative and financial autonomy, on its own sustainability actions and own governance bodies (e.g. some schools has a deputy director in charge of sustainability, others do not), meaning some schools

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have in place more ambitious programmes than others. N4G platform works to drive and boost all the schools to get common grounds, milestones and goals.

Engaging NOVA community to adopt sustainable practices and take SDG into education courses, R&D proposals, and operations is critical to achieve systemic changes, but very hard to carry out at the same pace across all schools. Different engagement schemes, interlinking a top-down one from the rector and the board of deans, who lead the vision, with several bottom-up schemes in education, research, value creation and operations, are being implemented to take different purposes towards the common goal.

'NOVA Sustainability days' is an event, with editions in 2022 and 2023, to mobilize NOVA community – students, professors, researchers, staff and partners – to showcase initiatives carried at NOVA schools, to share knowledge and best practices and to advance on how to take sustainability deeper in the university activities. These events have been able to enrol hundreds of people from NOVA, dozens of NOVA external partners and many others that use to follow on NOVA YouTube channel.

The Roadmap for Climate Neutrality and Resilience of NOVA is an upcoming initiative to develop a structured framework supported by quantitative indicators and projections of greenhouse gas emissions (scope 1, 2 and 3) and to envisage coherent and cost-effective options to drive NOVA's future pathway towards net-zero carbon emissions. At the same time, the impact climate risks, mostly from extremes, on the normal activities will be assessed and adaptation options will be proposed. The roadmap is mobilizing project, engaging the nine schools and all services, from their leaders to the whole community, to deliver NOVA contribution to the Paris Agreement ambition.

NOVA Health

NOVA UNIVERSITY
LISBON

NOVAhealth is a knowledge hub in different areas of health, resulting from the collaboration between NOVA's academic units, their perimeter institutions, as well as the health sector at large. The platform creates value from different interdisciplinary contributions, and works in a variable geometry, with focus groups that range from molecular aspects of transmissible and non-transmissible diseases, nutrition, epidemiological and community studies and interventions, health systems and policies and organization and managerial aspects of health practice. This platform arises from the recognition that NOVA had a strong potential on health research, championed by its academic units more directly related with the health sector, but also by all the other academic units than can contribute to health in many different manners.

NOVAhealth aims at filling the interdisciplinary gaps that remain for this overall objective and, while nurtures individual academic units' initiatives, it wants to go beyond that, promoting new projects that result from the interaction between different areas of the university and our stakeholders. Several partnerships are developed with academia, industry and society. Examples include collaboration with Pfizer, materialised on regular think tanks held together, as well as an annual fellowship. We also have a partnership with the Amélia de Mello Foundation for many years and we organise the Alfredo da Silva Award - Sustainability in Health, promoted by the Foundation, for already three editions.

Coordinator:
Cláudio M. Soares
novasaude@unl.pt
www.unl.pt/nova/novasaude

A very impactful project promoted by NOVAhealth is the NOVA Institute for Medical Systems Biology (NIMSB), a partnership between NOVA and the Max Delbrück Center (Berlin, Germany), and supported by the European Union (Teaming for Excellence – Horizon Europe), the Portuguese Government and the Municipality of Oeiras. The total amount of funding secured for this new Center of Excellence already exceeds 30 million euros. NIMSB aims to be a leader in the development, integration and application of state-of-the-art systems biology and artificial intelligence approaches to medical research and innovation, contributing to the development of early diagnostics and advanced therapeutic solutions to deliver real Precision Medicine to patients.

Another relevant partnership is the Value for Health CoLAB, a private non-profit organisation, with the mission of supporting healthcare stakeholders in measuring value in health and other projects. It is certified as a "collaborative laboratory" by the Portuguese Foundation for Science and Technology, with a total public base funding for the first 6 years of 2.3 M€, which is complemented with other external projects. The team of eight researchers collaborates with universities, companies and government to develop high-value healthcare solutions and practices for society. By applying for research grants in collaboration with NOVA, the Value for Health CoLAB joined international research networks that are contributing to the sustainability of healthcare. In the last 4 years, 11 projects have been developed with public and private hospitals, supporting research and innovation activities related to healthcare services' design and value assessment. This year, the Value for Health CoLAB launched the Atlas of Variation in Healthcare, aligning Portugal with an international

network of countries that monitor geographical variation in healthcare to support public policy. Also, it won a national prize for Health Literacy and supported more than 20 organizations developing high-value healthcare innovations.

NOVAhealth derives value from diverse interdisciplinary inputs, covering a wide spectrum of topics, from disease and molecular research to public policies and healthcare management.

Interdisciplinary
Research

Eutopia Alliance Research Initiatives

The EUTOPIA European University alliance is a dynamic network of ten European universities, having expanded from six through the ERASMUS+ EUTOPIA MORE project. By envisioning itself as an open, multicultural, and federated entity of interconnected campuses by 2030, the alliance aims to embody a spirit of unity and collaboration.

Among its esteemed members are Babeş-Bolyai University (UBB; Romania), Vrije Universiteit Brussel (VUB; Belgium), Ca' Foscari University of Venice (UNIVE; Italy), CY Cergy Paris Université (CY; France), Technische Universität Dresden (TUD; Germany), University of Gothenburg (GU; Sweden), University of Ljubljana (UL; Slovenia), Universidade NOVA de Lisboa (NOVA; Portugal), University Pompeu Fabra (UPF; Spain), and University of Warwick (UW; United Kingdom). Notably, the EUTOPIA alliance extends its global reach through partnerships with four distinguished institutions outside Europe: Monash University (Australia), International University of Rabat (Morocco), Stellenbosch University (South Africa), and Kyungpook National University (South Korea).

At the heart of the EUTOPIA alliance lies a profound commitment to academic freedom, fostering mobility for both staff and students, and cultivating a connected, inclusive academic community that addresses global and local challenges. The alliance strives to advance excellence in teaching and research models, emphasizing impact and contributing to European economic development, innovation, collaboration, and inclusiveness. A key aspect of its mission is the active engagement of the alliance with local and regional ecosystems, championing sustainable, responsible, and ethical practices towards our planet. In this collaborative spirit, EUTOPIA students, researchers, staff, and external stakeholders join forces to shape a new academic paradigm. They ensure a bottom-up approach, encouraging input and engagement from the community in all alliance activities. This reflects EUTOPIA's commitment to an open and cohesive Europe, marked by respect for its citizens and the environment.

EUTOPIA PHD CO-TUTELLE PROGRAM

One notable initiative within EUTOPIA is the **EUTOPIA PhD Co-tutelle program**, designed to improve high-quality doctoral projects across diverse research domains. This innovative program involves collaborative supervision by esteemed academics from EUTOPIA member universities. Successful candidates are granted doctoral fellowships spanning 3 to 4 years, contingent upon the specific requirements of their studies at the partner universities, which collectively oversee the joint supervision of PhD Co-tutelle candidates.

Participating in this program offers doctoral candidates a unique opportunity to undergo a comprehensive training program spanning both universities. Upon successful completion of their studies, candidates are awarded a double diploma - one from each partner university - following their PhD defense.

NOVA has played a crucial role in this program (2022 and 2023), either as a partner institution (10 EUTOPIA PhD candidates over the two

editions), or home institution (12 EUTOPIA PhD candidates), amassing a total of 22 EUTOPIA PhD co-tutelle candidates to date - in 2022, NOVA successfully secured 10 EUTOPIA PhD co-tutelle candidates, and in 2023, more 12 EUTOPIA PhD co-tutelle candidates were awarded. NOVA EUTOPIA PhD fellowships are funded by FCT, I.P., which allowed NOVA to award 6 PhD fellowships in each edition, in a total of 12 scholarships in the two editions. NOVA EUTOPIA PhD co-tutelle candidates distributed as follows: 11 positions with VUB, 6 positions with UW, 4 positions with CY, and 1 position with TUD.

The EUTOPIA PhD Co-tutelle program aspires to foster research projects of exceptional quality and global impact. It provides an intellectually stimulating environment for doctoral candidates, encouraging them to leverage the vibrant scientific community within the EUTOPIA alliance.



YOUNG LEADERS' ACADEMY PROGRAM

The EUTOPIA Young Leaders Academy (YLA) program, inaugurated during the EUTOPIA 2050 pilot project, continues to thrive under the auspices of EUTOPIA MORE, extending its impact through two additional cohorts (2023 and 2025). Each cohort is thoughtfully curated to embody a harmonious blend of gender parity, diversity in research domains, varied seniorities, and diverse backgrounds.

The overarching goal of the EUTOPIA YLA is to champion research exchanges among highly promising early to mid-career researchers, spanning a window of 2 to 12 years post-PhD completion, across all EUTOPIA partner universities. This program spans a 2-year period and is designed to fortify the career development of participants. EUTOPIA YLA members collectively form a community of emerging independent research leaders on the

EUTOPIA stage, united by the principles of European values and the shared vision of an interconnected academic environment. ambassadors for EUTOPIA within partner organizations.

In the year 2023, NOVA proudly boasts 2 exceptional fellows participating in the YLA program for the first time, that will be NOVA's ambassadors for EUTOPIA within partner organizations: Nausica Palazzo (NOVA School of Law) and Felipe Conzuelo (ITQB NOVA). These promising individuals will be instrumental in catalysing collaborative research projects between EUTOPIA partners. Moreover, they are poised to share their newly acquired skills and experiences with the broader EUTOPIA community and the subsequent YLA cohort.

Eutopia Alliance Research Initiatives

holders from the business sector, public agencies, and cultural organizations.

- **Promoting Teaching and Research:** by combining diverse formats of cross-campus cooperation, EUTOPIA CCs strive to enrich both teaching and research endeavors.

- **Enhancing Inclusion:** opening up knowledge activities to a broad audience through flexible and blended formats ensures inclusivity.

In pursuit of these goals, each selected EUTOPIA CC receives a fixed amount of seed funding. By pooling resources for the implementation of connected cross-campus knowledge activities, EUTOPIA CCs are anticipated to yield a multitude of impacts for local ecosystems and society at large, such as: i) international exposure; ii) mutual access to specialized data and infrastructure; iii) synergies for teaching; iv) joint participation in funding schemes; v) joint publications.

In 2023, NOVA takes the lead in steering an EUTOPIA CC entitled Ocean Challenges, dedicated to ocean policy for a more sustainable ocean economy. This NOVA CC, led by Professor Assunção Cristas (NSL), aims to bring students together on the ocean topic and related challenges with an interdisciplinary perspective. Additionally, NOVA actively participates as a partner in two other CCs, contributing to the alliance's collective efforts in addressing pressing societal challenges: one related with Entrepreneurship and Innovation, which aims to develop soft and managerial skills with deep technological and data science know-how; and other on the Environmental Humanities topic with the goal of tackling the climate issues from the Humanities' perspective, aiming to conduct public lectures and seminars, special peer-reviewed issue, and field trips in partner countries.

EUTOPIA CONNECTED COMMUNITIES PROGRAM

A pivotal long-term objective of the EUTOPIA alliance is the establishment of sustainable researcher networks. The **EUTOPIA Connected Communities** (CCs) initiative is strategically crafted to fortify exemplary practices in challenge-based learning, teaching, and research. This initiative creates an integrated thematic network wherein teachers, researchers, and students collaborate across campuses, engaging in cross-disciplinary knowledge activities to cultivate ideas in various science and technology fields, fostering a culture of shared innovation.

EUTOPIA CCs place a distinct emphasis on activities aligned with global challenges or SDGs, aiming to amplify societal, economic, political, and scientific impact. The fundamental mission of EUTOPIA CCs revolves around:

- **Connecting Academia and Society:** focusing knowledge activities on key societal challenges involves collaborative partnerships with stake-

Impact at NOVA R&D Units

This section encompasses the various R&D Units of NOVA University Lisbon, with a focus on the impact these R&D are having on society.

NOVA R&D Units are organized in broad scientific domains, according to the Portuguese Atlas of Research Units written by FCT, I.P. in 2022.

AGRICULTURAL SCIENCES

64

GREEN-IT

ENGINEERING & TECHNOLOGY SCIENCES

66

CENIMAT

CENSE

CTS

METRICS

UNIDEMI

HUMANITIES

70

CESEM

CETAPS

CHAM

CLUNL

IELT

IEM

IFILNOVA

IHA

IHC

INET-MD

CIUHCT

VICARTE

MEDICAL & HEALTH SCIENCES

76

GHTM

CINTESIS

CHRC

INOVA4HEALTH

TOXOMICS

NATURAL SCIENCES

80

CEFITEC

NOVA MATH

GEOBIOTEC

LAQV

LIBPHYS

MARE

NOVA LINCS

UCIBIO

MAGIC

MOSTMICRO

SOCIAL SCIENCES

86

CICS.NOVA

CRIA

ICNOVA

IPRI

CEDIS

NOVA SBE

Agricultural Sciences

GREEN-IT

**NOVA
R&D Units**

GREEN-IT
Bioresources 4
Sustainability Unit
ITQB NOVA

Coordinator:
M. Margarida Oliveira

www.itqb.unl.pt/green-it

The major impact initiative developed by GREEN-IT members in the past 5-years, and continuing for the next 5, was the Collaborative Lab project - InnovPlantProtect. With NOVA LINCS, CTS and MagIC (NOVA R&D Units), and in close partnership with INIAV researchers (GREEN-IT) and agro-associations, private agro-sector and Elvas City Council, we have installed a CoLAB fully dedicated to the development of innovative bio-based solutions to protect plants from pests and diseases. The remodelled installations were only finished by July-2022, but from 2019 until now the CoLAB has bloomed, growing until a team of 45 members (15 being Post-Doc researchers) and producing scientific and technological innovation and digital services (already available), installing well-equipped laboratories, restoring greenhouses facilities and releasing patent applications.

Engineering & Technology Sciences

CENIMAT

CENSE

CTS

MEtRICs

UNIDEMI

**NOVA
R&D Units**

CENIMAT
i3N Institute
of Nanostructures,
Nanomodelling
and Nanofabrication
NOVA FCT

Coordinator:
Rodrigo Martins

www.cenimat.fct.unl.pt
www.i3n.org

During the last 5 years the CENIMAT| i3N has been at the forefront of groundbreaking initiatives: the Advanced ERC grant DIGISMART (Fortunato) that allowed to acquire a STEM and SEM that extended its competences towards nanoanalysis and e-beam lithography; the 4 PoC ERC grants (FLETRAD, Barquinha); the EXCELL (Pereira); e-GREEN (Fortunato); CAPSEL (Ferreira); 3 EU projects coordinated by this R&D Unit out of 9: EMERGE, the first European infrastructure on flexible electronics beyond silicon; SYNERGY (energy); and BRIGHT (paper functionalized). At National level, the involvement in 8 Mobilizer Agendas of the Portuguese Resilient programme, on energy (M-ECO2; NGS; ILLIANCE, 8.4M€); electronics (R2U, BE Neutral, 4.04M€); paper electronics (F2F, 1.21M€); Materials and Biomaterials (Blue Bioeconomy, SUSTAINABLE STONE, 1.43 M€). Finally, the NANOVA infrastructure (CCDRLVT) through which CENIMAT | i3N accommodates the Nanoanalysis lab and improves the microelectronics lab.

CENSE
Center for Environmental
and Sustainability Research
NOVA FCT

Coordinator:
Nuno Videira

www.cense.fct.unl.pt

CENSE researchers have been engaged in several projects and initiatives leading to a wide range of contributions with societal impact, namely through: i) Support to development of national public policies – e.g., the National Strategy for Green Public Procurement 2030 (ECO360), the National Energy and Climate Plan (2021-2030), and the Portuguese Carbon Neutrality Roadmap 2050; ii) Development of tools and processes promoting competitive and circular value chains – e.g., advancing sustainable and efficient techniques for critical raw materials recovery developed in the RELIEF project (Horizon EU, 2022-2025); iii) Collaboration in stakeholder advisory networks – e.g., the Energy Poverty Advisory Hub, a centre of energy poverty expertise in Europe for local governments and all interested stakeholders; iv) Citizen science programs – e.g., “À descoberta do Aquífero” program developed in the eGROUNDWATER project (PRIMA, 2022-2025) which involves several schools and over 200 students in capacity and training sessions for groundwater monitoring.

CTS
Centre of Technology
and Systems
NOVA FCT

Coordinator:
Luís Camarinha de Matos

www.cts.uninova.pt

CTS achievements are focused on cognitive and collaborative cyber-physical systems (CPS). This includes: i) CPS in Collaborative Networked Systems – e.g., nature inspired collaboration, collaborative energy ecosystems, performance management in business ecosystems, mass collaboration; ii) CPS in Smart Manufacturing Systems - e.g., bio-inspired self-organized systems, digital twins, security and trust in CPS, AI in distributed manufacturing, collaborative CPS design; iii) CPS in Energy Systems – e.g., energy flexibility characterization, fault detection, energy router, energy saving in buildings; iv) CPS in Healthcare Systems – e.g., digital solutions for healthcare and wellbeing, uterine explorer, low-cost sensors and devices; v) CPS in Electronics and Control Systems – e.g., fractional signal processing, new control approaches, Petri nets in controller design.

Such initiatives are materialized in more than 120 national and international projects in the last 5 years (about 75 ongoing).

MEtRICs
Mechanical Engineering
and Resource Sustainability
Center
NOVA FCT

Coordinator:
Ana Luísa Fernando

www.metrics.com.pt

MEtRICs aims to develop solutions in the field of energy and bioenergy, biofuels, biobased products and biorefineries. MEtRICs is also committed to creating scientific knowledge and providing technical solutions for the Food Industry, focusing on innovative solutions for food preservation: replacing synthetic additives with natural ingredients; active and intelligent packaging. This has been supported and will be supported by FCT/MCTES and by National and European projects: i) GOLD project, www.gold-h2020.eu, ongoing until 2025; ii) MIDAS project, www.midas-bioeconomy.eu, ongoing until 2026; iii) PRODUTECH R3/PRR. UNL is involved in the development of equipment and industrial lines optimized for the production of Bioactives and Biocomposites, ongoing until December 2025.

UNIDEMI
Research & Development
Unit in Mechanical and
Industrial Engineering
NOVA FCT

Coordinator:
Rui Martins

www.unidemi.com

UNIDEMI highlights the “Smart WAAM” project that aims to improve the lifetime of industrial components by utilizing in-situ microstructure control in Wire Arc Additive Manufacturing (WAAM) including real-time non-destructive testing. The project outputs include a spin-off company, two case studies, and two functional prototypes. An international patent was granted within this project. The “Drivolution - Transition to the Factory of the Future” is another project that contributes to an effective change in the production profile of the automotive industry in Portugal. It aims to promote the implementation of new technologies, to creating new processes, products, and services. At last, the “AneurysmTool” project established a database of clinical and imaging examinations, serving as the foundation for developing advanced computational methods. It will enhance the understanding of thoracic aortic aneurysms and develops in-silico tools capable of modelling patient-specific fluid-structure interactions.

Humanities

CESEM	IHA
CETAPS	IHC
CHAM	INET-md
CLUNL	CIUHCT
IELT	VICARTE
IEM	
IFILNOVA	

NOVA R&D Units

CESEM
Research Centre for the
Sociology and Aesthetics
of Music
NOVA FCSH

Coordinator:
Luísa Cymbron

www.cesem.fcsh.unl.pt

CESEM encompasses a large spectrum of research activities related to music, including collaboration with non-academic entities, both public (National Library, museums) and private. CESEM is a founding member of IN2Past, a FCT-funded national, interdisciplinary network specializing in Heritage Studies. In this context a new laboratory, dedicated to the recovery of magnetic tapes, has just been added to those previously existing. Among CESEM’s initiatives with major public impact, the online database Arquivo José Mário Branco, launched in 2018 in collaboration with the artist and expanded since, should be mentioned. The most ambitious current project at CESEM is the Thematic History of Music of Portugal and Brazil, which involves nearly one hundred contributors of both countries and implements an updated, all-encompassing vision of Music History across the Atlantic, acknowledging Africa’s cultural contribution.

CETAPS
Centre of English,
Translation and Anglo-
-Portuguese Studies
NOVA FCSH

Coordinator:
Carlos Ceia

www.cetaps.com

The Translationality strand at CETAPS is developing cutting-edge research in Translation Studies. It has ongoing projects into Epistemic Translation, Machine Translation Literacy , and Pivot Audiovisual Translation (with Leiden University), with another planned into the application of artificial intelligence in translation. Its Skopus-indexed journal Translation Matters has hosted special issues that are helping to redefine the field. It has also organised innovative training initiatives, such as the Soundscapes course on translating from music, the annual graduate symposium New Voices in Portuguese Translation Studies, and Lisbon Spring School in Translation Studies (with UCP), and will soon launch workshops on Terminological Management, Machine Translation and Artificial Intelligence (with CITIUS and CODA). It is also involved in varied outreach activities.

CHAM
Centre for the Humanities
NOVA FCSH

Coordinator:
João Luís Lisboa

www.cham.fcsh.unl.pt

CHAM is a leading national research unit on the Humanities and interdisciplinarity is at the core of its research. Its approach to the study of the human is grounded on a solid historical perspective. A wide array of projects questions what is to be human across geographies, societies, and ecocultural dynamics. Strategic lines – Heritage, Digital, Theory – guide collaborative efforts to respond to societal and environmental challenges. Projects such as UNESCO Chair Ocean’s Cultural Heritage, RIC – Magazines of Ideas and Culture, 4-OCEANS – Human History of Marine Life, several MSCA staff exchange projects (e.g. EDGES) among others, have a strong impact through dissemination of data, and the establishment of partnerships with stakeholders (e.g. municipalities) and knowledge-holders (including local, traditional and Indigenous communities). CHAM’s scholarship is directed to advanced training and knowledge transfer, outreaching and open science, while fostering multifold views, dialogue, and engagement.

CLUNL

Linguistics Research Centre of the UNL NOVA FCSH

Coordinator:
Rute Costa

www.clunl.fcsh.unl.pt

CLUNL is extremely engaged in interdisciplinary activities with high impact. The iRead4Skills project (ongoing HORIZON project coordinated by CLUNL), focusing on the development of reading skills through an innovative intelligent system that analyses texts complexity automatically, is a highlight. HEREDITARY (HORIZON project starting in January 2024) is also a high impact project, aiming to transform the approaches to disease detection, treatment response, and exploration of medical knowledge, in which CLUNL will lead the WPs “Multilingual Semantic Network” and “Citizens Engagement in the Validation of Terminology”. CLUNL coordinates PIPALE, a project aiming to improve, from early age, the quality of learning in Portuguese as a mother tongue, in the areas of language awareness, emergent literacy, reading and writing.

IELT

Institute for Studies of Literature and Tradition NOVA FCSH

Coordinator:
Teresa Araújo

www.ielt.fcsh.unl.pt

The impact of IELT actions reflects in areas such as: 1) the integration of postdoctoral researchers in R&D projects through the concession of grants; 2) the promotion of gender equality through the study of female authorship (“Portuguese Women Writers during the Military Dictatorship and the Estado Novo in Portugal, Africa, Asia and countries of emigration”); 3) the dissemination of (in)tangible cultural heritage, using digital tools (Modernismo.pt, e.g.) and (co)organising scientific meetings of great international projection (see ielt.fcsh.unl.pt); 4) the intersection of interdisciplinary and cultural fields, in “Atlas of Literary Landscapes” and “GHOST – Spectrality: Literature and the Arts (Portugal and Brazil)”; 5) the participation in the UNESCO Chair “The Oceans’ Cultural Heritage”; 6) scientific dissemination through the publication of e-books.

IEM

Institute of Medieval Studies NOVA FCSH

Coordinator:
Catarina Tente

www.iem.fsch.unl.pt

The Institute for Medieval Studies (IEM) aim to promote high quality research in the medieval field by networking with other researchers, both in Portugal and elsewhere so as to foster international collaboration that will contribute to new, multidisciplinary and comparative approaches to the Middle Ages.

The Medieval Project created within this RU born in 2022 and has as its main purpose the transfer of knowledge, the creation of economic and social value, and, finally, to stimulate the connection between companies and society. In this sense, in close collaboration with their researchers, IEM wants to develop four areas of work, namely: communication; studies and projects; museums and interpretation centers; and digital humanities. IEM wants to promote and disseminate the Middle Ages to civil society, through innovative products and solutions capable of attracting different audiences to a rich and fascinating time.

IFILNOVA

NOVA Institute of Philosophy NOVA FCSH

Coordinator:
João Constâncio

www.ifilnova.pt

For the past five years, IFILNOVA has developed important philosophical research on problems related to the nature, role, and normativity of values, either in argumentation theory and pragmatics, in ethics and politics, through work on cinema, or in connection with literature and other arts. Through the development of fundamental theories and application of new ones to empirical fields, or through research that seeks direct social intervention, IFILNOVA has hosted projects funded by EEA Grants, the Creative Europe programme of the European Union or Horizon 2020. Most recently, IFILNOVA received one ERC Consolidator Grant. With a growing number of renowned publications and a growing international group of researchers IFILNOVA will keep its commitment to its thematic line through original and singular approaches.

IHA

Institute of Art History NOVA FCSH

Coordinator:
Alexandra Curvelo da Silva Campos

www.institutodehistoriadaarte.wordpress.com

During the past five years, IHA executed several R&D projects through FCT funds, including Iberian Modernisms and the Primitivist Imaginary and The Manor House in Lisbon and Rio de Janeiro. IHA also hosts an EU H2020 Marie Skłodowska-Curie Action and partakes in numerous projects with leading public and private institutions. Besides being a full member of the international RIHA network, IHA is a founding member of the IN2PAST Associate Laboratory. IHA will continue its project-oriented policy, aiming for international funding while promoting high-quality basic and applied research and education. IHA will reinforce its commitment towards Digital Humanities and Open Science through publications and digital resources, emphasising the journal Revista de História da Arte, which is currently undergoing renewal and expansion.

IHC

Institute of Contemporary History NOVA FCSH

Coordinator:
Luís Trindade

www.ihc.fcsh.unl.pt

For many years, the Institute of Contemporary History has developed intense research – in line with its mission of opening new avenues into modern history – on the history and memory of Portuguese authoritarianism and colonialism, a decisive aspect of twentieth-century Portugal that will receive a boost of public visibility with the forthcoming inauguration of the National Museum of Resistance and Freedom, to which the Institute also contributes on an institutional level. The IHC is also about to launch an online dictionary Connecting Portuguese History, made of entries in open access (in both Portuguese and English), with the aim of establishing new relations between Portuguese and global history, materializing our current scientific project to question the limits of national history.

INET-md
Ethnomusicology
Institute – Center
for Studies in Music
and Dance
NOVA FCSH

Coordinator:
Manuel Deniz Silva

www.inetmd.pt

The INET-md is a transdisciplinary research unit with headquarters at the FCSH-UNL and three branches at Universidade de Aveiro, Faculdade de Motricidade Humana, Universidade de Lisboa, and Instituto Politécnico do Porto. INET-md fosters a culture of excellence in advanced training, transdisciplinary research, performance, creation and artistic research, and awareness of the social responsibility of researchers and artists. Some of INET-md most notable achievements are: two international open access peer-reviewed journals, RPM - Portuguese Journal of Musicology (rpm-ns.pt), the only refereed music journal published in Portugal, in partnership with CESEM and SPIM, and ÍMPAR - Online Journal for Artistic Research; the contribution toward curating (with local institutions) sound, audiovisual and written sources of music and dance heritage, and making them accessible through 4 public digital platforms.

CIUHCT
Interuniversity Centre
for the History of Science
and Technology
NOVA FCT

Coordinator:
Isabel Amaral

www.ciuhct.org

CIUHCT, stands as the preeminent institution in Portugal dedicated to History of Sciences and Technology. With its distinguished classification in 2019, it offers an outstanding academic environment for conducting research in the history and material culture of Science, Technology, and Medicine (HSTM) in Europe. In 2020, for the first time in Portugal, the Society for the History of Technology (SHOT) awarded the Leonardo da Vinci medal to the professor and researcher Maria Paula Diogo. In addition, over the last years, both nationally and internationally, CIUHCT highlights the importance of international partnerships in scientific research projects, including topics such as the Anthropocene (Anthropocene Campus, Anthropocene Curriculum), scientific and technological diplomacy (InsSciDE - Inventing a shared diplomacy for Europe), the History of Health (Cost Action 22159 - National, International and Transnational Histories of Healthcare, 1850-2000), or the University Hub with a focus on the student community, CIRC. LE - Circular&Socio-civic Learning Hub. It is also worth highlighting the participation of some members in government entities, namely the Ministry of Science, Technology and Higher Education.

VICARTE
Glass and Ceramic
for the Arts
NOVA FCT

Coordinator:
Márcia Vilarigues

www.vicarte.org

In the last five-years VICARTE was a team member of the European projects Creative Europe Craft-HUB and Erasmus E+KA2 Craft. These projects focus on the research of craft skills heritage and their potential to benefit significantly local ecosystems, both in terms of improving social cohesion, participation and well-being, and their role in the creation and development of long-term local, sustainable economic ecosystems. The aim is to map craft skills, investigate ways of recording and transmitting them, and, more importantly, create sustainable models where skills can be transferred intergenerationally. Focusing on glass, ceramics and porcelain, our future research will establish methodologies to produce know-how and material knowledge of craft manufacturing on these materials. While futuring the past by producing new sustainable products.

Medical & Health Sciences

GHTM

CINTESIS

CHRC

iNOVA4Health

ToxOmics

NOVA
R&D Units

GHTM

Global Health and Tropical
Medicine
IHMT NOVA

Coordinator:
Miguel Viveiros

<https://ghmt.ihmt.unl.pt/>

In the last 5 years, GHTM promoted global health with a one health vision, answering to the demands for advanced information and management tools to support international public health decision-making, specifically for epidemiological surveillance and modelling of early warning systems. It developed several impacting initiatives on the control and surveillance of malaria, tuberculosis, HIV, COVID-19, arbovirose, parasitic neglected diseases and antibiotic resistance, in fair partnerships with partners mainly from the Community of Portuguese Speaking Countries, particularly related with environmental changes and population mobility, in control or elimination contexts. Health monitoring strategies in mobile and vulnerable populations, risk maps, new drugs and new in-vitro diagnostic tools, information systems and bioinformatics tools were developed and implemented. Based upon a strong national and international research network, it will continue to develop innovative partnerships for equitable and sustainable development in global health and tropical medicine

CINTESIS

Center for Health Technology
and Services Research
NMS

Coordinator:
Conceição Calhau

www.cintesis.eu

CINTESIS (Center for Health Technology and Services Research) is a vital R&D unit based at the University of Porto, committed to swiftly addressing major health concerns with a focus on cost-effectiveness. Under the leadership of Professor Conceição Calhau at NOVA Medical School (NMS), CINTESIS houses the Metabolism and Nutrition Lab (MNL). The MNL researches various clinical aspects of human nutrition and metabolism, including obesity, diabetes, metabolic syndrome, nutrient biology, foods, dietary supplements, vitamins, minerals, phytochemicals, and contaminants like endocrine disruptors. CINTESIS-NMS plays a crucial role in national and international projects, clinical trials (e.g., PtCRIN's Nutrition group coordination), and community initiatives like nutrition consultations. Moreover, CINTESIS-NMS oversees the Bachelor's Degree program in Nutrition Sciences at NMS, training an increasing number of students over the years. The MNL is also affiliated with the RISE associate laboratory.

CHRC

Comprehensive Health
Research Centre – Research,
Education and Innovation
in Clinical Research
and Public Health
NMS & ENSP

Coordinator:
Helena Canhã (NMS)
Sónia Dias (ENSP)

www.chrc.pt

The PORTHOS study and the EpiDoC cohort, pivotal in heart failure and chronic disease research respectively, found a synergistic ally in the Comprehensive Health Research Centre (CHRC). The CHRC, known for its dedication to advancing healthcare research, provided a robust platform for these studies to amplify their impact. The PORTHOS study and the EpiDoC cohort, developed in Portugal, stand as monumental research initiatives in the healthcare sector, focusing on heart failure and chronic diseases respectively. PORTHOS, aiming to update and refine data regarding heart failure prevalence, seeks to influence future healthcare strategies and policies through its insightful findings. Meanwhile, the EpiDoC cohort, initiated in 2011, employs a multidisciplinary approach to explore the determinants and outcomes of chronic diseases, impacting healthcare resource allocation. Over the next five years, both projects aim to deepen their research, expand collaborative networks, and translate findings into practical healthcare applications and policies, ensuring their research not only advances academic knowledge but also tangibly benefits public health and healthcare strategies in Portugal.

iNOVA4Health
Programme in Translational
Medicine
NMS & ITQB NOVA

Coordinator:
Paulo Pereira (NMS)
Paula Alves (ITQB NOVA)

www.inova4health.com

iNOVA4Health is a Translational Research Program in Biomedicine organizing the efforts of i) biomedical researchers involved in biological understanding of disease, lead compounds and biopharmaceuticals pre-discovery, ii) technological scientists involved in preclinical development, and iii) clinicians involved in early clinical and first-in-man clinical trials from institutions within NOVA University of Lisbon. The program has a strong emphasis on developing therapies to promote healthy ageing and in targeting chronic diseases that are responsible for two thirds of deaths worldwide and a major burden on healthcare systems. The aim of iNOVA4Health is to reinforce transdisciplinary and translational research activities amongst its four partners (NMS, IPO; ITQB and IBET) so as to implement precision medicine practices.

ToxOmics
Centre for Toxicogenomics
and Human Health
NMS

Coordinator:
José Rueff

www.nms.unl.pt/pt-pt/investigacao/unidades-de-investigacao/toxomics

Toxomics' research groups carry out their activity in the following main areas: Molecular genetics and genomics – Identification of genetic and genomic variation modifying gene expression and function; Assessment of genetic polymorphisms as predictors of cancer susceptibility, resistance to therapy and disease progression; Improvement of detection methods, namely at the nano scale; Application of multifunctional nano-and-biomaterials for cancer therapy and diagnosis, especially for tumour imaging and targeting, gene therapy/editing and drug delivery; Transcriptional and post-transcriptional control of gene expression – Investigation of regulation of transcription, involvement of constitutive or alternative transcript processing, mRNA stability, translational efficiency, and patterns and roles of microRNAs in health and disease phenotypes; Proteome profiling and function – Quantitative and qualitative characterization of protein expression patterns and elucidation of the cellular networks associated with health and disease, towards biomarker discovery and validation; Analysis of mutant proteins in appropriate disease models, characterizing their biochemical properties, interacting molecular partners, signaling activities or subcellular localization.

Natural Sciences

- | | |
|-----------|------------|
| CEFITEC | NOVA LINCS |
| NOVA Math | UCIBIO |
| GeoBioTec | MagIC |
| LAQV | MOSTMICRO |
| LIBPhys | |
| MARE | |

CEFITEC
Centre of Physics and
Technological Research
NOVA FCT

Coordinator:
Orlando Teodoro

www.cefitec.fct.unl.pt

One of CEFITEC’s main initiatives has been the significant improvement in the performance of solar-pumped lasers, which are considered as one of the most promising technologies in renewable energy research. Through the development of alternative prototypes for pumping laser crystals with broader absorption spectrum in the visible region, world records in collection and solar-to-laser conversion efficiencies of 41.3 W/m2 and 4.64% were reached, being spotlighted in Laser Focus World. The highest solar laser power of 40 W, lowest threshold power of 29.2 W and stable laser emissions with high tracking error compensation capacity of 0.5° were also reported. Breakthroughs are also expected in the upcoming years with the aim of extending the applications of this renewable technology on Earth and in Space.

NOVA Math
Center for Mathematics
and Applications
NOVA FCT

Coordinator:
Ana Luísa Custódio

<https://novamath.fct.unl.pt/>

If it is undeniable that society needs mathematics, it is also true that hard challenges in society often motivate interesting research topics. The Center for Mathematics and Applications (NOVA Math) encourages these synergies between research and society by hosting a variety of projects whose outcomes have a direct impact on fields as diverse as fisheries, home care, or vaccines. MONET and AI-4-MUFF are two examples. The recently completed AI-4-MUFF project aimed to build tools for more effective urban firefighting management, as well as to increase public entity readiness. Data science and AI methods allowed to model urban fires and assess population risk. The project benefited from an interdisciplinary team, including experts from mathematics and industrial engineering, as well as from a strong collaboration with the Portuguese National Authority for Emergency and Civil Protection. MONET project addresses brain tumor heterogeneity by identifying and validating molecular biomarkers in gliomas using modern data analytic and experimental methods. MONET is built on a multidisciplinary knowledge network that includes mathematicians, computer scientists, and molecular biologists, all working together to improve patient diagnosis, prognosis, and treatment decisions.

GeoBioTec GeoBioSciences, GeoTechnologies and GeoEngineering NOVA FCT

Coordinator:
Fernando Reboredo

sites.fct.unl.pt/geobiotech

In terms of impact, GeoBioTec emphasizes the projects dedicated to the biofortification of food crops in several mineral elements, essential in human nutrition, without compromising the production cycle, thus constituting an innovative product (functional foods) and an economic asset for producers.

Regarding the geological contribution, the Late Jurassic saw the breakup of Pangea, opening the North Atlantic and separating North America, Africa, and Europe. Surprisingly, vertebrates with shared affinities existed in these regions. Thus, to refine lithostratigraphic frameworks in Portugal and USA, will contribute to the understanding of vertebrate evolution. Also, studies about geostatistical modelling and data analysis (characterization of mineral deposits), risk analysis, modelling (geological), geotechnics (tunnels) had been developed over the last years.

LAQV Associated Laboratory for Green Chemistry - Clean Technologies and Processes NOVA FCT

Coordinator:
João Carlos Lima

www.laqv.requimte.pt

novamath.fct.unl.pt/

LAQV coordinates MAR2PROTECT which provides a holistic approach to prevent groundwater contamination from global and climate change impacts based on a new-generation Managed Aquifer Recharge (MAR). The core of this project is M-AI-R Decision Support System that incorporates technological and societal engagement information using an Artificial Intelligence-based approach to improve groundwater quality and quantity. The selected 7 demo sites represent a wide panorama of climatic conditions, types of pollution, water sources, MAR schemes and political/societal context. The MAR2PROTECT LivingLabs integrates technological innovations and strong engagement of stakeholders to explore different socio-economic, political, geographical, climatic and technological settings, to cocreate and uptake the proposed technologies and to promote a behavioural transition towards the prevention of contamination.

LIBPhys Laboratory for Instrumentation, Biomedical Engineering and Radiation Physics NOVA FCT

Coordinator:
Ricardo Vigário

www.libphys.fct.unl.pt

Interdisciplinarity is at the very core of LIBPhys-UNL, which focuses on instrumentation; foundations and engineering developments in Particle and Radiation Physics; as well as in various areas of Biomedical Engineering.

Three representative examples of ongoing and starting interdisciplinary projects include: i) the development of instrumentation for the material study and preservation of Cultural Heritage, through non-destructive and non-invasive analytical techniques, preferably carried out in situ; ii) a new project for the development of an Artificial Intelligence-based healthcare platform, with advanced synthetic data generation capability, to be used by healthcare engineers, practitioners, and researchers, in a transformative progression towards decentralized digital health technology; and from a fundamental and metrology research viewpoint, a study of superconducting tunnel junctions, in search for greatly elusive sterile neutrinos, one of the most promising candidates for so-called warm dark matter.

MARE Marine and Environmental Sciences Centre NOVA FCT

Coordinator:
Maria Graça Martinho

www.mare-centre.pt

Marine litter, plastics and microplastics pollution have been some of the main topics of research at MARE-NOVA. Since pioneering these fields in Portugal, MARE diagnosed, monitored and assessed their impacts across several environmental matrices, such as river and sea water, sediments and biota, by coordinating and participating in several projects.

This R&D Unit also developed strategies and policies, and CAPonLITTER, an Interreg Europe project coordinated by MARE-NOVA researchers, aiming at preventing marine litter from coastal activities, is an example of the work developed on this front.

The effects of nanoplastics in human cells, the biodegradability assessment of new types of packaging, and the Agri-Plast project aiming at developing integrated solutions for reducing agricultural plastics waste are some examples of our ongoing and future research.

NOVA LINC NOVA Laboratory for Computer Science and Informatics NOVA FCT

Coordinator:
Nuno Correia

nova-lincs.di.fct.unl.pt

Over the last few years, NOVA LINC have developed tools and applications that make extensive use of state of the art AI&ML techniques to implement an ecosystem that combines information from specially developed mobile applications, field sensors and satellite data, targeted at the continuous monitoring of the territory, crucial to address current sustainability issues. NOVA LINC multimodal conversational AI system scored first place in the 2023 Amazon Alexa Challenge with several groundbreaking advances. Collaboration with companies and Carnegie Mellon University was a key component of the research program, including low-code approaches with OutSystems and conversational AI for online fashion shopping with Farfetch. NOVA LINC are currently leading the development of novel AI&ML techniques for space traffic management, to help avoid satellite collisions with space debris by efficiently and accurately making predictions about their trajectories, and novel Neuro-Symbolic AI techniques that integrate classical symbolic AI with modern neural ML, namely to be able to generate human understandable explanations for neural networks. Work on cultural heritage, interaction techniques, augmented and virtual reality will continue to be carried out in the scope of a new major funded initiative to explore new forms of cultural content access. TaRDIS is a new 7M€ Horizon project lead by NOVA LINC that, for the next three years, will provide mechanisms to ease the complexity and reduce the effort of building correct and efficient decentralized systems.

UCIBIO

Applied Molecular
Biosciences Unit
NOVA FCT

Coordinator:
Cecília Roque

www.ucibio.pt

UCIBIO is an interdisciplinary research unit in Health Sciences and Bioeconomy. UCIBIO's research led to the creation of several spin-offs: Nano4 Global (fast molecular diagnostics), CellmAbs (glyco-immuno-oncology solutions) and AqualnSilico (digital tools for circular economy). Several European research projects are focusing on cancer non-invasive diagnostic tools (SCENT & ENSURE; ERC), on promoting excellence and innovation in Glycosciences (GlycoTwinning) and on establishing a cryo-electron microscopy hub for life sciences (CryoEM@NOVA; ERA Chair). UCIBIO is also a member and co-founder of patient-centered initiatives (CDG & Allies PPAIN). UCIBIO strong international presence in Bioeconomy has several European projects developing bioprocesses to convert industrial byproducts into bioplastics at our Pilot-Plant Facility (YPACK & GLOPACK; H2020) and sustainable solutions to biopharma (PURE; FET-OPEN).

MagIC

Information Management
Research Center
NOVA IMS

Coordinator:
Tiago Oliveira

<https://magic.novaims.unl.pt/en>

Data is transforming the way MagIC understands and responds to the world. In this data-driven era, MagIC Research Center has been a transformative force in Information Management and Data Science research. In Information Systems, MagIC reshapes technology adoption in organizations, revolutionize business operations, and enhance employee engagement. In Data Science, MagIC improves healthcare, leading to more accurate diagnostics and better patient outcomes. Geoinformatics contributes to sustainable resource management, protecting ecosystems, and minimizing natural disaster consequences. Data-driven marketing explores ethical Artificial Intelligence, striving to create transparent, trustworthy technology and guide policies that safeguard consumer rights and well-being.

MagIC, with 80+ members, secured 30+ R&I projects (worth €8.5M) in 5 years. In 2022, 9 distinguished professors were recognized in Stanford's Top 2% Scientists list, including Professor Tiago Oliveira, MagIC's Director, who was also recognized as a Highly Cited Researcher for the second consecutive year. With 80% Open Science publications, MagIC bridges academia and industry through its 10 NOVA Analytics Labs, driving innovation through tailored research.

MOSTMICRO

Molecular, Structural and
Cellular Microbiology Unit
ITQB NOVA

Coordinator:
Cláudio M. Soares
www.itqb.unl.pt/mostmicro

Under the umbrella of microbiology and molecular biosciences, MOSTMICRO impacts basic science, health and sustainability. The COVID-19 pandemic prompted the creation of a task force involving 12 labs working on 11 multidisciplinary Synergy projects with patents and service to the school system as direct effects and coordination of major European funding (1M€ la Caixa, 8M€ HORIZON-HLTH-2023-DISEASE-03) as indirect ones. In health, MOSTMICRO also attracted a H2020-MSCA-RISE, 2 H2020-Twinning and one 3M€ ERC-2022-ADG grant. In sustainability, MOSTMICRO attracted one FP7-Food, one H2020 FET Open, one H2020-BIOTECH, one H2020-MSCA-RISE and one H2020-BBI-JTI. Paving the way in Science Communication MOSTMICRO won the first ERC Science Journalism Initiative. These funds will focus MOSTMICRO on its mission of advancing science and innovation at ITQB NOVA

Social Sciences

CICS.NOVA

CRIA

ICNOVA

IPRI

CEDIS

NOVA SBE

NOVA
R&D Units

CICS.NOVA
Interdisciplinary Centre
of Social Sciences
NOVA FCSH

Coordinator:
Helena Serra

www.cics.nova.fcsh.unl.pt

Over the last 5 years, several initiatives with scientific, social, and cultural impact, among others, have been developed and stimulated by CICS.NOVA. The project MOSAIC - Joined-up land use strategies tackling climate change and biodiversity loss (HORIZON-CL5-2022-D1-01-two-stage) (2023 – 2028), which includes a team of researchers from different disciplinary areas of CICS.NOVA. This project is the result of a research network with scientific and social impact, which has already resulted in several outputs of scientific and social impact, including knowledge transfer and co-creation. The main objective of the project is to contribute to the production of knowledge about the integrated management of land use in combating climate change and the loss of biodiversity in Europe, through understanding the motivations of the different stakeholders involved in decision-making processes and its integration in the formulation of future scenarios and sustainable land use policies.

CRIA
Centre for Research
in Anthropology
NOVA FCSH

Coordinator:
Sónia Vespeira de Almeida

www.cria.org.pt

Anthropology is crucial for examining the world’s social and cultural dynamics. With extensive research on cultural heritage, CRIA earned recognition as a consultant NGO by UNESCO and FCT funding for its PhD Program in Politics and Displays of Culture. Collaborating with public and private sectors in ICH inventory, research, and dissemination, CRIA has participated in the shaping of local, national, and transnational policies. Today, CRIA offers specialized ICH training and is member of IN2PAST Laboratory, a research consortium in Conservation, History, Arts, and Anthropology oriented towards scientific policies on cultural heritage. Assuming a pivotal position in ICH matters, CRIA also integrates working groups coordinated by UNESCO National Commission and General-Directorate on Cultural Heritage, consolidating its research’s impact at social and political spheres.

ICNOVA
NOVA Communication
Institute
NOVA FCSH

Coordinator:
Cristina Ponte

www.icnova.fcsh.unl.pt

In the past 5 years, ICNOVA developed advanced research in the fields of mediated communication and the arts. Various initiatives with impact resulted in the publication of hundreds of scientific works, as well as attracting competitive funding (at both the international and national levels) for applied research. Different observatories and laboratories were also created with the aim of improving the interaction between the scientific community and non-academic publics through initiatives of scientific engagement and co-creation. For the upcoming years, ICNOVA will continue to explore the multidirectional transformations that are taking place in media-related contexts in two key issues: the social and ecological justice in the contemporary mediated landscapes; and digital media, arts and data society.

IPRI
Portuguese Institute of
International Relations
NOVA FCSH

Coordinator:
Ana Santos Pinto

www.ipri.pt

IPRI-NOVA is an institute dedicated to advanced studies in Political Science and International Relations. IPRI-NOVA is not a think tank but assumes social responsibility and public mission in contemporary society, developing applied research, strengthening its relationship with the world of policy and strengthening its presence in the public space. In terms of training, the Institute, in close relationship with the Department of Political Studies of FCSH/NOVA, promotes an advanced training policy that integrates teaching/research. In the area of knowledge transfer and value creation, the Institute assumes its social responsibility. In addition, the Institute develops its own knowledge dissemination tools: the website, publications, and the quarterly magazine R.I.

CEDIS
Research & Development
Center on Law and Society
NSL

Coordinator:
Luís Duarte d'Almeida

www.novalaw.unl.pt/cedis

CEDIS and the NOVA School of Law boast many research-based initiatives that enhance legal knowledge and awareness across society, engaging with key public and private agents and the wider public. Namely: i) The Observatório do Racismo e Xenofobia that monitors national and international action against racism and xenophobia in Portugal; ii) The Multiversity project that will produce a White Paper setting out integrated levelling protections against discrimination (including multiple and intersectional discrimination); iii) NOVA BHRE's which activities contribute to foster responsible, sustainable business conduct in Portugal and beyond; iv) NOVA IPSI's legal clinic that helps local start-ups and innovators make the most of their intellectual property and know-how; and at last, the TRACE project that develops data-management solutions to enhance law-enforcement agencies' ability to trace and recover illicit money flows.

NOVA SBE
NOVA School of Business
and Economics

Coordinator:
Steffen Hoernig

www.novasbe.unl.pt/en/faculty-research/research/research-unit

Nova School of Business and Economics (Nova SBE) has made significant strides in research and knowledge dissemination in the past five years. Notably, between 2019 and 2020, the school expanded its faculty, published more than 30 articles in prestigious journals, and secured multiple European Commission research grants, including COVID-19-related projects. In 2021, Nova SBE achieved its highest-ever publication record, with 23 articles in top journals and recognition for social impact initiatives. By 2022, the school focused on impactful research addressing societal challenges, securing prestigious European grants, and gaining global recognition for research productivity. Going forward, Nova SBE aims to strengthen research capabilities, foster new partnerships, and drive impactful projects, reinforcing its position as a leading research institution.

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