

champalimaud research

annual
report

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Not everything scales up.

Starting was hard,
but going from a few to many was even harder.

In medicine and science,
everything is divided into specialties,
but the body, and the world around it, is fully integrated.

You start local, build partnerships, and then go global.
You do proof of concept, then partner for scale.

The biggest challenge, and the greatest opportunity,
is to stay innovative and meaningful as the world scales up.

You can be small, but go deeper, go faster.

Rui Costa
CF Non-Executive Director,
President and CEO of the Allen Institute
from 20 Years, 20 Stories Collection

This year’s annual report is guided by the concept of Scale.

Scale as growth and expansion.

Scale as proximity and distance.

Scale as the tension between the individual and the collective.

Over the years, Champalimaud Research (CR) has continuously moved across scales: from absence to presence, from potential to structure, from a few voices to a diverse and interconnected community, from local beginnings to global relevance. Growth has transformed not only our dimensions, spaces, teams, and ambitions, but also our relationships, rhythms, and ways of belonging.

Yet scale is not measured solely by size. It is equally defined by how closeness is preserved as structures expand, how identity evolves and how meaning and purpose remain visible as impact grows. Every shift in scale introduces new balances to negotiate: intimacy and complexity, continuity and transformation, stability and change.

Scale also operates globally. Beyond its physical boundaries, the CR community engages with global scientific, clinical, and societal challenges. In this context, the question is not simply how large a research programme becomes, but how it positions itself, and how it remains agile, innovative, and influential in a world that is itself accelerating and constantly reshaping.

This report approaches scale (and perspective) not as fixed conditions, but as dynamic processes. Its visual language explores shifts in magnitude, density, rhythm and focus, requiring readers to continually adjust their gaze as they move through the report, mirroring the way growth requires continual adaptation and redefinition.

While the typography changes in scale, weight, and form throughout these pages, it remains rooted in a single typeface. Individual visual elements gradually accumulate into larger systems, patterns and structures, reflecting the idea that collective impact emerges from interconnected contributions.

**Because
no mind
is an island.**

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champalimaud

foundation

f o r e w o r d

neurotechnology

warehouse

s t r u c t u r e

cr community in numbers

research

groups

research

support

p u b l i c a t i o n s

competitive external funding

e d u c a t i o n

scientific

events

c u l t u r e

science

communication

nitty

gritty

board of directors Leonor Beleza, President
João Silveira Botelho, Vice-President
Rui Costa, Non-Executive Director (all pictured)
António Horta-Osório, Non-Executive Director



Since its launch in 2007, CR has become a vibrant, creative research community seeking answers to the hardest problems in biomedical research. With more than 500 members, CR works in close contact with over 500 health professionals at the CF to advance our understanding of cancer and neuroscience and apply this knowledge to help those in need.

The model that guides us remains what we have come to call fusion research – a collaborative approach in which scientists and clinicians work not simply alongside one another, but within each other's teams, sharing the same spaces, the same questions, and a common purpose. This structure allows us to navigate complexity, foster innovation, and ensure that our scientific work is always anchored in the realities of patients. It is the foundation on which everything else here is built.

The scientific achievements of 2025 reflect the breadth and depth of what this community is capable of. Among the highlights, the European Research Council (ERC) awarded a Starting Grant to Joaquim Alves da Silva, Group Leader of our Neural Circuits Dysfunction Group. The ERC also recognised the work of Megan Carey, a senior CR Group Leader, with an Advanced Grant of €2.5 million to pursue her work on motor memory and cerebellar function. Joe Paton, Director of our Neuroscience Programme, and Carlos Minutti, one of our Principal Investigators (PIs), secured significant funding through the CaixaResearch Health Call 2025 for projects on how the brain balances short- and long-term information and the innovative GlycoTARGET project, respectively. Rita Fior and Henrique Veiga-Fernandes, two of our senior PIs, were recipients of the Pfizer Research Awards 2025, the oldest scientific distinction in Portugal. The work of Rita Fior on personalising colorectal cancer care, in particular, is a direct example of fusion research translating scientific insight into tools that can change individual patients' lives.

This spirit of excellence was further reflected in the most recent R&D Units Assessment of the FCT, in which CR received the highest possible rating across all criteria. Conducted by more than 315 experts from academic and scientific institutions across 35 countries, the evaluation reflects the strength and collaborative nature of the research environment we continue to build.

2025 saw an important evolution in the structure of our scientific programmes. The Centre for Restorative Neurotechnology (CRN) is now fully established, bringing together the Neuroscience of Disease Programme, the Digital Neurotherapeutics Centre, and the Neurotechnology Warehouse. This new development reflects our conviction that the next frontier in neuroscience lies not only in understanding the brain, but in harnessing that understanding to restore function, autonomy, and quality of life for people living with neurological and psychiatric conditions. It is an ambitious undertaking, and one that is distinctively our own.

As always, we believe that our mission should be driven by the very best scientific talent. We were pleased therefore to welcome Juan Álvaro Gallego to the CRN, where he and his lab will help us explore how the brain controls movement, blending fundamental research with cutting-edge technologies.

Artificial intelligence (AI) is woven into our work. It is increasingly important in the way we analyse data, build models of neural circuits, design therapeutic interventions, and translate research into clinical practice. We do not see AI as separate from science. We see it as a new and powerful dimension of the scientific method itself, one that demands the same rigour and the same commitment to patients that have always guided us.

Our annual CR Symposium, held this year under the theme of Neuro-Cybernetics at Scale, brought together researchers from across the globe. It was, as these gatherings always are, a reminder of the vitality of the scientific conversation we are part of, and of the role that CR plays in shaping it. In an ever-changing world, it is an important symbol of our desire to work across borders and build strong global partnerships.

We would like to take this opportunity to thank our Scientific Advisory Board for their fundamental role in helping us maintain the excellence we strive for. Their guidance shapes our thinking, sharpens our ambitions, and challenges us to be better. We are grateful to each member for their commitment and their care.

The year also marked the appointment of neuroscientist Rui Costa to CF's Board of Directors. A former Principal Investigator and Director of CR, and currently President and CEO of the Allen Institute, he has played a defining role at CR since its early years and recently served as Chair of the Scientific Advisory Board. We are very happy to welcome him to the Board in this new capacity, reinforcing our long-term commitment to scientific excellence, innovation, and the advancement of our research and clinical mission.

As we look back on 2025 and forward to the years ahead, we do so with the same energy and dedication that have brought us this far. And we are always mindful that science, at its best, is an act of service to humanity.

f o r e w o r d

cr directors Celso Matos, Champalimaud Experimental Clinical Research Programme
Joe Paton, Champalimaud Neuroscience Programme



Human beings are innately curious, we notice patterns and seek to identify their origins, even if not immediately obvious. We observe, imagine, and test ideas through experiments to solidify our understanding. This ability to make sense of the world around us, to satisfy our curiosity, is arguably the single most important adaptation underlying our success as a species. When we understand how things work, we can use that knowledge to invent new tools, technologies, and approaches to address the challenges we face - not only to survive, but to thrive in an ever-changing world.

And yet, in many places, fundamental science is under threat. At CR, we have always understood our founder's vision - that the Champalimaud Foundation (CF) perform "scientific research in the field of medicine" - as highlighting the critical importance of balancing strong curiosity-driven discovery with translational and clinical research focused on addressing specific challenges in human health. Indeed, the history of science and medicine shows that the most effective approach is a pluralistic one, where deep fundamental knowledge meets focused efforts to solve immediate problems. In 2025, we can point to several concrete developments that reflect this philosophy.

Our submission to the Fundação para a Ciência e a Tecnologia (Portuguese Foundation for Science and Technology, FCT) Units call, which brought together researchers studying neuroscience, behaviour, immunology, and cancer biology, received the highest possible evaluation score, resulting in more than €9.3M in funding over five years. Among other initiatives, these funds will support the creation of new infrastructure for high-performance computing and spatial multi-omics, expanding the technological frontier for CF researchers across all areas of inquiry.

In addition, several researchers contributed to a large-scale collaborative effort to map the full "connectome" of the fruit fly nervous system. This work paves the way for future efforts to map more complex nervous systems, including our own, and for advances in the field of Neuro-AI to build increasingly accurate computational models of how the brain controls behaviour. Such efforts could ultimately not only unlock new treatments for brain diseases, but also lead to more efficient and adaptable AI algorithms inspired by biology, with far-reaching implications across many areas of society.

In 2025, we also continued to serve as a hub for scientific exchange. The Portuguese Society for Immunology annual meeting, titled “Breaking Boundaries in Immunology”, was held at the Foundation and organised by investigators from the Physiology and Cancer Programme. The Neuroscience Programme hosted the annual CR Symposium, themed “Neuro-Cybernetics at Scale”. In both cases, our researchers sought to move beyond traditional disciplinary boundaries, adopting a more integrative perspective on biology – an approach also reflected in the topic of the upcoming 2026 symposium: “Neural and Immune Codes in Cancer”.

The year also saw significant developments in the organisation of our research programmes. In neuroscience, several new entities were established, including the Neurotechnology Warehouse, the Neuroscience of Disease Programme, and the Digital Neurotherapeutics Centre. Together with the existing Champalimaud Neuroscience Programme – which continues to focus on generating fundamental knowledge of how the brain gives rise to behaviour – these more translational and applied elements form a synergistic ecosystem of programmes in brain research and repair, spanning the full spectrum from blue-sky research and technology development to clinical application, all under one roof.

The Neuroscience of Disease Programme recruited a new Principal Investigator, Juan Álvaro Gallego (formerly of Imperial College London), and absorbed several groups from the now-discontinued Experimental Clinical Research (ECR) Programme, giving rise to its first cohort of research groups under the directorship of John Krakauer, a world-renowned stroke neurologist, motor neuroscientist, and long-time visiting scientist at CR. The remaining ECR groups were integrated into the newly established Champalimaud Imaging Centre and other research units.

The ECR Programme has long played a distinctive role within CR, serving as a bridge between laboratory discovery and patient care, and embedding rigorous scientific methodology within a clinical setting. Through studies directly involving patients – from early-phase trials testing novel therapeutic approaches to longitudinal investigations of disease progression – it has generated insights that neither pure bench science nor routine clinical practice could achieve alone. This close integration of experimental design with real-world medical contexts has enabled researchers to ask questions grounded in unmet clinical needs, and to translate answers back into tangible improvements in diagnosis, treatment, and quality of life. As its groups transition into and enrich the broader research ecosystem, the spirit and standards of experimental clinical research remain a cornerstone of CR’s identity.

Indeed, it would not be hyperbole to suggest that 2025 marked the year in which CR made the most progress in realising the vision of our founder, António Champalimaud. We are beginning to coordinate research efforts more fully across the continuum from basic science to applied science and clinical care. At the same time, important challenges are emerging. Europe has seen a massive influx of scientific researchers in recent years, but public funding has not kept pace with the increased demand generated by this growing pool. To continue pushing the boundaries of knowledge and advancing human well-being, we will need to innovate not only in our science, but also in how we secure the resources to support it.

To that end, philanthropic development, innovation, and technology transfer, alongside our strong track record in securing competitive public and private funding, represent important avenues not only for broadening our impact but also for bringing in the resources needed to continue pushing boundaries. We therefore intend to invest significant effort in strengthening these activities in the years to come.

As we enter 2026, we draw on nearly two decades of experience in building a world-class research environment. We are extremely proud of what has been achieved, but also acutely aware of how much remains to be done. The pages that follow offer a snapshot of the wide range of cutting-edge science, education, public outreach, technology development, and translational innovation carried out over the past year. But much more is underway beneath the surface, taking shape to open new lines of inquiry, make the unknown known, and apply it for humanity’s lasting benefit.

directors Joe Paton, John Krakauer

programme manager Catarina Pimentel

innovation manager Nina Patrick (until March 2025)

neurotechnology liaison officer Thaïs Lindemann (since April 2025)

staff scientists Alexander Loktyushin, Fatemeh Molaei, Johannes Stelzer, and Niklas Fricke (Immersive AI Systems group); Eric Lacosse, Filipe Rodrigues

The Neurotechnology Warehouse is a growing multidisciplinary space where researchers, clinicians, engineers, creatives, and entrepreneurs collaborate on novel forms of basic and applied human research. It provides access to expertise in AI and generative AI, motion capture, immersive exergaming, and virtual and augmented reality, alongside enabling hardware such as soft robotics.

In the applied domain, one approach under development at the Warehouse integrates generative AI with motion capture technologies to create immersive exergaming environments for the treatment of psychiatric conditions, cognitive decline and movement disorders.

In parallel, fundamental research is being conducted in synthetic neuroscience, including robotic twinning using novel actuators to probe the interface between neuroscience and AI. This work aims to uncover how the hierarchical organisation of biological nervous systems supports robust and flexible behavioural control.

By bringing together diverse disciplines, expertise and technologies in a single environment, the Warehouse acts as a catalyst for translating early-stage innovations into functional prototypes ready for first-in-human testing, licensing, and spin-out into start-ups.

The year began with strong momentum. In February, the Neurotechnology Warehouse was awarded a grant under the Lisboa2030 programme, supporting the “Research Infrastructure for Digital Therapeutics” project. This funding laid the foundation for the year’s subsequent growth and activity.

In April, the team welcomed a Neurotechnology Liaison Officer, strengthening its organisational capacity through a cross-functional role shared between the Warehouse and Communications, Events and Outreach (CEO) teams.

On 5 June, CF hosted the European Innovation Council (EIC) Board, alongside representatives of the Portuguese deep-tech ecosystem. The event fostered dialogue between innovators from academia and industry and the investment community, and featured a guided tour of CF’s facilities and laboratories, including a live demonstration of generative AI technologies by the Immersive AI Systems group.

In July, the Warehouse took on a different role, becoming a film set for a day. While the goal was to produce a promotional video for the Warehouse, the process also became a celebration of the projects underway and a genuine team effort. The video will be released on CF's YouTube channel.

On a lighter note, August marked the moment the Warehouse officially entered "Lego world", with a miniature added to the CF campus model at the main entrance.

On 3 September, a major milestone was reached. After months of planning and preparation, the renovated Warehouse spaces were occupied by their teams. This was celebrated with the wider CF community during a sunny Happy Hour.

That same month, further progress followed with the creation of the Neuroscience of Disease Programme, an academic division closely linked to the Warehouse to advance human-based research. Shortly after its launch, the programme welcomed Juan Álvaro Gallego, who established a research group in neocybernetics.

On 17 October, during the 2026 CR Symposium, Warehouse Directors Joe Paton and John Krakauer presented the vision for the Warehouse, integrating research, technological innovation, and clinical application in close synergy with the CR Neuroscience Programme. This presentation introduced the new interdisciplinary ecosystem to the international neurocybernetics community, positioning CF as a leading hub for next-generation neuroscience research and advanced neurological therapies.

Throughout the year, the Warehouse also began to evolve into a broader scientific ecosystem as CF laid the groundwork for welcoming leading academic partners, including the Instituto de Sistemas e Robótica (ISR) at Instituto Superior Técnico (IST), the NOVA Institute for Medical Systems Biology (NIMSB), and the



Centro de Investigação Biomédica (CBR) at the Faculty of Medicine of Universidade Católica Portuguesa. In parallel, a startup accelerator initiative bringing together science, medicine, and industry began to emerge. Together, these developments are creating a unique environment where integration extends beyond CF itself, fostering new connections across institutions, disciplines, and communities.



The central nave of the Warehouse transformed into a film set, with its teams stepping into the role of "actors" for a few hours.

s t r u c t u r e

champalimaud foundation

botton-champalimaud pancreatic cancer centre

champalimaud clinical centre

champalimaud research

neurotechnology warehouse

scientific and technological platforms

advanced biolmaging and biooptics experimental biophotonics fish flow cytometry fly glass wash and media preparation hardware and software histopathology molecular and transgenic tools multimedia rodent

cr support units

communication, events and outreach direction support fellows support office graduate studies office health and science lab administration office for sponsored programmes - post-award operations strategic research development

ombudsperson

direction team

experimental clinical research groups

cancer development and innate immune evasion computational clinical imaging immunotherapy / immunosurgery molecular and experimental pathology myeloma lymphoma research ocular low-cost gene therapy preclinical mri radiopharmacology

physiology and cancer groups

cancer dormancy and immunity cancer and stem cell biology immunophysiology immunoregulation stem cells and regeneration tissue immunity

education

direction coordination teaching lab education and courses

neuroscience groups

behaviour and metabolism behavioural neuroscience circuit dynamics and computation cortical circuits learning mathematics of behaviour and intelligence natural intelligence neural circuits and behaviour neural dynamics neuroethology sensorimotor integration systems neuroscience theoretical neuroscience vision to action

research associates

computational cognitive decision science development of neural circuits innate behaviour neural circuits for visuomotor behaviour

adjunct scientist

social neuroscience

graduate programme sab *

cf sab *

* The Scientific Advisory Boards (SAB) consist of external scientists who provide guidance to CR Programmes and Research Groups

or community in numbers

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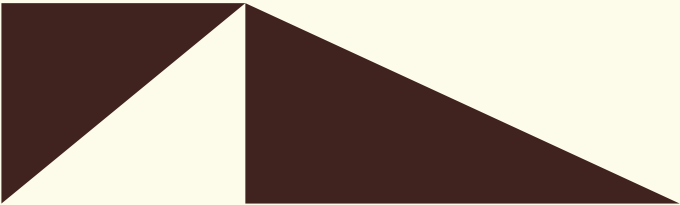
nationalities

- | | | |
|------------|-------------|-----------------------|
| Argentina | Germany | Romania |
| Austria | Greece | Russia |
| Bangladesh | Hungary | South Africa |
| Belgium | India | South Korea |
| Brazil | Iran | Spain |
| Bulgaria | Ireland | Sudan |
| Canada | Israel | Switzerland |
| Cape Verde | Italy | São Tomé and Príncipe |
| China | Japan | Thailand |
| Colombia | Mexico | Turkey |
| Croatia | Netherlands | United Kingdom |
| Estonia | Poland | United States |
| France | Portugal | Vietnam |

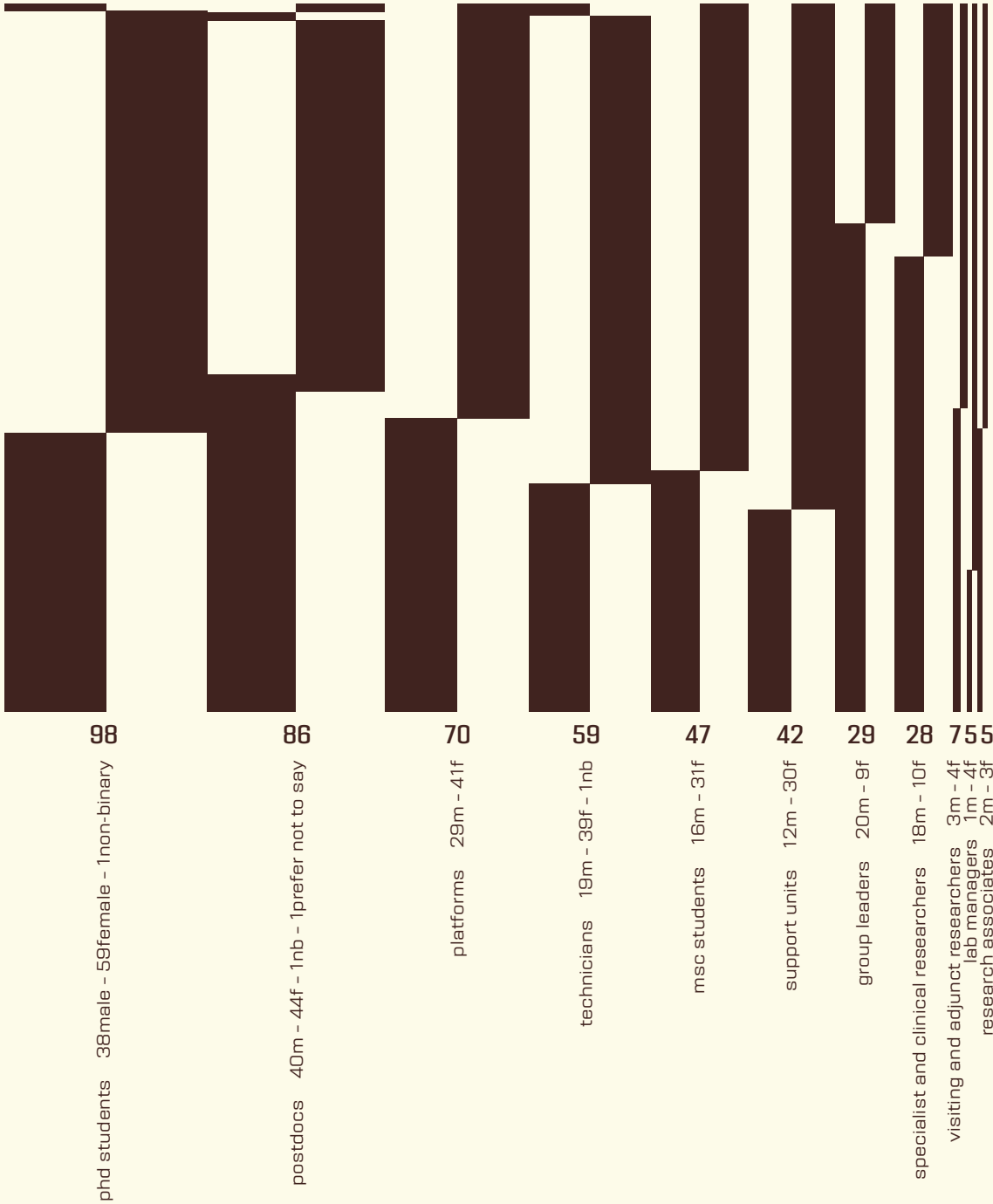
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After Portugal (297 members), the most represented nationalities were Spain (21), Germany (17), the United States (15), France (14), Italy (13), the UK (10), the Netherlands (10) and India (10).

36 % national



64 % international



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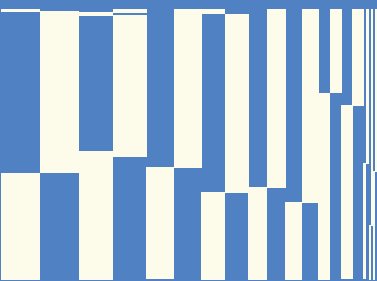
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members

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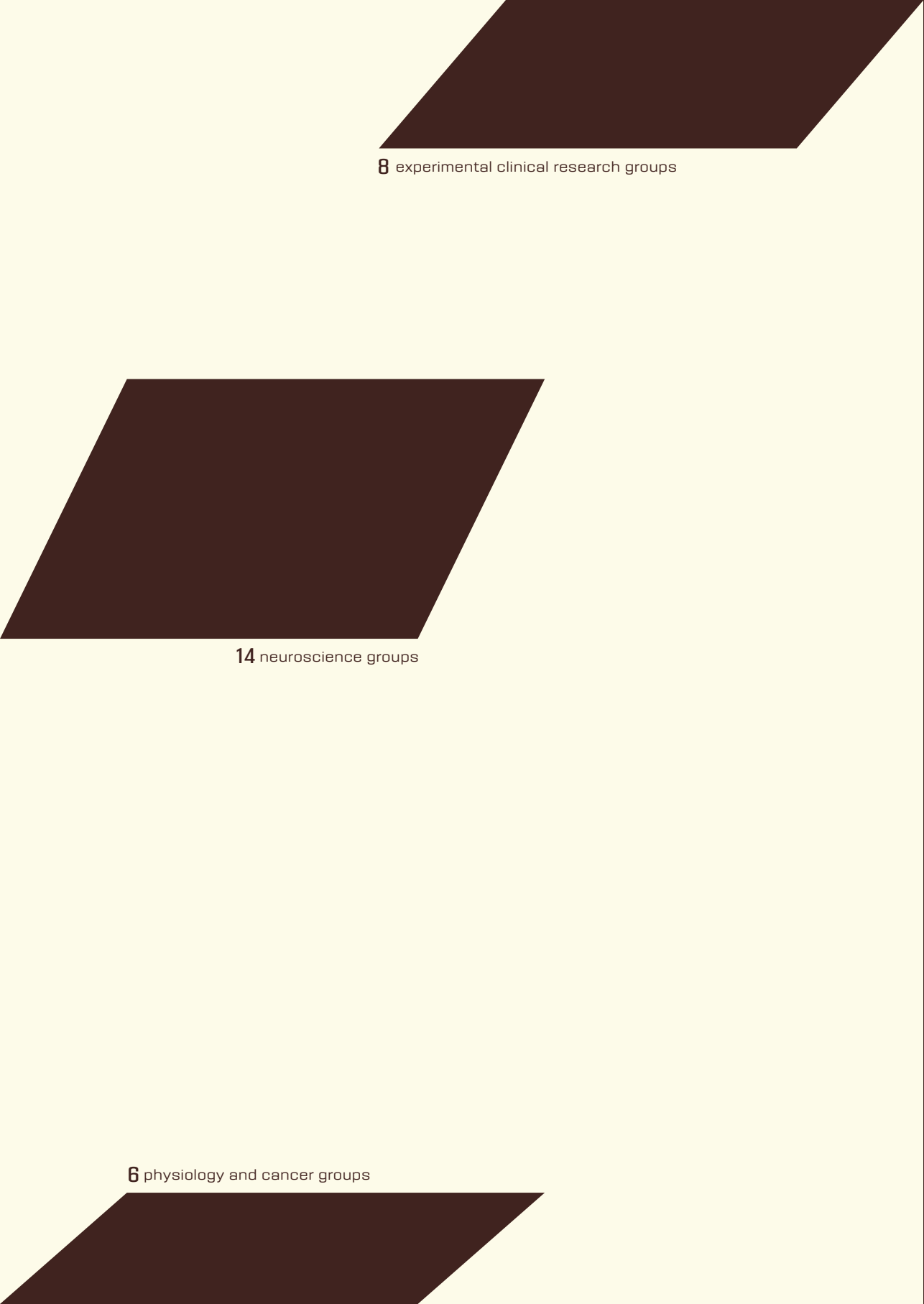
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We thought of a behaviour-focused
neuroscience programme across organisms,
it solidified quickly and gave us a distinct identity.

**Now we are one part among many programmes.
Still important, but part of something larger.**

Zachary Mainen
PI, Systems Neuroscience lab
from 20 Years, 20 Stories Collection



The visuals in this chapter are artistic renditions of the original images.

research

groups

CR integrates three programmes: Experimental Clinical Research, Neuroscience, and Physiology and Cancer. Each programme comprises labs of scientists and students conducting basic, clinical and/or applied research, often in collaboration with other labs at the CF or beyond.

Since late 2025, the labs led by Daniel McNamee, Il Memming Park, Joe Paton, and Zachary Mainen, together with the Hardware & Software platform, have also been collaborating with CRN. The labs led by Albino J. Oliveira-Maia and Joaquim Alves da Silva joined CRN's Neuroscience of Disease Programme and are therefore not included in this report.

cancer development and innate immune evasion

principal investigator Rita Fior

postdoctoral researchers Bruna Costa, Inês Trancoso, Marta Estrada, Raquel Mendes

phd students Ana Beatriz Machado, Beatriz Sebo, Catia R. Almeida

msc students João Lourenço Matos, Mariana Pinto, Marta Matos, Martim Gamboa

technician Miguel Ribeiro

model Zebrafish

methods Zebrafish microinjection, immunofluorescence, *in situ* hybridisation, RT-PCR, microscopy (confocal, spinning-disk and light-sheet), bulk and single-cell RNA sequencing, AI-based image analysis

our lab uses the Zebrafish Avatar model zAvatar as a platform for personalised medicine and to discover innate immune mechanisms and modulators for cancer immunotherapy

Ovarian structures are depicted as flowers, while falling petals symbolise spreading cancer cells. A guiding hand selects the most effective treatment, reflecting how the lab's zAvatar model helps identify personalised therapies for each patient. Credits: Marta Matos



fior lab

experimental clinical research

Our lab developed the zebrafish patient-derived xenograft model (zAvatar). This model relies on the injection of a patient's tumour cells into zebrafish embryos to rapidly test treatments by observing cancer response in a living organism. This personalised approach optimises existing treatments and could transform cancer care. The zAvatar test has shown high accuracy in predicting therapy responses for colorectal, breast, and ovarian cancer, leading to a clinical trial where patients with metastatic breast and ovarian cancer will be randomly assigned to standard or zAvatar-guided treatment.

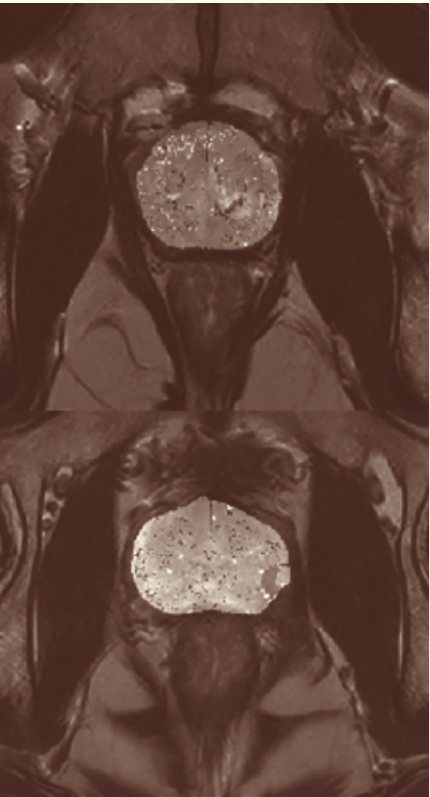
We also study how tumours evade the innate immune system. How do cancer cells escape and suppress these defences? Can we enhance innate immunity and combine it with immune checkpoint blockade to activate both the innate and adaptive branches of the immune system? Our lab is tackling these questions, focusing on the interactions between innate immunity and human cancer cells in real-time, at single-cell resolution.

Several long-term projects reached fruition, reflecting years of development of the zebrafish zAvatar platform and close collaboration with the Champalimaud Clinical Units (Breast, Gynaecological and Digestive) and the CF Biobank. In breast cancer, a study led by Raquel Mendes in partnership with the Breast Unit achieved 100% concordance (18/18) in predicting patient responses. In ovarian cancer, work led by Marta Estrada with the Gynaecological Unit and collaborators in Basel and at Gustave Roussy reached 91% accuracy; this study was dedicated to the memory of Dr. Henrique Nabais.

The team also received the 2025 Pfizer Clinical Research Award for its *Nature Communications* study on colorectal cancer, led by Bruna Costa with the Digestive Unit and Hospital Amadora Sintra. An AI LPCC-Oeiras Valley grant will support the development of AI-based analysis to scale and accelerate zAvatar diagnostics. The lab's ongoing randomised clinical trial comparing zAvatar-guided therapy with standard care was highlighted in *Science*, and the group celebrated the fifth edition of its international hands-on course on zebrafish xenografts.

computational clinical imaging

principal investigator Nikolaos Papanikolaou
postdoctoral researchers Alexandre Calado, José Almeida
phd students Ana Sofia Castro Verde



model Human
methods AI models for medical imaging

develop AI systems to enhance outcomes for cancer patients, support healthcare providers, and improve healthcare systems, while offering education on the safe clinical application of AI research

↙ Radiologic-pathologic correlation used to validate our deep-learning models for detecting prostate cancer from MRI scans.

papanikolaou lab

experimental clinical research

Our group specialises in computational medical imaging, integrating imaging and clinical data to advance oncology research. Using machine learning, we identify key features to address cancer research questions. Our AI models focus on automatic tissue and lesion segmentation, early disease detection, and predicting disease recurrence risk. We collaborate internationally with clinical partners across the UK, France, Italy, Denmark, Sweden, Greece, and Brazil, enriching our research with diverse data.

We are active in major research initiatives like ProCancer-I and EUCAIM, a panEuropean cancer imaging data repository. As founding members of FUTURE-AI, we set guidelines for safe AI use in clinics and enhance AI model fairness and explainability.

We also work on improving clinical AI infrastructure and communication. By developing large language models, we aim to present AI predictions in a user-friendly way, making complex AI insights accessible for practical healthcare applications.

It was a highly productive year, with six submissions for European funding and 13 peer-reviewed publications. Among these publications was a paper published in The BMJ, in which Nikolaos Papanikolaou joined 116 international AI experts to develop the FUTURE-AI guidelines for trustworthy AI in healthcare. He was the only researcher representing Portugal in this global initiative, which brought together experts from 50 countries. In addition, the European Innovation Radar recognised CF as an innovator based on the group’s contributions to the ProCancer-I project.

immunotherapy / immunosurgery

principal investigator Markus Maeurer
chief of staff Barbara Loesch
coordinator Miguel Vázquez
head of quality assurance Daniel Korner
head of molecular engineering and bioinformatics Vitaly Balan
head of good laboratory practice Dário Ligeiro
clinical trial design specialist Filipe González
postdoctoral researchers Joana Lérias, Carolina Gorgulho
pharmacist Bernardo Marinheiro
technicians Jéssica Kamiki, Rodrigo Eduardo
clinical pathologist Leonardo Lordello
senior scientist Mariia Mitina
bioinformatician Miguel Chaves Ferreira
scientific writing associate Karina Balan
lab manager Patrícia António
msc student Matilde Sedas
intern students (including erasmus programme) Paul Korn, Arianna Zanon, Laura Creati, Gonçalo Santos, Sara Correia, Judite Martins

model Human (patient-derived clinical specimens and ex vivo tumour and immune cells)
methods DNA exome and RNA sequencing, single-cell analysis, spatial transcriptomics, immunohistology, flow cytometry, deep TCR (T-cell receptor) and BCR (B-cell receptor) sequencing, TCR transfer and target identification, bioinformatics platforms for personalised clinical applications, CRISPR and CRISPRi/a, lentiviral production, single-cell secretomics, functional T-cell assay

we build an integrated preclinical-to-clinical cell therapy pipeline for cancer patients, supported by a preclinical development suite and a GMP facility undergoing accreditation

← A T cell recognising and killing a tumour cell.

maeurer lab

experimental clinical research

The Cell Centre develops, in collaboration with international partners, T-cell therapies for patients with solid tumours, using either non-genetically engineered immune cells or approaches that combine antigen-specific recognition with CRISPR-based control of T-cell function. Alongside this, the team is building end-to-end workflows, from patient-derived tumour material to the release of clinical-grade products, while advancing Good Manufacturing Practice (GMP) readiness of the GMP facility, including quality assurance systems, electronic batch record capture, and a dedicated functional quality control laboratory. Our single-vector platform integrates an anti-cancer receptor with programmable control of T-cell function, enabling more streamlined engineering of therapeutic T cells and reducing manufacturing complexity compared with multi-vector methods. Preclinical work combines tests of cancer specificity, T-cell potency, and how long these engineered T cells remain active with single-cell profiling and viral integration site analysis to assess their performance, safety, and stability.

The lab advanced its single-vector, programmable T-cell platform, enabling coordinated cancer-targeting and epigenetic control of T-cell state. It expanded its release testing framework to combine functional potency assays with single-cell multi-omics and genomic integration analyses. Manufacturing workflows were further scaled from patient-derived starting material, improving consistency across cell engineering and expansion processes.

The group strengthened its clinical translation pipeline through new and expanded collaborations, developing protocols for early Phase I trials in solid cancer. In parallel, we continued to build a strong intellectual property portfolio and strategic partnerships to support the development of synthetic biology-enabled cell therapies.

The year also saw Markus Maeurer elected to the Academia Europaea, one PhD and one MSc thesis completed under his supervision, alongside awards for best oral and poster presentations at an international tumour immunology conference in Germany.

principal investigator Mireia Castillo-Martin
phd students Camila Sarmiento Betancourt (co-sup. D. Accardi and L. Vanneschi, NOVA IMS), Inês Ribeiro, José Gonçalves Moreira de Azevedo (co-sup. P. Gouveia, Champalimaud Clinical Centre)
msc student Tatiana Ferreira
visiting scientist Mafalda Jacob
technician Hasti Calá

model Human biological samples
methods Immunohistochemistry, immunofluorescence, multispectral microscopy, digital pathology

we investigate molecular signatures in cancer and its microenvironment to identify new biomarkers that enhance patient outcomes

Rectal cancer tissue following chemoradiotherapy. A combined staining approach distinguishes scar-like fibrotic tissue from remaining smooth muscle fibres, enabling precise tissue differentiation. Credits: Hasti Calá

We apply histopathology techniques to analyse tissue samples from various human solid tumours, correlating findings with clinical data to identify novel biomarkers for cancer diagnosis, prognosis, and treatment response. Our goal is to improve patient management and outcomes.

We have long used multispectral microscopy and recently integrated AI-powered digital pathology to assess molecular signatures of tumour cells and their microenvironment, enhancing our understanding of cancer biology.

The lab was highly active, advancing several collaborative projects. Tatiana Ferreira developed three novel multiplex immunofluorescence (mIF) panels for her Master’s thesis as part of the KeyPARTNER clinical trial led by the Breast Unit at the Champalimaud Clinical Centre. Hasti Calá optimised a specialised staining method to distinguish fibrosis from residual smooth muscle fibres in rectal cancer specimens following neoadjuvant chemoradiotherapy, contributing to an international project led by former CR postdoc Andrada Ianus at King’s College London.

Inês Ribeiro implemented two mIF panels to investigate the relationship between Sialyl-Tn expression in pancreatic ductal adenocarcinoma (PDAC), its molecular carriers and immune cell infiltration within the PDAC tumour microenvironment, in collaboration with Paula Videira (NOVA FCT). Camila Betancourt started a collaborative study on rectal cancer biopsies collected before treatment, working with Leonardo Vanneschi (NOVA IMS) and Davide Accardi and José Azevedo (CF). Mafalda Jacob completed her project characterising the colon adenocarcinoma microenvironment, with a particular focus on natural killer cells.

myeloma lymphoma research

principal investigator Cristina João
postdoctoral researchers Ana Queirós, Emilie Arnault Carneiro
phd students André Santos, Filipa Barahona, Joana Caetano
msc students Carolina Preto, Jessica Pereira Rodrigues, Madalena Silva, Maria Margarida Domingos
technician Mireia Duran

models Human, mouse, cell lines
methods Flow cytometry, genomics, proteomics, cell cultures

uniting clinical haematologists and researchers, we focus on multiple myeloma to advance lymphoid cancer treatment

3D imaging of an artificial bone marrow model reveals how blood and immune cells reorganise over time, from day 1 to day 7.

joão lab

experimental clinical research

We focus on the blood cancers multiple myeloma (MM) and mature B-cell lymphomas, emphasising four key areas: (1) Identifying biomarkers for monoclonal gammopathy of undetermined significance and MM diagnosis using liquid biopsies to analyse circulating DNA, tumour cells, proteins, and immune profiles; (2) Developing novel therapies for MM and lymphoma targeting the bone marrow microenvironment, using mouse models and a 3D organoid drug screening platform; (3) Studying the role of neuronal signals in MM progression and their effects on MM cells and natural killer cells within the bone marrow, aiming to improve patient outcomes and suggest new treatment approaches; (4) Enhancing lymphoma tumour assessment with advanced imaging techniques.

Our goal is to advance the treatment of mature B-cell malignancies, improve patient care, and introduce innovative therapies, providing practical insights for haematologists and deepening understanding of the tumour microenvironment.

Our group published original research on 3D bone marrow organoid models to improve how multiple myeloma is studied and tested in the laboratory. The team also contributed as co-authors to the European Myeloma Network Group Consensus Statement on the use of next-generation sequencing to support risk stratification in newly diagnosed patients.

Two students completed their Master’s theses, and the group helped select candidates for the 2025 International Cancer Doctoral Programme. The lab maintained a strong international presence through participation in major scientific events, including the European Hematology Association congress and the International Kidney and Monoclonal Gammopathies meeting. Cristina João was invited to deliver a keynote lecture at the symposium “Unravelling the Complexity of Multiple Myeloma: Advances in Science and Therapeutics”, held in September in Trondheim, Norway.

ocular low-cost gene therapy

principal investigator Miguel Seabra
assistant researcher Pedro Antas
postdoctoral researcher Luisa Lemos
phd students Ana Fonseca, Cláudia Carvalho
technician Shuvajit Rakshit

models Human cell-based, mouse
methods Cell and molecular biology, genome engineering, imaging, flow cytometry, electroretinography, OCT

RNA-based therapeutics,
innovative delivery systems
and molecular strategies
for eye diseases

Mouse retinal pigment epithelium
imaged by confocal microscopy following
subretinal delivery of genetic material.



seabra lab

experimental clinical research

The lab develops scalable and cost-effective gene therapy platforms to expand access to advanced treatments for eye diseases worldwide. The team combines synthetic mRNA technologies with innovative nanoparticle delivery systems to target a wide range of conditions, from inherited retinal disorders to chronic eye diseases and ocular cancers. By integrating gene-editing tools with personalised medicine approaches, the group designs precise molecular therapies tailored to patients' genetic profiles, aiming to translate advances in genome engineering into practical and widely accessible clinical applications.

The team continued to advance genomic medicine approaches for vision restoration. We secured funding from the Choroideremia Research Foundation to optimise prime editing strategies for the treatment of inherited retinal diseases, further strengthening our work in personalised therapies for ocular conditions. In recognition of the lab's research excellence, Cláudia Carvalho was awarded a prestigious Doctoral INPhINIT fellowship from the la Caixa Foundation to support her PhD studies.

The group presented its latest findings at major international meetings, including the mRNA-Based Therapeutics Summit Europe (Frankfurt), the European Society of Gene and Cell Therapy (Seville), and the Neuro-Ophthalmology meeting (Lisbon). To accelerate the development of effective gene delivery systems, we established a new collaboration with Ana Coroadinha (iBET) and continued our partnership with Niren Murthy (UC Berkeley), strengthening the translation of molecular and nanotechnology innovations into clinical applications.

preclinical mri

principal investigator Noam Shemesh

postdoctoral researchers Cristina Chavarrias, Gili-Ezra, Rafael Henriques, Rita Gil, Sónia Gonçalves, Tal Shemesh

phd students Frederico Severo, Rita Alves, Ruxanda Lungu, Sara Monteiro

technician Francisca Fernandes

models Mouse, rat

methods MRI, optogenetics, electrophysiology, histology, intrinsic optical microscopy

harness ultrahigh field MRI to understand the mechanisms by which modifications in tissue microstructure transcend globally to modulate function and behaviour, and to explore the potential of these as early disease biomarkers

Brain activity patterns in the rat inferior colliculus during auditory stimulation, measured using functional MRI BOLD responses.



shemesh lab

experimental clinical research

We've discovered large-scale intrinsic oscillatory patterns in fMRI signals using a novel ultrafast imaging method. These global brain dynamics coordinate spontaneous activity across regions, and open new avenues for understanding their biological basis, how they are altered by brain stimulation, and their potential for early detection of neurological disorders. This aligns with our efforts to map brain changes in conditions such as stroke, gliomas and neurodegeneration.

We've also advanced research in neurodegenerative disease and cancer models. This included studying sensory dysfunction in a Parkinson's disease mouse model and collecting extensive imaging data in an Alzheimer's disease model. We've progressed in detecting precancerous pancreatic lesions and mapped visual receptive fields in visually deprived rats using fMRI, yielding remarkable findings in adult brain plasticity. In parallel, we've refined advanced MRI acquisition and noise-reduction techniques, with wide-ranging applications.

The lab published ten papers, including five collaborative studies, in journals such as *Communications Biology*, *Imaging Neuroscience*, *Abdominal Radiology* and *NMR in Biomedicine*. These publications covered a broad range of topics, from pancreatic imaging to mapping auditory and visual brain function.

Rita Gil received the Best PhD Award at the European Society for Molecular Imaging Annual Meeting after delivering a plenary lecture. Ruxanda Lungu won first prize in the 7th edition of the Prémio CNS competition. Former postdoctoral researcher Rafael Henriques established his own laboratory at the University of Lisbon (FCUL), where he is now Assistant Professor, and secured an FCT grant - to be carried out at CF - to explore Correlation Tensor MRI in stroke.

The group also welcomed Gili Ezra-Nevo as a postdoctoral researcher, working on metabolism in mouse models.

radiopharmacology

principal investigator Durval Costa
mathematician Francisco Oliveira
physicists Mauro Costa, Paulo Ferreira, Rui Parafita
radiopharmacist Ana Capacho
radiochemist Francisco Silva
nuclear medicine physicians Ângelo Silva*, Carla Oliveira*,
Diogo Rombo, Joana Castanheira, Ricardo Teixeira, Sofia Vaz
biomedical engineers Cláudia Constantino*, Luísa Silva
phd students * and Jorge Borbinha
masters students Beatriz Ornelas, Inês Cardoso, Inês Correia, Luísa Dias,
Marta Almeida, Mónica Alfaiate, Joana Marques, Vasco Pedrosa
technicians Alexis Rodrigues, Ana Canudo, Ana Siqueira, Andreia Figueiredo,
Beatriz Correia, Helena Delgado, Marisa Machado*, Miguel Andrade,
Rita Oliveira, Sara Matos, Sónia Teixeira, Vanessa Santos

model Human
methods Image processing/quantification,
imaging biomarkers, statistical methods/ML,
radiopharmaceuticals, theranostic personalised dosimetry

to use radiopharmaceuticals
to promote better diagnoses,
improve prognostication with
new biomarkers and develop
new treatments to achieve
better outcomes for patients

Top: pre-radiotherapy FDG PET/CT scan
showing two malignant lung lesions (arrows).
Bottom: the same scan overlaid with the
planned radiotherapy dose distribution
to study radiation-induced lung inflammation.
The pale lung areas outside the lesions
(arrows) may be affected by radiation-
induced side effects.

costa lab

experimental clinical research

Our lab maintains a strong partnership with the Nuclear Medicine-Radiopharmacology clinical service, working collaboratively to enhance patient diagnosis, monitor disease progression, evaluate therapy responses, and provide treatment using radiopharmaceuticals - molecules tagged with radionuclides. Our research is dedicated to developing new radiopharmaceuticals and software tools that positively affect patient care within clinical settings.

We are also focused on advancing personalised dosimetry in theranostics, which involves planning and verifying radionuclide therapy effectiveness. In terms of software development, our goals include refining radiation dosimetry related to radiopharmaceutical use and enhancing the processing and analysis of imaging data. This involves creating software capable of classifying and quantifying diseases linked to cellular functional abnormalities.

The group published nine peer-reviewed papers and presented eleven conference abstracts at major meetings, including the Annual Meetings of the European Association of Nuclear Medicine (EANM) and the Society of Nuclear Medicine and Molecular Imaging (SNMMI), with the abstracts later published in leading nuclear medicine journals. One abstract, “Pre-treatment [18F]FDG PET-based lesion features predict clinical radiation pneumonitis after lung radiotherapy”, received the SNMMI 2025 International Best Abstract Award for Portugal. Several team members were invited as keynote speakers at national and international conferences, and five Master’s students successfully defended their theses.

The lab also performed its first in-house labelling of [68Ga]FAPI (Fibroblast Activation Protein Inhibitor), a promising radiopharmaceutical for cancer diagnosis and staging. Building on this milestone, the team is developing a research project to evaluate its potential advantages in the detection and staging of pancreatic cancer.

behaviour and metabolism

principal investigator Carlos Ribeiro
lab manager and senior research assistant Ana Elias
postdoctoral researchers Daniel Münch, Gili-Ezra, Hina Kosakamoto, Ibrahim Taştekin, Marcel Dias, Silvia Henriques
phd students Anna Beltramini, Arina Dygay, Rita Figueiredo, Rory Beresford, Shrivas Chaterji
technicians Célia Baltazar, Eva Scholz Carlson, Inês Haan de Vicente

model Fruit fly
methods Neural circuit manipulations, connectome, automated behavioural assays, volumetric calcium imaging, CRISPR, RNAi screens, isotope-resolved metabolomics, scRNAseq

how do nutrients shape brain function, behaviour, and physiology?

A small subset of the cells in the central nervous system (brain and ventral nerve cord) of the male *Drosophila* fruit fly (data acquired and analysed by the FlyEM Project Team at HHMI-Janelia, the Cambridge Connectomics Group, and Google Research).

ribeiro lab

neuroscience

We investigate how nutrients shape behaviour through brain-body interactions. Using the fly connectome, genetics, genomics, and metabolomics, we uncover conserved mechanisms linking diet and the brain.

The lab published a comprehensive study showing how amino acid deficiency alters gene expression in the brain. When flies lack a single essential amino acid, their brains rewire sensory circuits to seek out beneficial gut bacteria, revealing an adaptive strategy to mitigate the effects of an imbalanced diet.

In collaboration with international partners, the team also demonstrated that the evolution of food preferences is shaped not only by changes in taste receptors, but by how the brain interprets taste signals, providing new insight into how species adapt to their dietary niches.

We contributed to a major consortium effort to map the entire male fly nervous system and, for the first time, mapped the complete wiring diagram of the fly’s taste and feeding circuits. This work traced how taste information is transformed into feeding behaviour and identified a dedicated brain circuit for protein appetite.

Daniel Münch established his own laboratory as a professor at the University of Giessen. Beyond research, Carlos Ribeiro co-founded Science Kitchen, an initiative bringing scientists together with leading Portuguese chefs to explore connections between science and gastronomy.

behavioural neuroscience

principal investigator Marta Moita
postdoctoral researchers Alexandre Leitão, Anna Hobbiss, Matheus Farias, Natalia Barrios (jointly with A. Oliveira-Maia), Ricardo Neto Silva
phd students Charlotte Rosher, Marco Colnaghi (co-sup. A. Renart), Mirjam Heinemans, Violetta La Franca
msc student Matilde Henriques
technician Sara Santos (jointly with M.L. Vasconcelos)

model Fruit fly
methods Quantitative behavioural analysis, *in vivo* cardiac and muscle imaging, genetic manipulation, optogenetics, neuronal anatomy

we study the rapid behavioural, physiological and neural changes triggered by external threats that help organisms survive

↙ Trajectories of a fruit fly during rapid escape jumps triggered by a simulated looming threat. Three separate jumps are shown.

moita lab

neuroscience

When faced with a predatory threat, an animal must decide whether to freeze to avoid detection, flee to safety, or, as a last resort, fight back. From fish to primates, this choice depends on the nature of the threat, the environmental context and the internal state of the animal.

To understand how defensive strategies are selected and executed, our lab studies fruit flies. This model allows us to combine high-throughput behavioural analysis with powerful tools – including genetics, connectomics and physiological measurements – to uncover the neural and bodily mechanisms underlying defensive behaviour.

Mirjam Heinemans defended her PhD thesis on the social modulation of defensive responses in *Drosophila*. Matilde Henriques joined the lab for her Master’s thesis, investigating how genetic background shapes neuronal function under the supervision of Alexandre Leitão. Rui Gonçalves, formerly a technician in the lab, began a new chapter in his research career by starting a PhD at Northumbria University under the supervision of Clara Ferreira, with Marta Moita as co-supervisor.

The lab also remained active in outreach. Charlotte Rosher and Violetta La Franca organised several science engagement activities with local under-resourced communities, including the *Science on the Walls* summer camp. Marta Moita completed her medical degree at the University of Algarve (UAIg).

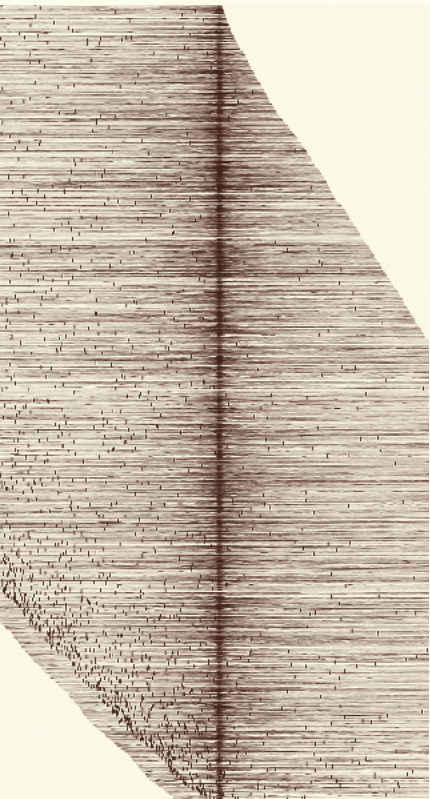
circuit dynamics and computation

principal investigator Alfonso Renart
postdoctoral researchers Juan Castiñeiras, Mafalda Valente
phd students Anh Nguyen, Catarina Fonseca, Joan Gort, Marcel Graetz (co-sup. D. McNamee), Marco Colnaghi (co-sup. M. Moita), Naz Belkaya, Sofia Freitas (co-sup. J. Paton)
research assistants Hagar Yulzari, Joao Pimenta, Jose Grilo, Raghavendra Kaushik

models Human, rat, mouse
methods Behaviour, electrophysiology, optogenetics, theory

computational principles
underlying decision-making,
control and the temporal
sequencing of behaviour

Social influence on behaviour in flies.
Each row represents a threat-evoked freezing
episode. Tick marks indicate when flies resume
movement. The experiment explores how flies
may use movement cues from nearby flies
to judge when danger has passed.



Our lab uses both experimental and theoretical approaches to study decision-making, using rats, mice and humans as model systems. Our methods include large-scale electrophysiology, perturbations, quantitative behavioral analysis and mathematical modelling. The focus of our current research encompasses five main areas: (1) Understanding the neural basis of decisions about sensory intensity through psychophysical tasks (2) Characterising the processing of sensory intensity in individuals with autism spectrum disorder and in animal models of the condition (3) Developing mathematical models to understand the interaction between controlled and automatic processes during decision-making, both at the behavioural level and at the level of neural circuits (4) Understanding how the computational flexibility of artificial neural networks can be realised in more biologically constrained networks of spiking neurons (5) Describing the dynamics of loom-evoked freezing in *Drosophila*.

In collaboration with the Mainen Lab, we published a study in *Nature Neuroscience* showing that mice’s facial movements reflect their hidden thoughts. We presented our work at invited seminars in Amsterdam and at the online Van Vreeswijk Computational Neuroscience Seminar. Alfonso Renart also participated in a workshop organised by the Nencki School of Ideas in Paris, where philosophers and neuroscientists discussed the concept of neural representation, and Catarina Fonseca attended the Cold Spring Harbor course on Autism Spectrum Disorders.

The team presented two posters at the COSYNE meeting and will return in 2026 with three additional posters and a contributed talk. During the year, Mafalda Valente and Sofia Freitas defended their PhDs, and João Pimenta completed his MSc thesis. The lab welcomed Joan Gort as a PhD student and Hagar Yulzari as a research technician, while Tiago Costa moved on to work as a data scientist.

cortical circuits

principal investigator Leopoldo Petreanu
postdoctoral researchers Emanuele Paoli, Flora Vasile, Matthijs oude Lohuis (jointly with C. Machens), Solene Sautory (jointly with Z. Mainen)
phd students Beatriz Belbut, Devanshi Sha, Kerem Sarikaya, Pedro Dias
technicians Feray Feuerhake, Gonalo Ferreira

model Mouse
methods Electrophysiology, optogenetics, two-photon microscopy, quantitative behaviour

we explore how the brain learns internal models of the world and combines them with sensory stimuli to guide perception and action

Section of the mouse neocortex showing neurons that send connections to the primary visual cortex.

petreanu lab

neuroscience

Our brain continuously interprets the environment around us to plan and guide our actions. This process entails integrating sensory inputs with internal models of the world. We investigate how the brain acquires and uses knowledge about the world to influence perception. By employing optical, electrophysiological, and behavioural methods in mouse models, we explore how brain circuits across various areas learn and retain information about expected regularities of the world. Moreover, we examine how these learned patterns are integrated with sensory information to shape perception.

The lab welcomed Emanuele Paoli as a postdoctoral researcher and Pedro Dias as a PhD student, having previously worked in the group as a technician. Together, they are investigating how different regions of the neocortex represent visual objects that are partially hidden or recalled from memory. Anastasia Simonoff completed her Master’s thesis on developing and applying an artificial neural network-based “digital twin” of the mouse visual cortex to study interactions between cortical areas. We also initiated a collaboration with Julijana Gjorgjieva’s lab at the Technical University of Munich to explore how signals are integrated within dendrites and how synaptic plasticity differs across pathways in the cortical hierarchy.

learning

principal investigator Joe Paton
postdoctoral researchers Caroline Haimerl (jointly with C. Machens and D. McNamee),
Filipe Rodrigues (Neurotechnology Warehouse staff scientist), Pawel Bujalski
phd students Francesco Costantino (co-sup. J. Gallego), Francisco Azevedo
(co-sup. C. Haimerl), Prannay Reddy, Renato Sousa (co-sup. R. Oliveira), Simon Zamora,
Sofia Freitas (co-sup. A. Renart), Teresa Serradas Duarte (co-sup. M. Carey)
technicians Benjamin Zarov, Rodrigo Martins

models Mouse, rat
methods Behaviour, computational modelling,
electrophysiology, imaging, genetic ablations, robotics

circuit and computational
basis of timing, learning,
and behavioural control

A musculoskeletal limb in a virtual physics
environment, overlaid with the “force field”
(arrows) produced by the limb upon activation
of its spinal circuit model controller. Such
motor primitives, observed across many species,
may provide a powerful basis for the composition
of complex behaviour.

paton lab

neuroscience

The lab studies how the brain learns from experience and uses time to guide decisions and actions. The team focuses on brain structures spanning the entire neuraxis to understand how animals figure out which signals in their environment predict important events and rewards. By training rodents to perform carefully designed tasks, recording or manipulating brain activity, and constructing computational models, they uncover how patterns of neural activity encode the passage of time, expectations, and the value of different choices. Their work aims to reveal general principles by which the brain transforms past experience into flexible, goal-directed behaviour.

Margarida Sousa published her paper in Nature, consisting of collaborative work with Daniel McNamee, showing how populations of dopamine neurons encode a rich map of possible future rewards – including their size, timing, and variability – helping to explain how animals rapidly adapt when task rules change. This work bridges biological learning and AI by revealing distribution-like codes in real neural circuits. Caroline Haimerl, Filipe Rodrigues, and Joe Paton co-authored an Annual Review of Neuroscience article titled “Time, control, and the nervous system”. The lab also received a la Caixa Foundation grant for the project “Dopamine, impulsivity, and multi-timescale, hierarchical control of behavior”.

mathematics of behaviour and intelligence

principal investigator Gonzalo de Polavieja
senior research scientist Fernando Martín-Maroto
postdoctoral researcher David Méndez
machine learning researcher Carolina Gonçalves
software developer Jordi Torrents
phd students Dean Rance (co-sup. M. Orger)
msc students Francisco Silva

models Zebrafish, computational
methods Machine learning, behavioural analysis, learning methods

we study how interacting units (animals, neurons or mathematical agents) can give rise to intelligent behaviour

2D visualisations showing how idtracker.ai groups images of individual animals according to their unique visual characteristics. Each point represents a single animal image.

de polavieja lab

neuroscience

The lab combines experimental, theoretical and computational approaches to study how complex systems coordinate across scales - from groups of animals and neural populations to abstract interacting units that solve tasks collectively. A central goal is to make high-dimensional systems easier to understand by identifying simpler underlying structures and representations. Much of this work relies on data-driven inference in collective systems, supported by the development of new tools based on modern machine learning.

In parallel, the group is developing Algebraic Machine Learning, a framework that treats learning as a structured decomposition of tasks. By focusing on the mathematical structure of problems, this approach aims to reduce reliance on extensive parameter tuning and to limit overfitting by design, offering a complementary perspective to conventional statistical learning methods.

The lab developed new machine-learning tools spanning computational ethology, genomics and formal learning theory. In computational ethology, the team advanced idtracker.ai, redesigning it to use representation learning so that individual animals can be tracked more robustly, even in less-than-ideal video conditions, while improving both speed and accuracy. We also developed C.La.P., a transformer-based model that integrates DNA sequence information with chromatin accessibility data (ATAC-seq) to improve the analysis of genomic signals.

In parallel, the group completed the mathematical framework underlying Algebraic Machine Learning and systematically evaluated its performance against standard statistical learning methods. The algebraic approach proved particularly accurate for small datasets and remained competitive on larger datasets, especially for structured tabular data.

The lab's collaboration with Manuel Irimia on neuronal microexons was published in *eLife*. Work on dolphin communication with Germán Sumbre continued, and a new collaboration with Pablo Jercog was started to study hippocampal activity in mice.

natural intelligence

principal investigator Daniel McNamee
postdoctoral researchers Caroline Haimerl (jointly with C. Machens and J. Paton),
Francesco Trapani, William Walker
phd students Hannah Vormann, Inês Laranjeira (co-sup. Z. Mainen),
Jaime Arlandis (co-sup. Z. Mainen), Marcel Graetz (co-sup. A. Renart), Shahar Haim
msc students Inês Castro, João Dias, Mariana Duarte, Sara Monteiro
research scientist Eric Lacosse

models Human, bat, rodent, synthetic agent
methods Theory, simulation, data analysis

we seek algorithmic and
circuit-level descriptions
of flexible cognitive processing
and behavioural adaptation

Conceptual map of how human thought moves
between related ideas. Each cluster groups similar
concepts (e.g. farm animals, primates, insects).
Dotted arrows show thinking narrowing toward
closely related ideas (convergence), while solid
arrows show it branching out to more distant
ones (divergence).

mcnamee lab

neuroscience

The lab’s interests span the internal processing of the external world to physical embodied interactions in natural systems throughout the animal kingdom, from understanding the detailed dynamics regarding how brains internally conceptualise and generate inferences to learning to optimise continuous behaviours.

The lab published new research on human expert planning in *PNAS* and a study on hierarchical control at the Conference on Neural Information Processing Systems (NeurIPS). A continued collaboration with colleagues at Instituto Superior Técnico led to advances in computational models of memory, published at the International Conference on Machine Learning (ICML) and in the Journal of Machine Learning Research. The lab also welcomed two new members, Shahar and Hannah, whose perspectives are already contributing to ongoing projects.

neural circuits and behaviour

principal investigator Megan Carey
postdoctoral researchers Alice Geminiani, Ana Machado, Coralie Hérent, Jorge Ramirez-Buritica, Romain Sala, Tatiana Silva
phd students Ana Gonçalves, Marta Forcella, Merit Kruse, Teresa Duarte (co-sup. J. Paton)
technician Margarida Gingeira

model Mouse
methods Quantitative behavioural analysis, neurophysiology, optogenetics, chemogenetics

studying the neural circuits for learned and coordinated movement in mice

↙ Purkinje neurons in the mouse cerebellum, arranged like a row of beads, with their climbing fibre inputs.

carey lab

neuroscience

We aim to understand how activity is orchestrated within neural circuits to give rise to behaviour. With this in mind, our research focuses on the cerebellum, a brain area critical for coordinated motor control and motor learning and whose circuitry is well characterised. The lab’s major achievements so far include: (1) Establishing a quantitative framework to identify specific cerebellar contributions to mouse locomotor coordination (e.g. Machado et al., *eLife*, 2015; Machado et al., *eLife*, 2020) (2) Dissecting circuit mechanisms for cerebellar learning and its modulation by behavioural state (Albergaria et al., *Nature Neuroscience*, 2018; Silva et al., *Nature Neuroscience*, 2024) (3) Establishing a paradigm for locomotor learning in mice (Darmohray et al., *Neuron*, 2019).

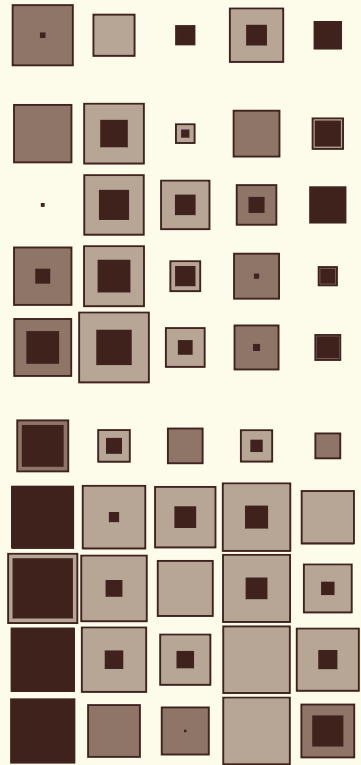
Our ongoing work combines quantitative behavioural analysis and neurophysiology with genetic tools to understand how cerebellar circuits enable complex, coordinated movement flexibly adapted for a wide variety of contexts.

The lab was awarded an ERC Advanced Grant, *Sculptabellum*, which will investigate how neural activity in the cerebellum is sculpted across timescales. This research direction sprang largely from our recent study led by Tatiana Silva, which suggested that ‘offline’ cerebellar activity between training sessions may be crucial for consolidating motor memories. This represents the third major grant that the lab has received from the European Research Council.

We also celebrated the thesis defences of two PhD students, Merit Kruse and Teresa Serradas Duarte (co-supervised with Joe Paton).

neural dynamics

principal investigator Il Memming Park
postdoctoral researchers Matthew Dowling, Piotr A. Sokół, Yves Bernaerts
phd students Ábel Ságodi, Ayesha Vermani, HyungJu Jeon
technicians A. Carolina Filipe, Mahmoud Elmakki
interns Arthur Liang, Isabel Rosário, Justus Kautz



models Non-human primate and rodent data, computational models
methods Statistical modelling, machine learning, dynamical systems, Bayesian inference

statistical modelling of neural code and computation reflected in complex spatiotemporal neural activities

Two complementary aspects of similarity between dynamical features, shown as nested boxes, with larger boxes indicating greater similarity.

park lab

neuroscience

Our goal is to obtain a systems-level description of neural dynamics underlying cognitive function and dysfunction. Building on dynamical systems and stochastic processes, we study the appropriate language for neural dynamics that can explain neural activity and behaviour and generate testable predictions. To arrive at models of neural computation grounded in biology and experiment, we work closely with experimental and clinical collaborators.

We create methods for analysing spatiotemporal neural and non-neural time series, develop theories that extract simpler structure from noisy data, and provide data-driven evidence for and against scientific hypotheses. We also develop real-time machine learning and control methods and design next-generation experiments and tools to integrate information across heterogeneous recordings.

How can we make sense of the brain’s remarkable complexity while respecting both what we share and what makes each of us unique? A major milestone was Ayesha Vermani’s PhD defence. Her work developed new ways to combine brain data across subjects and laboratories, showing that shared principles of brain function can be revealed without erasing individual differences – a key insight for understanding learning, behaviour, and brain disorders. Building on this work, visiting intern Justus Kautz demonstrated how an agent’s strategy changes during learning even when its internal wiring cannot be directly observed.

Both brains and modern AI systems can produce complex behaviour from simple components, yet understanding them remains a central challenge. We proposed a theoretical approach that describes nonlinear brain dynamics in an intuitive, interpretable way, and built systems that learn from experiments in real time by actively guiding data collection to speed up scientific and clinical discovery.

We also organised two interdisciplinary events: the CR Symposium, “Neuro-Cybernetics at Scale”, and the Beyond Clarity workshop.

principal investigator Susana Lima
postdoctoral researchers Bertrand Lacoste, Jonathan Cook,
 Nicolas Gutierrez-Castellanos
phd student Inês Dias
research assistant Margarida Duarte
technician Liliana Ferreira

model Mouse
methods Calcium imaging, electrophysiology,
 viral tracing, optogenetics, behaviour

we are interested in understanding
 the neural circuits controlling
 sexual behaviour



Defensive mating behaviours in female mice. When not sexually receptive, females respond to male advances with characteristic rejection behaviours, including kicking and boxing. We uncovered the specific hypothalamic region that drives these actions.

Sex is a fundamental aspect of nature, essential for species maintenance, evolution, and overall well-being. Despite its central role, the biological mechanisms underlying sexual behaviour remain poorly understood. Using both female and male mice, we aim to uncover the principles of sexual interaction that drive this complex behaviour. By employing state-of-the-art, genetics-based tools, we investigate the neural circuits that govern sexual dynamics, from initiation to completion.

We published a paper in *Neuron* identifying a previously unrecognised hypothalamic region that controls sexual rejection behaviour in female mice. Outside periods of sexual receptivity, females actively reject male mating attempts through behaviours such as kicking and boxing. The team revealed a dedicated brain area that coordinates these rejection responses, providing new insight into the neural control of female sexual behavior.

In *Nature Communications*, we characterised the spinal cord circuitry underlying ejaculation in male mice. While most knowledge of ejaculatory control comes from rat studies, we used genetic tools in mice to describe for the first time the spinal circuits involved. We found that the spinal cord not only controls the ejaculatory reflex, but also regulates arousal during copulation and the post-ejaculatory refractory period.

Susana Lima organised the biennial CAJAL Course on Interacting with Neural Circuits, which provides hands-on training in state-of-the-art approaches for studying neural circuits to an international cohort of students.

sensorimotor integration

principal investigator Eugenia Chiappe
postdoctoral researchers Claire Rush, Corinna Gebehart, Miguel Paço, Nuno Rito, Virginia Palieri
phd students Athira, Daniel Kozlowsk (co-sup. L. Fenk)
msc student João R Leite (co-sup. H. Marques)
research specialists Ana Sofia Oliveira, Rafael Cataneo
technician Ishita Namjoshi

model Fruit fly
methods Whole-cell patch-clamp electrophysiology, two-photon optical and voltage imaging, optogenetics, genetics, quantitative behavioural analysis, virtual reality, computational modelling.

we study how activity in individual brain cells and connected networks of neurons drives the computations that enable animals to learn, make decisions, and control their movements

“Crab cells” in the fly brain. This group of neurons, located in the central brain, shares a characteristic shape across individuals, with subtle variations in their branching patterns and connections.

Our research explores how active vision links sensation, decision-making, and action selection in *Drosophila*. We study how flies coordinate their body, head, and eyes to direct their gaze and extract relevant visual information during two behaviours: exploration and courtship. These behaviours provide a useful comparison, as the brain must control gaze differently when navigating an environment versus tracking a potential mate.

By monitoring neural activity during these tasks, we examine how visual inputs are integrated with signals about self-motion and internal goals across multiple brain regions. This integration allows flies to distinguish self-generated motion from external changes, enabling error detection, memory formation, and anticipation to guide decisions. Ultimately, our aim is to reveal the principles by which the brain transforms sensorimotor interactions into flexible behaviour.

The lab expanded its collaborative network, initiating projects with Barbara Webb (University of Edinburgh) to formalise models of visually guided pursuit, and with Lisa Fenk (Max Planck Institute for Biological Intelligence) to study how the eyes, head and body coordinate as an integrated system. We also welcomed Ana Sofia Oliveira, who is exploring the biophysics of neural processing, and Ishita Namjoshi, who is examining gaze coordination during pursuit.

Our work on optic flow detection was published in *Nature Neuroscience*. Lead author Mert Erginkaya, a former postdoc in the lab and now at the University of Würzburg, demonstrated how a visuomotor circuit detects rotational flow during translation, providing robust signals to navigational centres for course control.

Three PhD students defended their theses: André Marques showed how neural circuits weight signals to monitor self-motion; Nuno Rito demonstrated how brain-body sensorimotor loops guide efficient pursuit; and Miguel Paço revealed how male flies anticipate female movement to maintain gaze and distance at high speed.

Beyond research, we participated in Science Kitchen with Chef André Cruz, creating a project that bridged the culinary arts and neuroscience.

systems neuroscience

principal investigator Zachary Mainen

postdoctoral researchers Davide Crombie, Razvan Sandru, Scott Rennie

phd students Giorgio Gristina (ICS-UL), Inês Laranjeira (co-sup. D. McNamee), Jaime Arlandis (co-sup. D. McNamee), Kcénia Bougrova, Solène Sautory (co-sup. L. Petreanu), Tiago Quendera, Zuzanna Dedyk

msc students Helene Duebel, Luke Griles, Philippine Decaix

technicians Bethan Jenkins, Magdalena Paluchowska, Margarida Duarte, Laura Silva, Lydia Fettweis Neto

visiting scientists Alireza Tavanfar, Anne-Lise Saive, Charline Tessereau

models Mouse, human

methods Theory, behaviour, electrophysiology, optogenetics

how the brain uses perceptual information to create and act on models of the world, and the role of confidence, uncertainty and neuromodulators in these processes

Coffee aroma wheel used to classify and describe olfactory perceptions.

mainen lab

neuroscience

We seek to understand the principles underlying complex adaptive behaviour. Starting with quantitative observations of behaviour, we integrate cellular and systems-level experimental analysis of neural mechanisms within a theoretical and ecological context. Mice provide a flexible animal model that allows us to monitor and manipulate neural circuits using electrophysiological, optical and molecular techniques.

To extend these studies to humans, we are developing approaches to study naturalistic behaviour using tools such as virtual reality and AI to create controlled yet realistic experimental settings. Our projects are diverse and continually evolving, with current research focusing on: (1) Serotonin signalling in adaptive behaviour (2) Serotonin and the modulation of neural population activity states (3) Dynamics of biological and machine learning (4) Cognitive maps and latent state spaces (5) Shared attention/experience.

In collaboration with the Renart lab, former postdoc Fanny Gazettes, principal investigator at CNRS and Aix-Marseille University, showed that mice's facial movements encode multiple decision strategies simultaneously, including those not currently guiding behaviour. Published in *Nature Neuroscience*, this work provides a non-invasive window into latent cognitive processes. Two *Nature* papers from the International Brain Laboratory – a 22-lab consortium we co-founded – delivered the first brain-wide, single-neuron-resolution map of activity during decision-making. Recording more than 620,000 neurons across 279 brain regions in 139 mice, the studies revealed that decision-related signals and prior expectations are distributed across nearly the entire brain, consistent with Bayesian inference implemented through recurrent brain-wide loops.

The lab also expanded its programme on naturalistic human behaviour, combining psychophysics with broader approaches to study visual, olfactory and auditory perception through ongoing art-science collaborations. Finally, Tiago Quendera, Solène Sautory, Jaime Arlandis and Kcénia Bougrova completed their PhDs.

theoretical neuroscience

principal investigator Christian Machens

postdoctoral researchers Adrien Jouary (jointly with M. Orger),
Caroline Haimerl (jointly with J. Paton & D. McNamee), Francesca Mastrogiuseppe,
Matthijs oude Lohuis (jointly with L. Petreanu), William Podlaski

phd students Guillermo Martin, Ildefonso Pica, Joana Carmona, Miguel Donderis

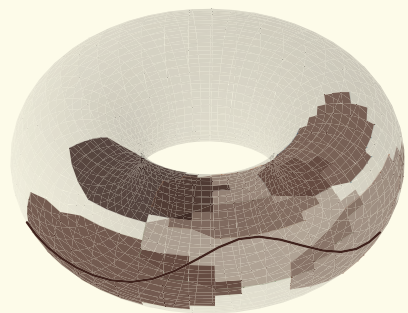
msc student Florentin Seifert

technician Vitor Paiva

models Non-human primate data, rodent, zebrafish

methods Mathematical modelling, computational simulations

we seek to understand how
neurons interact to process
information



Spatial information in the brain is believed to be organised on a toroidal (doughnut-shaped) manifold. The line traces an animal's trajectory, while highlighted regions show where neurons are active along this path.



machens lab

neuroscience

Our lab is interested in understanding how neurons communicate and process information. We study a range of systems, from the brain stem of the zebrafish to subcortical and cortical areas of the rodent and primate brains. We first analyse the activities of neuronal populations, based on recordings of 100s-10,000s of neurons, using modern data analysis tools such as dimensionality reduction. We then build models of neural networks that agree with these recordings. Finally, and abstracting further, we seek common principles of neural computations that apply to all of these very different brain circuits.

The lab published several studies advancing our understanding of neural representations and network dynamics. A highlight was Guillermo Martin's Master's thesis, published in *PLOS Computational Biology* with William Podlaski, showing how the brain's representation of space adapts across different environments. Francesca Mastrogiuseppe and Joana Carmona also published new work in *PLOS Computational Biology* linking network connectivity to the structure of emergent neural activity. In November, Carmona defended her PhD thesis.

In February, Carmona, Mastrogiuseppe, oude Lohuis and Machens organised a joint retreat with collaborators from the Albert Einstein College of Medicine and Carnegie Mellon University. Held in Ponta Delgada on São Miguel Island in the Azores and funded by the Simons Foundation, the setting provided a beautiful backdrop for intense and productive scientific discussions.

Several lab members also moved on to new positions. Mastrogiuseppe accepted a faculty position at SISSA in Trieste, Italy. Adrien Jouary joined Meta's Reality Labs in New York, and Vítor Paiva began a PhD at the University of Geneva.

vision to action

principal investigator Michael Orger
postdoctoral researchers Adrien Jouary (jointly wiith C. Machens),
Gokul Rajan, João Marques, Sabine Renninger
phd students Dean Rance (co-sup. G. de Polavieja), Elena Collins,
Joaquim Contradanças, Lucas Martins, Pedro Tomás Silva, Thomas Mullen
msc students Corry Martin, Inês Marques (co-sup. C. Feierstein),
Manuel Bettencort (co-sup. C. Feierstein)
senior technician Aaron Ostrovsky
technicians Catarina Matos, Mariana Falcão
consultant Edite Figueiras
interns Beatriz Costa, Margarida Pereira

models Zebrafish, giant danio, Danionella cerebrum
methods Imaging, genetics, behaviour

investigating the structure
and function of whole-brain
circuits underlying behaviour

Inputs and outputs of a neuron in the visual
thalamus of a larval zebrafish. Image by Aaron
Ostrovsky, derived from the electron microscopy
data in Petkova et al., bioRxiv (2025).

orger lab

neuroscience

Our lab studies the rules governing neural circuit design and activity and their influence on behaviour, considering the brain as a whole. Using zebrafish, Danionella cerebrum and giant danio, we focus on how brains process sensory inputs, internal states, and experiences to select and execute actions. Even simple behaviours engage widespread neural networks, making them difficult to decode. Zebrafish’s small size, transparency, and genetic tractability allow for noninvasive whole-brain imaging and manipulation. Their brains share many features with complex vertebrates, including architecture, cell types, and circuit motifs. Early in life, zebrafish explore their environment and display instinctive behaviours like hunting, predator evasion and movement stabilisation. By combining computational behaviour analysis, whole-brain imaging, and genetic and optical neural circuit manipulation, we aim to understand the neural circuitry behind these behaviours.

The lab celebrated the graduation of four PhD students within a four-month period: Elena Collins, Thomas Mullen, Lucas Martins and Joaquim Contradanças, each of whom successfully defended their theses before distinguished international juries.

We submitted a preprint (Adrien Jouary et al.) describing megabouts.ai, a machine-learning platform designed to standardise behavioural analysis across labs and experimental systems. This work led to an ERC Proof of Concept grant, which will enable the optimisation, dissemination and potential commercial development of the platform. The team also released SARDINE, a software platform for running neuroscience experiments, accompanied by a preprint (Martins et al.).

In addition, Collins and colleagues published a study in the open-access journal *eNeuro* describing new transgenic lines that label the reticulospinal system in fish. Michael Orger was awarded a Pivot Fellowship from the Simons Foundation to develop new research directions drawing on dynamical systems and control theory.

research associates

CR's Research Associates are senior investigators who manage independent projects in association with particular labs at CR.

eric dewitt computational cognitive decision science

Associated with the Neuropsychiatric unit

Our team focuses on Fusion Research – integrating knowledge, methods, and training across disciplines to better understand brain function, behaviour, and mental health. In 2025, we concluded our long-standing association with the Systems Neuroscience lab while continuing collaborations with the Neuropsychiatric Unit.

In collaboration with the International Brain Laboratory, we study mammalian learning and decision-making by combining AI with behavioural and neuroscience experiments. Using tools only available in animal models, we investigate neuromodulators and translate these insights through AI models to understand the role of these brain systems in human cognition, economic and political behaviour, and psychiatric disorders.

A second line of research applies computational psychiatry to study the relationship between reward learning and behavioural control in attention deficit disorder, obsessive compulsive disorder, and eating disorders. We also explore how emerging AI approaches can support interdisciplinary knowledge integration and guide future research.

ruth diez del corral development of neural circuits

Associated with the Vision to Action lab

We study how neural circuits form during zebrafish development. By using transgenic fish with fluorescent reporters and light-sheet microscopy, we follow and analyse the extension of neural projections in the whole embryo.

With the Vision to Action lab, we are exploring brain regionalisation and characterising the molecular identity of neuronal subpopulations involved in visually guided behaviours in zebrafish using immunohistochemistry and in situ hybridisation. Our focus is on the diencephalon, a brain region that processes sensory stimuli and directs neuronal signals to areas controlling motor behaviours.

maria luísa vasconcelos innate behaviour

postdoctoral researcher Nuno Machado

phd student Saheli Roy

msc student Vitor Silva

technician Sara Santos (jointly with M. Moita)

To understand how neurons organise behaviour, we focus on reproductive behaviours. These behaviours are not only central to the survival of a species but also complex, providing insight into different levels of biological organisation. To address our questions, we combine genetic manipulation, behavioural assays and calcium imaging in the fruit fly.

claudia feierstein neural circuits for visuomotor behaviour

Associated with the Vision to Action lab

msc students Inês Marques,

Manuel Bettencourt

How does our brain use information to select appropriate behaviours? This is a question that can be addressed by looking at zebrafish larvae. Because they are small and transparent, we can easily peek into their brains non-invasively. Using state-of-the art microscopes, we can image the activity of the whole brain, and simultaneously track their behaviour. We can then ask: how can the larva's behaviour, or its sensory environment, explain the neuronal activity that we measure? In collaboration with the Theoretical Neuroscience Lab, we develop and apply analysis tools to understand what type of information is carried by populations.

adjunct scientist

In addition to its research labs, CR hosts adjunct scientists working on complementary research areas.

rui oliveira social neuroscience

affiliations Gulbenkian Institute for Molecular Medicine (GIMM), ISPA University Institute for Psychological Social and Life Sciences

We study how social behaviour is shaped by biological mechanisms and how these, in turn, evolve. Our integrative approach spans multiple levels – from genes and neural circuits to behaviour and ecology – to explore both the immediate (proximate) and evolutionary (ultimate) causes of social behaviour.

Using model organisms like zebrafish and *Drosophila*, as well as ecologically relevant species such as African cichlids and cleaner wrasse, the team studies how social environments influence brain function, behaviour, and health. Collaborations with psychologists and psychiatrists also extend this work to humans, examining the health effects of social interactions – and of social isolation.

cancer dormancy and immunity

principal investigator Ana Luísa Correia
lab manager Telma Ventura
postdoctoral researchers Ana Frias, Catarina Barbosa Matos
phd students Andreia Gonçalves, Arjun Reecha
msc students Lena Jansen, Mariana Campos
research assistants Margarida Braga, Rúben Dourado

model Mouse
methods Genetic models, flow cytometry, cell/molecular biology, imaging, single-cell/spatial transcriptomics, computational biology

we investigate what brings disseminated tumour cells in and out of dormancy, and how these dormant cells can be targeted

Immunostaining of nerve fibres in a three-dimensionally cleared liver lobe.

correia lab

physiology and cancer

Our lab studies metastasis, the spread of cancer from the primary tumour to other body parts, which causes most cancer-related deaths. Metastases can emerge long after successful primary tumour treatment because disseminated tumour cells (DTCs) remain dormant at distant sites, awakening years or decades later to initiate metastases. This pause in cancer progression offers a therapeutic window to prevent future metastases.

We focus on breast cancer dormancy, which often spreads to bones, liver, lungs, brain, and lymph nodes. Our goal is to dissect DTC interactions with the unique microenvironment at each distant site, providing a roadmap of tissue-specific vulnerabilities for therapeutic exploration. We are especially interested in how immune cells, as first responders to tissue damage and DTCs, influence metastatic progression. Using multiple complementary approaches, we aim to develop strategies to prevent metastases from forming.

The lab launched its Caixa-funded project to map the spatiotemporal dynamics of the cellular ecosystem that controls formation of organ-specific metastases in mice and humans. To support this work, we expanded the lab and strengthened collaborations with the Champalimaud Clinical Centre’s Breast Unit, as well as with Radiology and Pathology Services.

Andreia Gonçalves presented her research on neuro-immune regulation of metastatic cancer dormancy at the 1st European Association for Cancer Research (EACR) Conference on Cancer Neuroscience in Bilbao. Lena Jansen defended her Master’s thesis, and Arjun Reecha was awarded an FCT PhD Fellowship.

We remained strongly engaged in science communication. Through the artistic project Céu Vermelho by Marina Thomé, Ana Luísa Correia explored parallels between cancer dormancy and volcanic reactivation from the perspective of a cancer survivor. She also contributed to the first chapter of Science Kitchen at CF, and Gonçalves participated in Pint of Science, engaging the public in discussions on neuro-cancer research.

The team welcomed new members Catarina Matos, Maria Soutilha, Ana Frias, Mariana Campos, Rúben Dourado and Telma Ventura, strengthening our mission to better understand and treat metastatic breast cancer.

cancer and stem cell biology

principal investigator Adriana Sánchez-Danés
postdoctoral researcher Ana Lúcia Rebelo
phd students Adrianna Bielowska, Ana Martins, Angelina Sanderson,
Sara Ferreira, Sofia Marques
senior research assistant Patrícia Borges
technicians Maria Lourenço, Maria Silva

model Mouse
methods Genetic tractable organisms, imaging,
cellular biology, genetics, flow cytometry

we study the cellular and
molecular mechanisms that drive
cancer initiation and progression,
with the goal of informing
new therapeutic strategies



Invasive melanoma cells
containing lipid droplets.

sánchez-danés lab

physiology and cancer

Our lab studies the cellular and molecular mechanisms that drive cancer initiation and progression, with the ultimate aim of developing more effective, targeted therapies.

We investigate how tumour cells contribute to cancer formation by developing state-of-the-art genetic mouse models. Our research covers both common adult cancers, such as basal cell carcinoma, and paediatric cancers, including neuroblastoma and medulloblastoma.

We also explore how the tumour microenvironment influences cancer development and treatment response, using melanoma – the deadliest form of skin cancer – as a key model system.

We published a major study in *Cancer Discovery* identifying the gene Survivin as a novel driver of basal cell carcinoma, the most common cancer worldwide. In collaboration with the Blanpain lab (Université Libre de Bruxelles), the team showed that Survivin is required not only for tumour initiation but also for the progression of benign lesions into invasive disease.

In *Nature Communications*, a collaboration with the Hannezo lab (Institute of Science and Technology Austria) described for the first time how mechanical forces play a key role in driving basal cell carcinoma formation. Working with Colin Goding's group (University of Oxford), the lab also uncovered a previously unknown metabolic pathway in melanoma, in which oleic acid uptake by tumour cells promotes migration and invasion (published in *Genes & Development*).

We additionally launched the Fight Kids Cancer research programme, one of Europe's largest paediatric cancer grants. The initiative aims to develop the first preclinical model of Group 4 medulloblastoma, a common paediatric brain tumour. Adriana Sánchez-Danés coordinates this international consortium, bringing together teams from Portugal, Germany and Spain.

immunophysiology

principal investigator Henrique Veiga-Fernandes

lab manager Hélder Ribeiro

postdoctoral researchers Cristina Godinho da Silva, Jaechan Ryu, Maria Aliseychik, María Martínez López, Miguel Rendas, Patrícia Bastos, Roksana Pirzgalska, Xinyi Lu

phd students Ana Rasteiro, Eric de Sousa, Hongren Huang, Kristin Fischer, Raquel Silva, Tianci Zhong

msc students Gleb Gorodetskiy, Johannes Schultz-Coulon

technicians Bruno Raposo, Inês Godinho, Inês Lobato Faria, Maria Bettencourt

model Mouse

methods Genetically tractable organisms, flow cytometry, cellular biology, molecular biology, imaging

neuroimmune interactions in the prevention and resolution of disease

Confocal microscopy image of neurons expressing vasoactive intestinal peptide, a signalling molecule involved in gut function, within the intestinal villi.



veiga-fernandes lab

physiology and cancer

We explore the role of cross-talk between neurons and the immune system in the prevention and resolution of disease. To that end, the team focuses on organs that have a complex and dense network of neuronal and immune cells, including the intestine, lung and pancreas. This combination of features makes these organs an optimal site to reveal how the neural and immune systems work together to preserve health.

Using this approach, the lab has been exploring the surprising role of the neural network that surrounds these organs: immune regulation. The team discovered that while the immune system actively fights infection and cancer, it is the neurons that detect the invasion of tumour cells, setting the immune response in motion. These findings may have tremendous potential in the design of novel therapeutic approaches to disease as they pinpoint new selective targets that can be harnessed in infection, metabolic disorders and cancer.

We published a study in *Science* showing that the intestinal nervous and immune systems cooperate to regulate the pancreatic hormone glucagon and blood sugar levels. First author and former postdoc in the lab Marko Šestan established his own lab at the University of Rijeka School of Medicine, Croatia, and was awarded both a European Research Council (ERC) Starting Grant and a grant from the European Molecular Biology Organisation (EMBO).

Roksana Pirzgalska published a first-author study in *Nature Immunology* demonstrating that the nervous system regulates epithelial cells to control gut immunity. This work laid the foundation for her independent research programme, for which she received the EASO-Novo Nordisk Foundation New Investigator Award in Basic Science. The lab also co-authored a second study in *Nature Immunology* showing that intestinal neurons regulate epithelial stem cell differentiation.

Henrique Veiga-Fernandes was appointed ERC Ambassador for Portugal and received the 2025 Pfizer Basic Research Award. The lab welcomed new PhD students Hongren Huang and Tianci Zhong, and Xinyi Lu joined as a postdoctoral fellow.

immunoregulation

principal investigator Carlos Minutti

postdoctoral researchers Juan Manuel Lozano-Gil, Kyle Cunningham, Maria Iliopoulou, Sahar Tehrani

phd students Maria Pires, Miguel Patrício, Robert Baber

research assistants/lab managers Gregory Newton, Mariana Henriques, Vasco Correia

technicians Elfie Moesker, Hannah Blumtritt, Simão Nogueira

models Mouse, zebrafish

methods Flow cytometry, single-cell RNA sequencing, microscopy, spatial transcriptomics, genetic lineage tracing, intersectional genetics

our lab investigates how conventional dendritic cells are centrally programmed in the bone marrow to anticipate tissue demands and orchestrate immunity, tolerance, and cancer responses



Bone marrow section containing dendritic cell progenitors at their site of origin.

physiology and cancer

The immune system must constantly balance protection against infection and cancer with tolerance of healthy tissues. Our group studies how this balance is established by conventional dendritic cells, key immune sentinels distributed throughout the body. Rather than being shaped solely by local tissue signals, we investigate how these cells are pre-programmed in the bone marrow to anticipate the specific needs of different organs.

We focus on how signals from inflamed or diseased tissues communicate with the bone marrow to generate distinct dendritic cell subsets with specialised functions. By combining advanced mouse models, single-cell technologies, imaging and computational analysis, we aim to uncover how this “central sensing” system coordinates immune responses. Ultimately, our goal is to identify new ways to harness dendritic cells to improve vaccines, immune regulation and cancer immunotherapy.

In 2025, our group made significant progress in testing the idea that the immune system can anticipate future challenges through central programming in the bone marrow. This work was reinforced by major funding successes, including support from the la Caixa Health programme for international collaboration in cancer immunotherapy, a Marie Skłodowska-Curie Postdoctoral Fellowship awarded to Maria Iliopoulou, and an FCT Predoctoral Fellowship awarded to Miguel Patrício.

We also published an invited, in-depth review in *Immunological Reviews*, reflecting growing recognition of our work within the immunology community. The team expanded with new members and expertise and established new international collaborations. We developed and implemented a broad range of advanced mouse and zebrafish models, including innovative approaches linking immunity with metabolism and neurobiology. Together, these achievements strengthened both our scientific output and the foundations for future discovery.

stem cell and regeneration

principal investigator Christa Rhiner

postdoctoral researchers Anabel Simões, Ana Cristina Ojalvo, Juan Sánchez, Victoria Canal

phd students Arjun Reeja, Catarina Costa (co-sup. E. Moreno), Daniela Cuffs, Margarida Caio

msc student Daniela Alvo

research assistants Beatriz Ferreira, Carolina Alves

models Fruit fly, mouse

methods Single-cell RNA sequencing, confocal microscopy, genetic lineage tracing, RNAi screens, genetics, cell/molecular biology, behavioural assays

pro-regenerative signals in brain repair and tumour formation



Brain injury inducing protective programmes in glial cells.

rhiner lab

physiology and cancer

We study the role of pro-regenerative circuits in the brain and their impact on the body. When tissues are damaged, growth programmes are activated that stimulate cell production and regeneration. However, if these pathways remain active for too long, they can also promote tumour formation. Our research aims to identify the cellular communication in the brain that supports repair and resilience following injury.

Using genetically versatile fruit flies, we test a wide range of injury-activated signals to understand how they affect brain repair mechanisms. Through this approach, we discovered that Wnt-Lipocalin7 complexes can recruit dormant neural stem cells to participate in repair, and we identified specific reactive oxygen species that promote cell division. In collaboration with other groups, we cross-validated these findings in mouse models and observed activation of remarkably similar circuits.

These insights open new avenues for developing therapies that enhance brain regeneration while limiting the risk of tumour formation.

Within the framework of our CaixaResearch Health Research project BrainImpact, we generated a single-cell-resolution map of all injury-induced changes in the damaged fly brain, based on high-quality sequencing libraries produced at CF. In another FCT-funded project, we used proteomics to detect proteins released by glial cells in the injured brain and secreted into circulation. We celebrated the award of an FCT fellowship to PhD student Daniela Cuffs and welcomed Arjun Reeja to the team as a new PhD student.

Together with Erik Storkebaum (Donders Center for Neuroscience), Christa Rhiner organised a workshop on Brain Health at the European Drosophila Research Conference in Alicante. The meeting also featured talks from lab members Juan Sánchez and Anabel Simões on brain plasticity and brain-systemic communication. Rhiner further co-organised the 2025 meeting of the Portuguese Drosophila research community, an important forum for early-career scientists working with this powerful genetic model.

tissue immunity

principal investigator Klaas van Gisbergen

research associate Inês Ramos

postdoctoral researchers Camila Veludo, Daniela Silva

phd students Lynn Vermeer, Maria Keridon, Raquel Sequeira

msc students Amber de Nooij, Beatriz Azevedo, Francisco Costa,

Lieke Mooij, Nguyen Phan

technicians Helena Silva, Hester Heimans, Manuel Jacinto, Sara Correia

model Mouse

methods *In vivo* tumour models, *in vitro* culture, flow cytometry, fluorescence microscopy, transcriptomics

defining developmental pathways and instructive cues of T cells that arise in local tissues after infection or at the tumour site



Immune cells in metastatic liver tissue analysed by flow cytometry.

physiology and cancer

We focus on the differentiation and activation of T cells, essential for specific immune responses against infections and cancer. Understanding their function is key to advancing cancer immunotherapies. Recent findings emphasise the importance of tumour-resident T cells in combating tumour growth, making their development and function a vital area of study.

Our lab identified critical transcriptional regulators for the differentiation of resident memory T cells in local tissues, establishing them as an independent lineage. We have developed tools to observe and manipulate these cells, shedding light on their development in peripheral tissues and response to antigen rechallenge. Additionally, we discovered mechanisms that temper their proinflammatory activity, which may help to protect healthy tissues.

Given their crucial role in opposing tumour growth, our current research aims to understand the development of resident memory T cells within the tumour site.

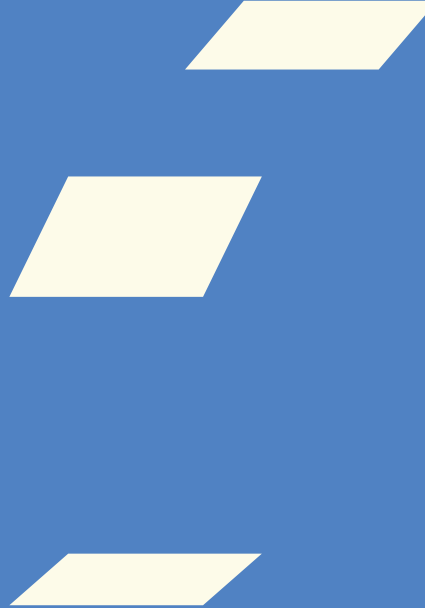
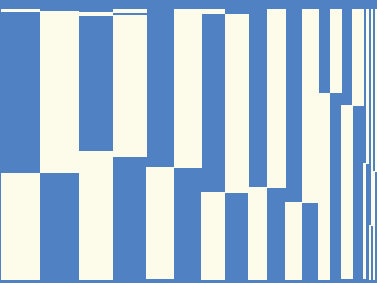
We welcomed Camila Veludo as a postdoctoral researcher studying how T cells acquire memory following viral infection, and Hester Heimans, who investigates how T cells respond to pancreatic cancer. To support this line of research, the lab secured FCT funding to recruit an additional postdoctoral fellow. Raquel Sequeira was also awarded an FCT doctoral fellowship to continue her work on T cell responses in metastatic breast cancer.

We hosted MSc students Lieke Mooij, Beatriz Azevedo, Amber de Nooij and Francisco Costa. Mooij completed her MSc thesis, and the others are expected to follow soon.

Inês Ramos celebrated two major publications: a first-author review in *Nature Reviews Immunology* and a co-senior author paper in *Science Signaling*, both focusing on the inhibitory pattern-recognition receptor LAIR-1. In addition, the lab contributed to six further collaborative publications on T cell responses in cancer, autoimmunity and infection.

The group also helped organise the 50th Annual Meeting of the Portuguese Society of Immunology, held at CF and co-organised with Ana Luísa Correia, Carlos Minutti and other members of the society.

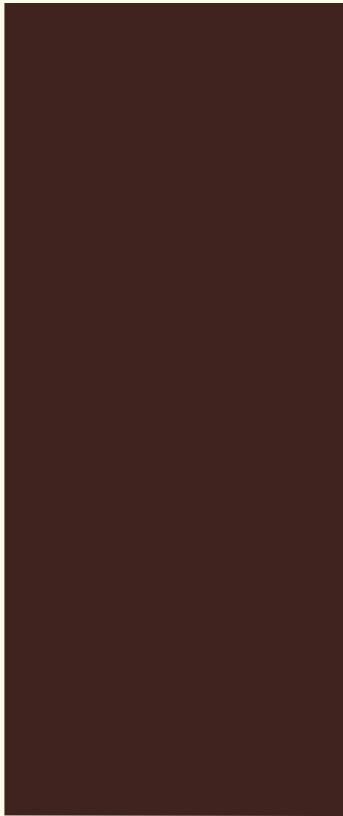
van gisbergen lab



The Teaching Lab changed the way we do science.
It empowers students and, through them, the labs.
It gives us the freedom to try things,
to experiment, to not be afraid.

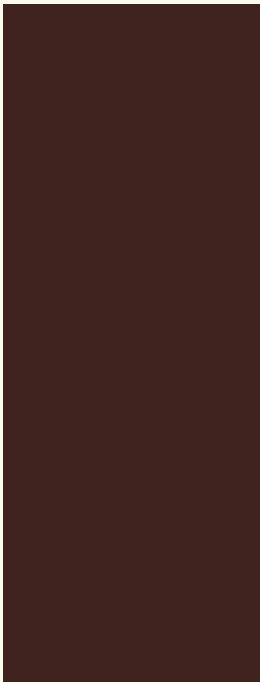
That's invaluable.

Marta Moita
PI, Behavioural Neuroscience lab
from 20 Years, 20 Stories Collection



12 scientific and
technological platforms

9 or support units



research

support

The work of CR investigators is supported by two structures: the Scientific and Technological Platforms, which handle technical aspects of research, and the CR Support Units, which provide administrative services.

The Scientific and Technological Platforms consist of nine individual units that support the work of researchers and clinicians at the CF. The platforms operate across a wide range of areas, from the development of sophisticated technologies in animal and cellular models, imaging tools, hardware and software, to managing resources and research infrastructures.

scientific and technological platforms

advanced biolmaging and biooptics experimental

coordinator Davide Accardi

microscopist and imaging specialists Anna Pezzarossa, Pedro Campinho

phd Student Camila Sarmiento Betancourt (co-sup. M. Castillo-Martin and L. Vanneschi, NOVA IMS)

The Advanced Biolmaging and BioOptics Experimental (ABBE) platform supports CF researchers with high-quality microscopy data. It assists users throughout the imaging pipeline – from project discussions and technical training to image processing, analysis, and visualisation.

Managed by an international team with backgrounds in biophysics and physics, ABBE offers expertise across a range of modalities, from light-sheet to super-resolution microscopy, enabling multiscale imaging from protein interactions to whole organisms. The team also represents CF internationally, liaising with microscopy companies on equipment maintenance, service, troubleshooting, and long-term partnerships.

In collaboration with the Ribeiro lab, we achieved a major technical milestone by combining expansion microscopy with light-sheet microscopy at the institute for the first time. This approach enabled imaging of the *Drosophila* brain at a resolution of 10-20 nanometres.

Anna Pezzarossa and Pedro Campinho were appointed chairs of the PPBI Training Working Group, an initiative designed to “train the trainers” and strengthen imaging expertise across the national research infrastructure, enhancing the quality of scientific and technical support provided to the research community.

Davide Accardi was invited by Global Biolmaging (GBI) to present in Montreal, Canada, to the global microscopy community, where he highlighted the mutual benefits of the “Evergreen Agreement” – a unique long-term collaboration between CF and ZEISS supporting sustained technical innovation and knowledge exchange between academia and industry. He also joined the GBI Impact Working Group, which develops guidelines for a more comprehensive and accurate evaluation of imaging facility support worldwide.

biophotonics

coordinator João Lagarto
phd student Alberto Ignacio Herrando
msc student Sofia Morais

The Biophotonics platform focuses on the development of innovative optical tools and methods for clinical applications. Our goal is to provide clinicians with effective diagnostic tools to aid in decision-making, ultimately enhancing early cancer detection, intraoperative margin assessment, and posttreatment monitoring. While our activities focus predominantly on clinical collaborations, we remain open to establishing future partnerships with CR groups.

Our multidisciplinary team brings together expertise in engineering, physics, biochemistry, and medicine. Our activities are closely coordinated with the various clinical units and the Pathology Service at the CCC, ensuring a strong connection between research, technological advancements, and clinical practice.

We completed a major study on *ex vivo* colorectal cancer, analysing nearly 200 cases and generating multiple publications. We also strengthened our collaboration with the Dermatology Department by launching two projects to establish clinical autofluorescence measurements. To support this effort, a new autofluorescence imaging system was designed specifically for medical use and is expected to begin clinical operation in early 2026.

Beyond dermatological applications, the platform is expanding its work into endoscopic settings through a collaboration with Lumeneye to deploy adapted imaging technologies. This partnership focuses on integrating advanced optical solutions into endoscopic workflows to improve diagnostic precision in the gastrointestinal tract.



fish

coordinator Ana Catarina Certal
platform manager Joana Monteiro
research technicians Guilherme Antunes, Inês Oliveira, Pedro Seco
aquaculture technicians Dionísio Sousa, Vanessa Pinto
animal technician Mariana Fernandes

The Fish platform (FP), established in 2011, provides a state-of-the-art facility for the housing and breeding of fish models under high standards of health and welfare. With a team of two senior PhD scientists and six research, aquaculture and animal technicians, it offers a comprehensive range of services such as complex line maintenance, generation of transgenic and gene-edited fish, and assisted reproduction. Through close collaboration with researchers, the platform adapts its services to the needs of the scientific community. It mainly serves CR while also supporting national and international research groups.

With a strong focus on scientific and technological innovation, the FP has contributed to numerous joint research projects, a patent, and more than ten peer-reviewed publications, gaining substantial international recognition. We also provide consulting on zebrafish facility design and management, as well as training and technology transfer, and participates in several national and international collaborations.

FP was invited to act as a consultant on the establishment of a new fish facility for a major European pharmaceutical company, reflecting its international reputation and expertise in zebrafish facility design and management. We also published an original research paper describing a newly developed method for sperm cryopreservation.

Platform manager Joana Monteiro developed and delivered the science workshop “Scientist Returns to School” for 3rd- and 4th-grade students in Mourão and Luz, as part of the Native Scientists volunteer programme, introducing fundamental concepts of responsible laboratory animal science. She also co-organised the first International Animal Tech Celebration Week at CF, part of a global initiative recognising the contributions of laboratory animal technicians.

flow cytometry

coordinator Pedro Garcia da Silva
group head André Mozes
flow cytometry specialist Inês Monteiro

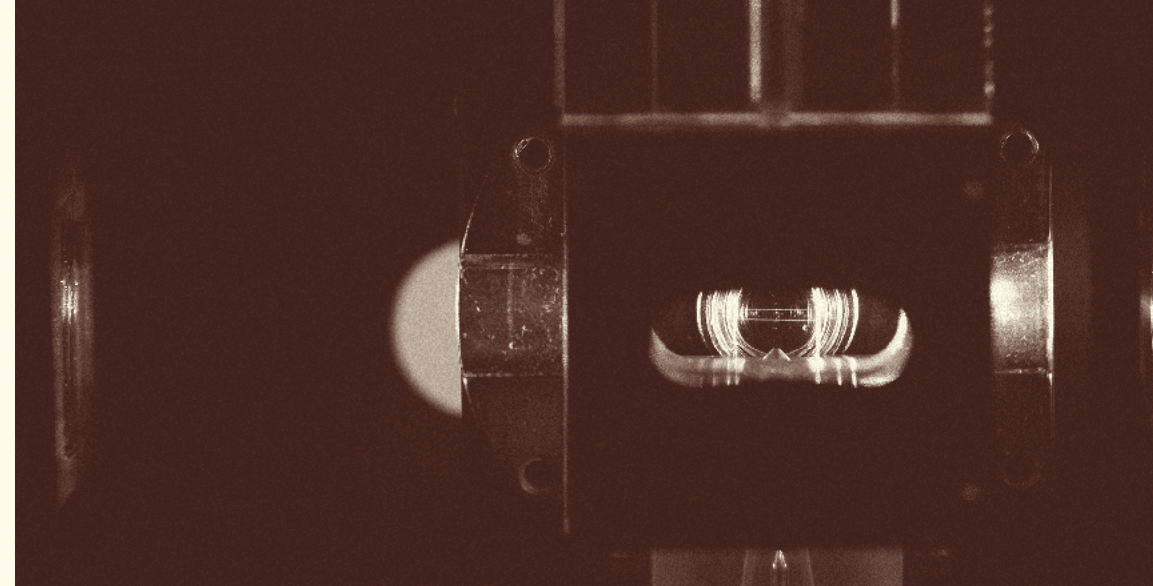
The Flow Cytometry platform supports researchers both within and outside the institution. Alongside state-of-the-art equipment, we maintain specialised devices used by clinical haematologists for diagnosis and clinical assays. Our instruments can characterise single cells at rates of thousands per second, with select devices capable of physically isolating specific cell populations for in-depth analysis.

We provide training in a wide range of areas - from flow cytometry principles and experimental design to hands-on instrument operation and multiparametric data analysis.

As part of the FLxFlow network, we played a central role in establishing the FLxFlow-HDSpect centre for spectral flow cytometry. This initiative received excellent evaluations and secured funding through the LISBOA2030-2024-15 programme. Another highlight was organising the second Spectral Day, which strengthened national expertise in spectral flow cytometry and featured leading international speakers.

The platform also expanded its capabilities with a second SONY ID7000 spectral flow cytometer, equipped with five lasers and 147 fluorescence detectors. The first instrument, acquired in 2024, logged more than 1,200 hours of use in 2025, demonstrating strong demand for advanced spectral flow cytometry.

Internationally, the platform participated in CYTO 2025, the annual meeting of the International Society for Advancement of Cytometry, in Denver, USA, and the Nordic Flow Cytometry Meeting at the University of Copenhagen, where team members presented posters. We also welcomed Inês Monteiro to the team.



fly

coordinator Isabel Campos
manager Liliana Costa
technicians Ana Reis, Carina Monteiro, Catarina Craveiro
(jointly with Rodent platform), Patrícia Valentim, Susana Matos

The Fly platform offers state-of-the-art conditions for breeding, upkeep and manipulation of fruit flies, accessible to both CR researchers and external users. Beyond overseeing all shared equipment and spaces, the platform's staff provide a range of technical services. These include core tasks such as medium production and stock maintenance, as well as more technically demanding procedures, namely organ dissection, staining, embryo microinjection and the creation of transgenic lines.

In addition to its daily support activities, the Fly platform and its staff remain strongly engaged in outreach and educational initiatives at multiple levels. As in previous years, we participated in numerous school visits, over ten in 2025, and provided materials and guidance to support classroom exploration of fruit fly genetics and its use as a model organism in research.

glass wash and media preparation

coordinator Cátia Feliciano

head Maria José Vito

technicians Diogo Martins, Madalena Martins, Soraia Rodrigues

Glass washing and media preparation are core functions essential to the operation of any research institution. The Glass Wash and Media Preparation platform (GWMPP) supports CF investigators and labs by providing sterilised labware - including glassware, plastics, and instruments - and by preparing high-quality tissue culture and bacteriological media required for standard research protocols.

The GWMPP delivered daily support to CR labs and platforms, as well as to the Botton-Champalimaud Pancreatic Cancer Centre and CCC's Nuclear Medicine, Radiation Oncology and Pharmacy services. The team continued to diligently adhere to established procedures and protocols, maintaining detailed records to ensure safe and efficient operations. We also began providing services to the NOVA Institute for Medical Systems Biology (NIMSB), located at CF, which is advancing research and innovation in systems medicine.



hardware and software

coordinator Artur Silva

hardware developers Alexandra Leitão, Artur Silva, Filipe Mendes, Paulo Carriço

hardware technicians Dario Bento, Mário Inácio

software developers Beatriz Lourenço, Luís Teixeira

We support scientific and technological innovation at CF by providing expertise in the design and development of new applications in electronic, robotic, software, and mechanical engineering.

Our team collaborates closely with researchers and clinicians to create technological solutions for advanced research and healthcare services.

We offer hardware and software development services covering requirement analysis, design, implementation, validation, and testing. We also support CF members with 3D printing, custom electronic hardware, and management of the electronic and mechanical workshops. Additionally, we contribute to open-source projects and share developments with the broader research community.

This year marked the consolidation of the platform's role in open-source technological tools, infrastructure growth, and technology development. Its in-house hardware and software innovations were again recognised through a peer-reviewed paper describing a syringe pump for microlitre-level precision liquid delivery.

The team welcomed a new member to strengthen electronic engineering design and support the platform's growing scope. We also deployed in-house mobile counter solutions to improve patient support at CCC.

A major milestone was the team's relocation to refurbished offices within the Neurotechnology Warehouse, expanding development and production capacity, accelerating prototyping, and enhancing collaboration.

External sales continued to extend the global reach of the platform's technologies, alongside ongoing development of open-source solutions within the Harp ecosystem created at CF.

histopathology

coordinator and veterinary pathologist Tânia Carvalho

digital pathology scientist Mariana Monteiro

histotechnologists Maria Inês Romano, Raquel Quitéria, Sérgio Casimiro

We provide integrated histology and experimental pathology support, with expertise in tissue-based approaches for animal models of disease. Services include tissue processing, histological staining, advanced labelling techniques, and customised workflows tailored to specific research questions, experimental models, and organ systems.

Veterinary pathologists work closely with researchers on experimental design, sampling strategies, and the integration of morphological findings with molecular, imaging, and functional data. In parallel, the platform offers hands-on training and methodological guidance in histological and necropsy techniques, supporting their consistent, high-quality use across research teams.

Through its combined technical, analytical, and training roles, the platform helps ensure the biological rigour, reproducibility, and translational relevance of research.

We supported multiple research projects and contributed to peer-reviewed publications in immunology, neuroscience, metabolism and oncology.

We established interdisciplinary collaborations to incorporate automated digital analysis into histopathology workflows. This included collaborative extramural work on deep learning-based classification of cancer staining patterns using canine tumours as comparative models, presented at international meetings including the European Congress of Veterinary Pathology in Turin, where Mariana Monteiro received the Best Oral Communication Prize.

Tânia Carvalho became the first veterinary pathologist based at a Portuguese research institute to obtain board certification from the American College of Veterinary Pathologists. The platform also supported research teams through training in tissue sampling, necropsy procedures, and pathological interpretation.

molecular and transgenic tools

coordinator Ana Catarina Certal

platform manager and senior scientist Ana Raquel Tomás

senior research technician Marta Barbosa

research technicians Ana João Martins, Catarina Miranda, Hugo Lopes, Renato Ferreira

The Molecular and Transgenic Tools platform (MTTP) specialises in molecular cloning, gene editing, genotyping and viral production, providing comprehensive, cost- and time-efficient services from experimental design to delivery. The team, composed of three PhD scientists and four technicians, supports a wide range of molecular biology applications, including the generation of complex knockout and knock-in constructs and advanced viral systems, using state-of-the-art technologies.

Equipped with a Biosafety Level 2+ laboratory for viral vector production, MTTP also performs genotyping for all in-house animal models. We primarily support CR while also serving academic and industry partners.

We contribute to CF's PhD programmes, run an annual Hands-on Molecular Tools Workshop, and played a key role during the COVID-19 pandemic by providing diagnostic testing for CF. As a member of the management committee of the European network CorEuStem, MTTP serves as a key resource for advancing research using molecular and cellular tools.

We genotyping service expanded to support new users, doubling the number of animal samples analysed each week to approximately 1,000 by the end of 2025, alongside the implementation of a rigorous quality-control protocol.

multimedia

coordinator Pedro Garcia da Silva
multimedia producer Alexandre Azinheira

The Multimedia platform produces audiovisual and photographic content for CF's scientific, clinical and institutional activities - recording events, developing institutional and orientation materials, creating short-form science communication for digital channels, and serving outreach and archival needs across CF.

Our Science Snapshot episode Reflections of Thought covered a study from the Mainen and Renart labs showing that mice's facial movements reflect their hidden thoughts. The video translated complex behavioural neuroscience into a short, accessible format for a broad audience. The team produced a video for the Breast Cancer Research Programme, outlining its objectives, research directions and collaborative framework, as well as a video documenting the Neurotechnology Warehouse's purpose, infrastructure and role within CF's research ecosystem. We also produced the three-part video series CF: 20 Years at the Service of Humanity, showcasing CF's mission, research and clinical activities.



rodent

coordinator Isabel Campos
animal welfare officer Rute Marques
veterinarian Catarina Carvalho
operational manager João Pereira
service manager Ana Vaz
animal health and welfare technicians Bruno Novais, Jennifer Murray, Sara Oliveira
assisted reproduction technicians Ana Rita Pereira, Catarina Craveiro (jointly with Fly platform)
colony managers Ana Rita Pereira, Erineo Silva, Filipa Franco, Irina Moreira, Laura Carvalho, Rita Esteves, Tamara Wonner
animal technicians Alexandre Leite, Pedro Franqueira, Wilcila Pontes
technicians João Rodrigues, Kevin Montrond, Rodrigo Santos

The Rodent platform ensures the welfare and veterinary care of all CR rodent models in compliance with European and national regulations and welfare guidelines. Our team oversees shared facilities, provides daily animal care, supervises animal use in scientific research, and offers specialised services including colony management, assisted reproduction, and contract research. Additionally, staff play a key role in the institutional Animal Welfare Body (ORBEA) and in training researchers in laboratory animal science.

The platform underwent significant staff transitions while achieving several operational milestones. We welcomed new colony managers Tamara Wonner and Rita Esteves, as well as Jennifer Murray, an experienced veterinary nurse specialising in contract research and our new Procedure and Surgical Support service.

The platform reinforced its commitment to the 3Rs (Replacement, Reduction and Refinement) by providing animal analgesia free of charge and acquiring new equipment to refine intravenous administration procedures, and co-organised the inaugural celebration of International Laboratory Animal Technician Week, strengthening engagement with the wider research community.

The internal ORBEA expanded to include its first lay member, journalist Vasco Trigo, while our ORBEA Chair and Animal Welfare Officer Rute Marques was invited to join the Committee for Ethics in Animal Experimentation (CETEA) at the Institut Pasteur.

The nine CR Support Units (CRSU) are responsible for providing comprehensive administrative and operational assistance, including budget and financial management, purchasing, procurement, and services within the people and culture area. As CR continues to evolve, so too do the organisation, expertise and capacities of the support provided to its scientists.

The vision of the CRSU is to be an exemplary resource in the field of research management and administration by providing tools and exceptional support to enhance the work of scientists, maximising their time spent in research.

cr support units

communication, events and outreach

coordinator (science communication and outreach): Catarina Ramos
coordinator (institutional communication and events) Teresa Fernandes
science and community events coordinator António José Monteiro
audiovisual technician and sound designer João Van Zelst
communication consultant (part-time) John Lee
communications and events officer (jointly with bcrp) Andreia Pinho
designers Carla Emílie Pereira, Marta Correia
events and digital managers Ana Rita Mendes, Diana Cadete
neurotechnology liaison officer (jointly with crn) Thais Lindemann
science writer and content producer Hedi Young

The Communication, Events and Outreach (CEO) team plays a central role in amplifying the mission and activities of CF, ensuring that its clinical, scientific and institutional work is communicated clearly, accurately and effectively. Through an integrated approach combining strategic communication, event design, outreach and capacity building, the CEO team strengthens dialogue, fosters knowledge exchange, and enhances public trust in science and health.

The team produced 45 press releases with growing international coverage, delivered 91 design projects (+44% vs 2024), and launched CF's first official podcast, Leafing Through Science, generating over 400 listening hours. Digital engagement increased across all channels: 136,825 website news views (+34%), 14,156 newsletter subscribers (+22.5%), and social media (Instagram +94%, LinkedIn +85%).

248 events were organised – roughly one per working day – a 124% increase since 2022, including Moving Beyond, Medica AI and the Responsible AI Forum. The CR Symposium alone convened 320 participants from 40 institutions in 11 countries.

Outreach engaged ~5,000 participants across 33 education programmes and 50 public initiatives, supported by over 80 volunteers. Science on the Walls became a Falling Walls finalist, while the 20 Years, 20 Stories Collection reached ~144,000 people online and attracted ~500 onsite visitors.

We also welcomed two new members and contributed to major science communication forums from Madeira to Shanghai.

direction support

executive assistant to the direction Inês Soeiro

The Executive Assistant (EA) provides strategic support to the CR Scientific Directors, helping to align leadership priorities with the overall research vision. The role manages the Directors' accessibility, ensures effective communication across stakeholders, and enables them to support the community by navigating challenges and addressing emerging needs.

In addition, the EA spearheads key institutional initiatives, including the annual Scientific Advisory Board meeting and national and international collaborations. In 2025, the EA also played a central role in the Evaluation of National Research Units by the FCT, in which CR received the highest possible rating across all criteria.

The 2024 FCT National Research Unit Evaluation was a landmark project for CR, requiring the consolidation of extensive institutional data and coordination of a complex, multi-stage application process. This comprehensive assessment by international panels reviewed five years of scientific output and the strategic plan for 2025-2029. Despite significant administrative and technical demands, workflows were centralised to ensure a seamless interface with FCT throughout the process. CR received top marks – “Excellent” (5/5) across all evaluation criteria – reaffirming its position among leading international research institutions.

fellows support office

coordinator Gerson Figueiredo/Teresa Carona

officers Beatriz Heitor, Mariana Duarte, Pedro Alves

The Fellows Support Office provides comprehensive human resources support to the CF's research community, covering everything from recruitment to maintaining connections with former members. In close collaboration with Human Resources (HR) and other CF support units and platforms, we work to ensure CF meets its commitments to researchers. We continuously refine HR policies, processes, and procedures to streamline operations and enhance the experience of our researchers. Our priority is to promote the success and well-being of all researchers and staff, fostering a nurturing and respectful working environment.

We actively supported our research community by processing 184 official statements and declarations, 197 onboarding requests, 35 offboarding processes, and more than 40 formal liaisons with Portuguese government offices. Throughout the year, we continued to refine and consolidate our HR policies and procedures to ensure clarity, compliance, and efficiency.

In parallel, we advanced several key initiatives. These included implementing a renewal-anticipation workflow to ensure timely contract extensions, designing a new, streamlined onboarding model that enhances both operational efficiency and the researcher experience, and upgrading our internal databases to enable faster access to information, improved decision-making, and more responsive support for fellows.

Looking ahead, we remain firmly committed to further strengthening the ecosystem around our researchers and staff so that every member of the community feels supported throughout their journey.

graduate studies office

director of education Isabel Palmeirim

gso coordinator Penka Girginova

cajal programme coordinator Mariana Costa

teaching lab coordinator Hugo Marques

The Graduate Studies Office (GSO) supports postgraduate training across the institution. Its activities extend beyond doctoral students to include healthcare professionals, researchers and other members of the scientific community, with an emphasis on translational research and applying scientific knowledge to advance medicine. The GSO fosters a collaborative learning environment that supports knowledge sharing and academic and professional development.

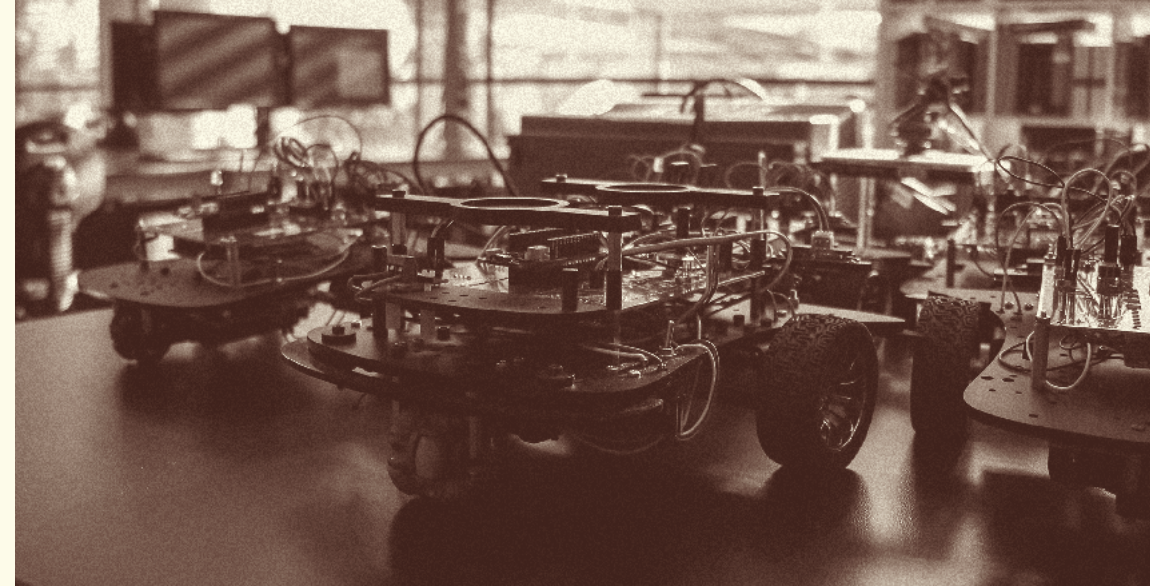
The GSO is committed to academic excellence, student integration, and interdisciplinary collaboration. By supporting students throughout their academic and professional journeys, it helps cultivate innovation, critical thinking and teamwork.

Through this structured environment, we contribute to scientific progress, the development of new therapeutic approaches, and solutions to public health challenges.

We continued to strengthen CF's scientific community by enhancing doctoral training and promoting links between research, clinical practice and health innovation. Major activities included the Neuroscience and Cancer Doctoral Programmes, which provide advanced interdisciplinary training, and the CAJAL Advanced Neuroscience Courses, offering intensive hands-on learning with international experts.

To further bridge science and medicine, the Advanced Course in Fundamentals of Medicine equipped researchers with essential medical knowledge, while Clinical Seminars fostered dialogue between laboratory research and clinical practice.

Together, these initiatives supported students, researchers and healthcare professionals, strengthening translational research and advancing health-related knowledge.



health and science

coordinator Teresa Fernandes

health and science writer Ana Gerschenfeld

As CF's clinical and research initiatives continue to evolve, so too does the importance of clear and accessible communication. The growing prominence of clinical and translational research at CF has highlighted the need to make complex medical and health-related information both understandable and relevant to a wider audience.

The Health and Science Communication team remained committed to its mission, crafting content that connects cutting-edge research with the public, patients, and healthcare professionals alike. From press releases to interviews, our efforts aim to ensure that CF's innovations are not only shared with our academic and clinical colleagues, but also with society at large.

This ongoing work supports a broader vision: to encourage dialogue around health and science, promote awareness of medical advancements, and ultimately, contribute to a more informed and engaged society.

lab administration

coordinator Raquel Gonçalves

lab administrators António Raposo, Catarina Ferreira,
Joana Castro, Raquel Soares, Tânia Matos, Vesna Petojevic

The Lab Administration unit supports CR scientists by handling a wide range of day-to-day tasks, allowing researchers to focus on their work. The team works closely with principal investigators, lab managers, and other lab members, assisting with ordering, budgeting, travel arrangements, data collection, and ensuring compliance with financial reporting standards. We also collaborate regularly with other CR support units, platforms, and departments – such as Post-Award, Logistics, and Accounting – as well as with external suppliers, service providers, shipping companies, and brokers. The team's core mission is to serve the CR community and improve overall organisational efficiency.

As CR continued to evolve, we focused on onboarding and training two new members while adapting to new policies and ongoing changes within CR. This period of transition required flexibility, close collaboration and effective knowledge sharing to ensure continuity of operations. Through collective effort and commitment, the team maintained high-quality support for researchers and the smooth functioning of lab activities.



office for sponsored programmes – post-award

coordinator José Mário Leite

project manager Francisco Semedo

project officers Helena Duarte, Henrique Moreira, Inês Bonifácio,
Pedro Monteiro, Rizwana Mahomed, Sandra Jacinto, Sofia Venâncio

The Office for Sponsored Programmes (OSP) - Post-Award plays a vital role in the effective management of research grants. It provides comprehensive support with financial and scientific reporting, cost eligibility, and overall grant administration, ensuring compliance with funders' requirements. Beyond administrative oversight, the OSP serves as a key bridge between the CR scientific community and the complexities of grant management. By streamlining processes and offering expert guidance, we help researchers navigate bureaucratic challenges, optimise resource allocation, and stay focused on their scientific work.

The OSP was central to the management of approximately €65 million across 140 projects, ensuring efficient oversight and full compliance with funding requirements. We submitted nearly 150 financial reports and 65 scientific reports to various funding agencies, supporting the research community in meeting reporting obligations and maintaining transparency in grant administration.

operations

operations manager and health and safety officer Cátia Feliciano

The Operations unit ensures the smooth day-to-day functioning of the labs by providing timely, effective support and managing infrastructure, maintenance, equipment, and space-related needs. We develop and implement operational policies and procedures, and also assist principal investigators with resource planning, equipment acquisition and installation, offering general guidance as required.

The team also oversees health and safety across the labs, maintaining high standards and providing initial inductions and training. The CR SafeLab website serves as a central hub for health and safety resources, including a chemical safety database, safety protocols, waste management guidelines, and information on common lab hazards.

We continued to deliver comprehensive support, working closely with researchers and other support units to address evolving needs and uphold high standards across CR. In addition, the Occupational Health and Safety Department became independent from the Operations unit and expanded its services across CF, with Cátia Feliciano primarily supporting CR and Pedro Rosa, Senior Occupational Safety Technician, overseeing clinical operations.

strategic research development

coordinator Joana Lamego

research funding managers Ana Luísa Tomás, Andreia Tavares, Bruno Ceña, Cátia Figueiredo, Mafalda Farelo

We drive fundraising initiatives for research, innovation and technology development at CF. We identify funding, policy and partnership opportunities and work closely with researchers to develop strategic programmes and projects.

Activities are structured around a centralised pre-award hub integrating expertise in internationalisation, science policy and development. This approach strengthens the competitiveness and sustainability of CF's research funding efforts.

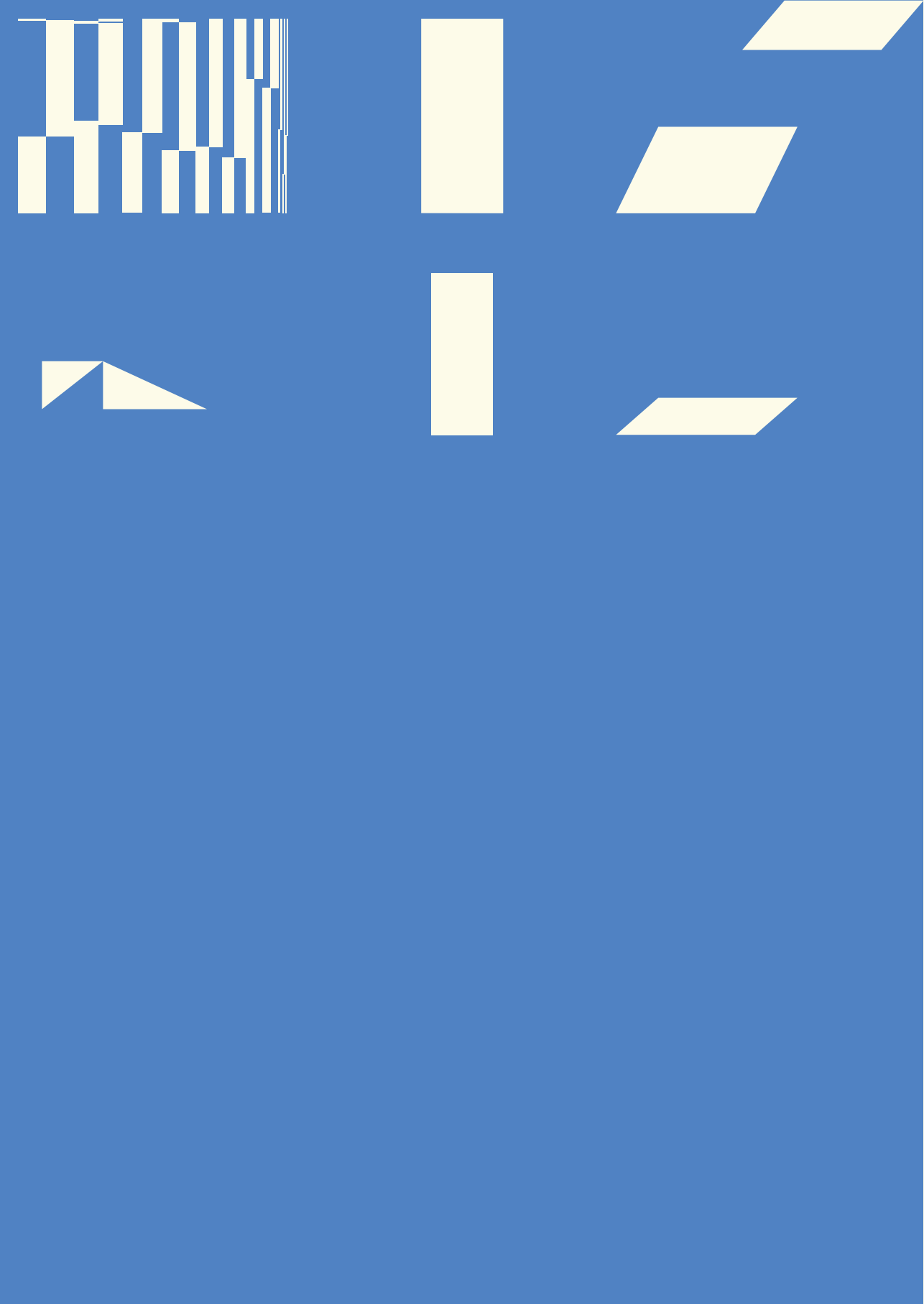
Since 2017, we have collaborated closely with the CF community to refine this framework and foster a strong team culture that supports successful funding outcomes. The excellence and commitment of CF researchers have helped secure more than €100 million in external research funding over this period.

The team identified and disseminated 277 funding opportunities from 163 organisations and supported 162 applications submitted to more than 40 funders. Over €25 million was secured through 38 awarded projects funded by 13 funders.

Cross-sectoral projects awarded with active team involvement included RiDT, a digital therapeutics research infrastructure co-funded by Lisboa2030, and Casa de Pomarchão, developed with the Ponte de Lima Municipality to host Encontros Improváveis, co-funded by Norte2030. Building on participation in the first edition of the Science4Policy initiative (FCT/PlanAPP), the team also contributed to a new science-for-policy project awarded in the programme's third edition and led by CF (neurologist and clinical researcher Marcelo Mendonça).

New initiatives included the proof of concept of Science Kitchen, established with Carlos Ribeiro (CF) and Paulo Amado (Edições do Gosto), bringing society closer to science. We also participated in the International Network of Research Management Societies (INORMS) Congress, engaging in advanced training, international networking and team development.

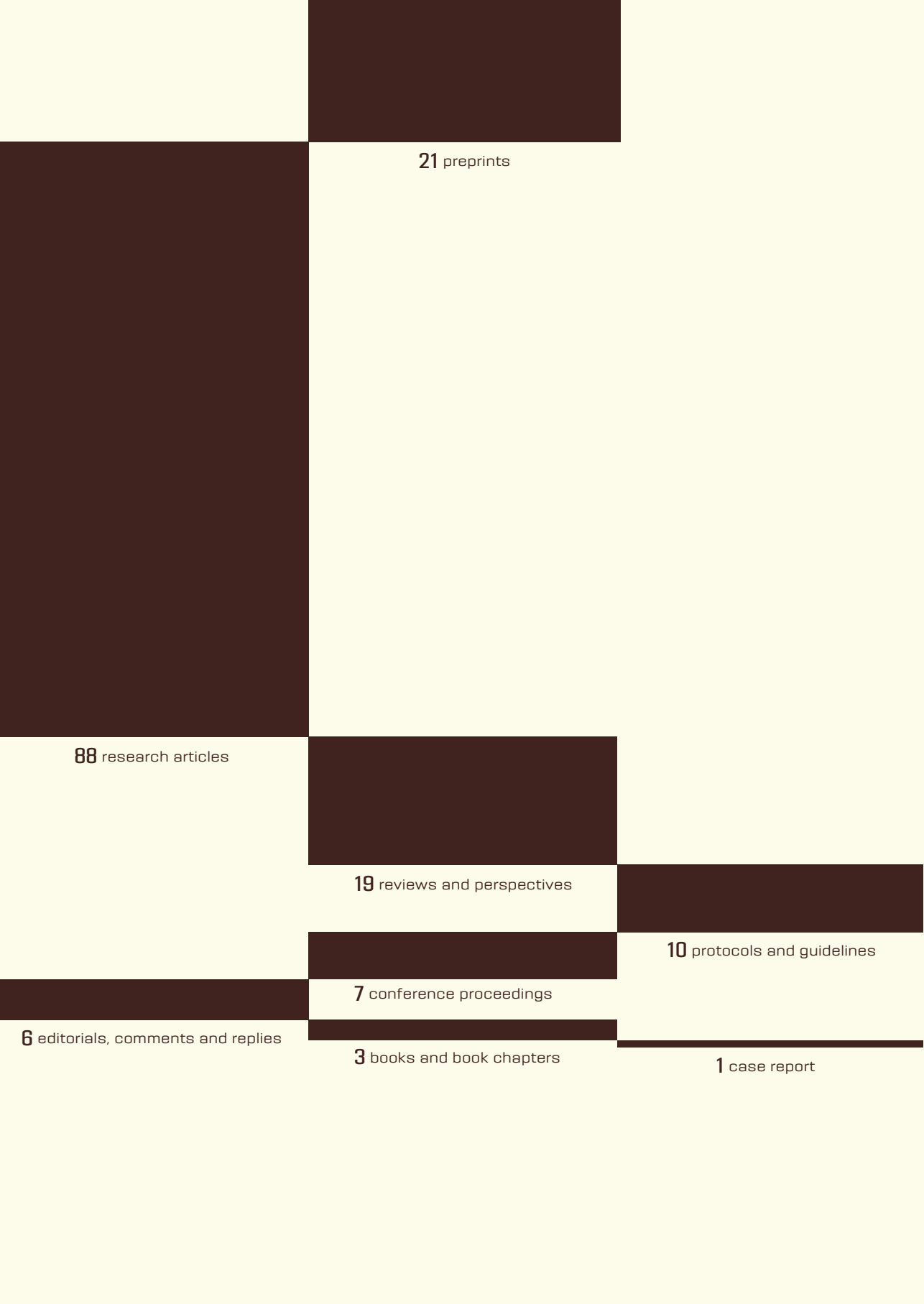




Building a research institute
where people can do good research
and publishing nice papers is the easy part.
What's harder, and what the CF has achieved,
is attracting people with big dreams and big ideas,
people who are willing to challenge themselves
to participate in building something larger
than the sum of its parts.

There's a spirit of adventure and community
that is intangible – and enviable.

Megan Carey
PI, Neural Circuits and Behaviour lab
from 20 Years, 20 Stories Collection



p u b l i c a t i o n s

In 2025, CR publications encompassed new discoveries in both fundamental research topics and translational and clinical fields. Many of these publications resulted from collaborative efforts among various groups within CF. The featured publications provide an overview of CR’s research spectrum across our three research programmes: Experimental Clinical Research, Neuroscience, and Physiology and Cancer.

parkinson's disease might be detected much earlier with a simple brain scan

lungu et al.
Journal of Cerebral Blood Flow & Metabolism

Parkinson's disease is usually diagnosed only after movement problems appear - by which time significant brain damage has already occurred. Yet many patients experience sensory changes, such as loss of smell or visual disturbances, years earlier. The Preclinical MRI | Shemesh lab, in collaboration with international partners, showed that these early alterations may be detectable through brain imaging. Using ultra-high-resolution functional MRI, the team found that a mouse model of Parkinson's disease displayed markedly reduced brain responses to both odours and visual stimuli, revealing a combined sensory deficit long before severe motor symptoms would typically emerge.

To determine whether these changes reflected true neural dysfunction rather than blood-flow effects, a known limitation of fMRI, the researchers combined imaging with independent measurements of cerebral blood flow and molecular markers of neuronal activity. They found that the abnormalities were driven primarily by reduced neural firing, suggesting genuine impairment of sensory circuits. Because fMRI is non-invasive and widely available, this approach could eventually help identify individuals at risk years before clinical diagnosis, when therapies may be most effective. The work opens a promising avenue for developing early biomarkers of Parkinson's disease and improving prospects for intervention.

artificial intelligence can help in the non-invasive diagnosis of prostate cancer

rodrigues et al.
Radiology: Imaging Cancer

Diagnosing prostate cancer often requires an invasive biopsy, even when MRI scans suggest the disease may not be present. The Computational Clinical Imaging | Papanikolaou lab, leading an international collaboration, developed an AI model that can assess prostate MRI scans and predict whether cancer is likely - potentially reducing the need for biopsy. Trained on thousands of scans collected from multiple hospitals and countries, the system integrates imaging data with clinical information such as PSA levels and lesion characteristics to mimic real-world decision-making by radiologists.

In validation tests, the AI model outperformed the widely used PI-RADS scoring system and could have avoided roughly one in five biopsies without missing significant cancers. Because biopsies are uncomfortable, carry risks of infection, and increase healthcare costs, such improvements could have substantial benefits for patients and clinicians alike. Although further validation in clinical settings is still required, the study demonstrates how AI could support safer, less invasive diagnosis and help personalise decision-making in prostate cancer care.

how ai is transforming pet/ct analysis

constantino et al.
Journal of Nuclear Medicine

Analysing PET/CT scans - a cornerstone of cancer diagnosis and monitoring - is often slow and labour-intensive, requiring specialists to examine hundreds of images to identify tumours. The Radiopharmacology | Costa lab developed an AI approach that can automatically detect and outline cancer lesions in these scans with high accuracy. The system was trained on nearly 1,000 patient scans using two widely employed radiotracers, one commonly used across many cancers and another specific to prostate cancer.

The researchers combined standard deep-learning analysis with a technique called maximum-intensity projection, which compresses three-dimensional data into images that emphasise the strongest signals - typically tumours. This hybrid approach produced the most reliable results, enabling detailed measurements of tumour burden with minimal false alarms. Such tools could help clinicians evaluate disease progression and treatment response more quickly and consistently, while still relying on expert review for final decisions. By accelerating image analysis without replacing medical judgement, the method has the potential to improve both efficiency and precision in cancer care.

many possible futures: how dopamine in the brain might inform ai that adapts quickly to change

sousa m et al.
Nature

How does the brain evaluate uncertain future rewards - not just whether something good will happen, but how big it will be and when it will arrive? The Learning | Paton lab discovered that populations of dopamine neurons encode a detailed "map" of possible future outcomes rather than a single average prediction. In experiments with mice, different odour cues signalled rewards of varying sizes or delays, allowing researchers to record how individual neurons responded. Some neurons favoured immediate rewards, others were tuned to delayed ones; some reacted strongly to unexpectedly large gains, while others were more sensitive to disappointments.

Together, this diversity formed a probabilistic representation of future rewards that could predict the animals' behaviour and adapt to changing conditions. The findings suggest the brain weighs multiple possible futures simultaneously - like consulting advisors with different risk preferences - enabling flexible decision-making when needs or environments change. This neural strategy closely resembles "distributional reinforcement learning", a modern AI approach that learns from the full range of outcomes rather than their average. By revealing how biological systems handle uncertainty, the study offers new insights into impulsivity, risk-taking, and adaptive behaviour, while pointing toward AI systems that can respond more effectively to complex, unpredictable worlds.

champalimaud foundation joins global effort to create first brain-wide map of decision-making

international brain laboratory et al.
Nature

How does the brain make decisions? A landmark international effort involving the Systems Neuroscience | Mainen lab produced the first brain-wide map of decision-making at single-neuron resolution. By recording activity from more than half a million neurons across most of the mouse brain while animals performed a simple choice task, the researchers found that decision signals were not confined to specialised regions. Instead, activity related to perception, action, reward, and choice spread across nearly the entire brain in a coordinated cascade.

A companion study revealed that internal expectations – the brain’s predictions about what is likely to happen – were also represented widely, appearing even in sensory and motor regions. Together, the findings challenge the traditional view of decision-making as a step-by-step process handled by distinct brain centres. Instead, behaviour appears to emerge from the collective activity of distributed networks operating simultaneously. Beyond its scientific insights, the project established new standards for large-scale, reproducible neuroscience through tightly coordinated experiments across multiple laboratories. The resulting open dataset provides an unprecedented resource for understanding how the brain integrates information, forms expectations, and guides behaviour – with potential implications for psychiatric and neurological disorders.

in insects, the evolution of feeding preferences is rooted in the brain, and not only in peripheral taste sensors, scientists find

bertolini et al.
Nature

Why do closely related species develop radically different food preferences? A study involving the Behaviour and Metabolism | Ribeiro lab challenges the long-standing assumption that such differences are driven mainly by taste receptors on the body. Comparing three fruit fly species – including one that feeds almost exclusively on the bitter noni fruit – the researchers found that peripheral taste neurons responded similarly across species. Surprisingly, the specialist species did not show reduced sensitivity to bitterness or enhanced sensitivity to sweetness, suggesting that sensory input alone could not explain its unusual diet.

Instead, the key differences emerged in the brain. Using whole-brain imaging of the flies’ taste-processing centre, the team showed that neural circuits in the central nervous system responded differently to the same stimuli, effectively reinterpreting taste information. Regions involved in feeding behaviour were tuned to favour noni in the specialist species, while responses to sweet tastes were diminished. The findings reveal that the evolution of feeding habits can be driven by changes in how the brain processes sensory information, rather than by changes in sensory receptors themselves. This work reshapes our understanding of behavioural adaptation and may inform new strategies for controlling pest species by targeting central neural circuits rather than peripheral taste mechanisms.

eavesdropping on organs: immune system controls blood sugar levels

šestan et al.
Science

The Immunophysiology | Veiga-Fernandes lab uncovered an unexpected role for the immune system in regulating blood sugar during periods of low energy, such as fasting or prolonged exercise. In mouse experiments, the team found that a specific type of immune cell, known as ILC2, is essential for maintaining normal glucose levels. Animals lacking these cells produced insufficient amounts of glucagon – the hormone that raises blood sugar – leading to dangerous drops in glucose. Remarkably, restoring the missing immune cells corrected the problem, revealing that immunity plays a direct role in metabolic control, not just in defence against infection.

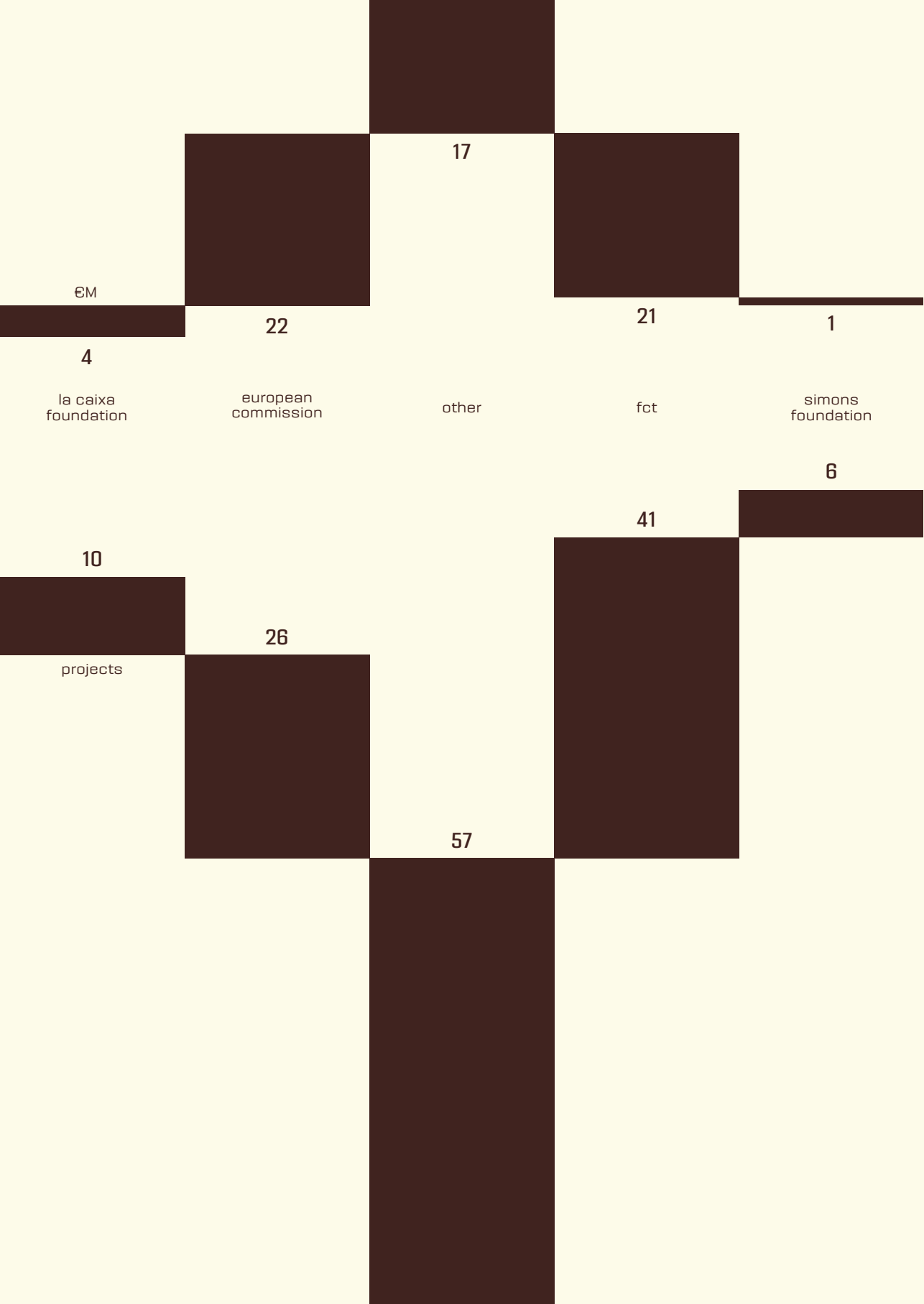
Further investigation showed that this process relies on a newly identified communication circuit linking the nervous, immune and hormonal systems. Signals from the brain trigger immune cells in the intestine to migrate to the pancreas, where they release molecular messengers that stimulate glucagon production, prompting the liver to release glucose into the bloodstream. This discovery reveals a coordinated, body-wide response that helps ensure a steady energy supply when food is scarce. By uncovering how organs “talk” to one another to regulate metabolism, the study opens new avenues for understanding and potentially treating conditions such as diabetes, obesity and cancer-related metabolic disorders.

researchers uncover mechanisms of initiation and progression of the most common skin cancer in humans

canato et al.
Cancer Discovery

The Cancer and Stem Cell Biology | Sánchez-Danés lab uncovered a key mechanism driving the initiation and progression of basal cell carcinoma, the most common skin cancer worldwide. The team identified a protein called Survivin – known for promoting cell division and preventing programmed cell death – as a crucial factor that allows skin stem cells to form tumours. In mouse models, removing the Survivin gene after activating cancer-causing mutations prevented tumour formation, while forcing its expression enabled normally resistant progenitor cells to become cancer-initiating. These results reveal why certain cells are uniquely capable of giving rise to this cancer and pinpoint Survivin as a central switch controlling tumour competence.

The study also showed that Survivin plays a role beyond initiation: blocking its activity in early lesions prevented their progression into invasive cancer. Because Survivin is elevated in many human tumours and inhibitors already exist, the findings suggest potential strategies for preventing disease development – for example, using topical treatments to halt tumour growth at a precancerous stage. The researchers further identified an alternative therapeutic target, SGK1, whose inhibition produced similar protective effects with potentially fewer side effects. By clarifying the earliest steps of tumour formation and identifying actionable targets, the work opens new avenues for preventing and treating basal cell carcinoma before it becomes aggressive.



competitive external funding

Since the establishment of the research programme, CR scientists have received significant support for their work through competitive external funding schemes. Counting all newly awarded and previously secured projects, a total sum of €65M was active at CR during 2025. The largest contributions came from the European Commission and the FCT.

This was a year of strong performance and international recognition for CF, marked by success across highly competitive national and international funding programmes, prestigious fellowships, and major scientific awards. More than €25 million was secured through 38 awarded projects supported by 13 different funders. This was an atypical year, with 58% of the funding coming from national sources and 42% from European and other international funders, reflecting both CF's strong position in Portugal and its sustained competitiveness on the global stage.

Funding was provided by leading organisations including the European Commission, la Caixa Foundation, Simons Foundation, Advanced Research and Invention Agency (ARIA), Fundação BIAL, Pfizer, Choroideremia Research Foundation (CRF), FCT, and Liga Portuguesa Contra o Cancro (LPCC), among others.

continued success in european funding

CF achieved significant success under Horizon Europe, including European Research Council (ERC) grants across career stages (Starting, Advanced and Proof of Concept), reinforcing its position among Europe's leading research institutions. The ERC Advanced Grant awarded to Megan Carey - the first CF researcher to receive all three frontier ERC individual grants (Starting, Consolidator and Advanced) - will be carried out at the University of Oxford.

CF also secured multiple MSCA Doctoral Networks and Postdoctoral Fellowships, further strengthening its role in training the next generation of scientific leaders. Together, these awards underscore CF's ability to compete at the highest European level and attract top international talent.

robust national and regional research funding

CF maintained a strong national funding portfolio, with multiple projects awarded under FCT programmes, including the Multiannual Funding Programme for R&D Units and EQUIPAR+2. In the quinquennial evaluation associated with the former, CF received the highest possible qualitative rating, reaffirming the excellence and maturity of its research ecosystem. In parallel, CF secured several R&D projects across all scientific domains, further consolidating its breadth and competitiveness. Together, these results underscore CF's central role in Portugal's scientific ecosystem and its strong alignment with national research and innovation priorities.

At the regional level, major projects recognised by the funding authority CCDR-LVT supported the development of scientific infrastructure, innovation, and intellectual property protection, strengthening CF's capacity to translate scientific excellence into societal and economic impact.

prestigious fellowships, awards, and talent attraction

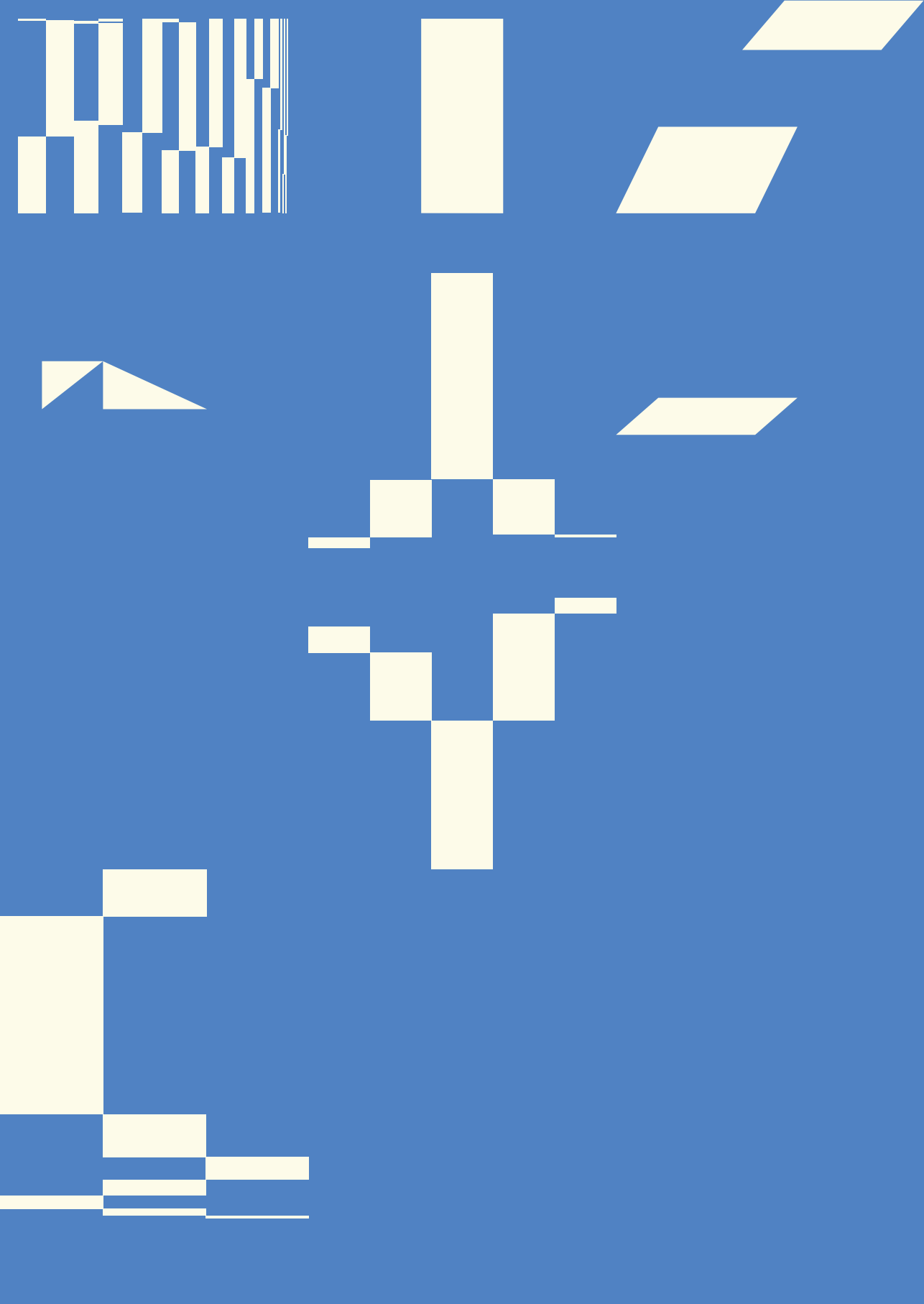
CF hosted highly competitive fellowships and employment contracts, including la Caixa Junior Leader Fellowships, Simons Foundation postdoctoral fellowships, and MSCA Postdoctoral Fellowships. These programmes bolster CF's international research environment and enhance its ability to attract outstanding researchers across career stages.

CF researchers also received high-profile scientific prizes, including the Prémio Maria de Sousa (BIAL) and Pfizer Research Awards. These distinctions recognise the quality, relevance, and translational potential of research conducted at CF, particularly in neuroscience and oncology.

expanding science-for-policy and strategic research interfaces

CF contributed actively to science-for-policy initiatives, including Science4Policy (PLANAPP/FCT), consolidating its role as a trusted partner for evidence-based policymaking. In addition, the regional funding authority CCDR-Norte recognised the potential of Casa de Pomarchão - a heritage property donated to CF by the Villar family - as the future home of the Sede dos Encontros Improváveis ("Improbable Encounters"), a programme dedicated to activities at the intersection of science and culture.

Collectively, these initiatives highlight CF's growing influence beyond academia and its increasing role at the interface of science, policy, and society.



Education is the glue that holds co-creation together
I hope it brings back from that journey
the seeds of a new kind of open science education
– one rooted in cooperation and freedom,
to shape not just the future of science,
but the future of how we learn.

Gonçalo Lopes
Former PhD Student,
Director of NeuroGEARS
from 20 Years, 20 Stories Collection

60 % international

40 % national

Canada, China, Estonia,
France, Germany, India,
Israel, Italy, Netherlands,
Poland, Portugal,
Russia, South Africa,
South Korea, Spain,
Switzerland, Turkey,
United Kingdom,
United States

Since its inception, CR has regarded educating scientists as one of its key strategic objectives. To this end, CR has devoted considerable efforts to the development and implementation of outstanding educational programmes, advanced courses, and workshops. Among these, three main endeavours are the International Neuroscience and Cancer Doctoral Programmes, the Fundamentals of Medicine Course, and the CAJAL Advanced Training Courses.

international neuroscience doctoral programme

director Megan Carey, CF, PT
co-director Il Memming Park, CF, PT
scientific advisory board Jonathan Pillow, Princeton University, US;
Laura Andreae, King’s College London, UK, Mónica Bettencourt-Dias, GIMM, PT
indp 2025 cohort Dunya Assaf, CA; Kumar Neelabh, IN; Margarida Gingeira, PT;
Mariana Duarte, PT; Mengjiao Zuo, CN; Philippine Decaix, FR; Ziqian Xu, CN

total doctoral students 69
26 national
43 international
students who defended their PhD during 2025 23
nationalities represented 19
Canada, China, Estonia, Germany, France, India, Israel, Italy, Netherlands, Poland, Portugal, Russia, South Africa, South Korea, Spain, Switzerland, Turkey, United Kingdom, United States

external funding access
During 2025, 13 students applied for fellowships from the FCT, of which six were successful (≈46% success rate). One student was awarded a la Caixa Foundation fellowship.

The INDP provides students with a rigorous, multidisciplinary, and integrated training in behavioural neuroscience. The programme promotes active engagement, intellectual independence, and critical thinking, preparing graduates for careers as innovative scientists and researchers. Its international student body brings together diverse academic backgrounds, including life sciences, physics, psychology, mathematics, and computational sciences. The programme is fully accredited, with degrees awarded by two partner institutions of CF: ITQB NOVA – Institute for Chemical and Biological Technology, NOVA University Lisbon, and ISPA – University Institute of Psychological, Social and Life Sciences.

The final stage of recruitment for the 2025 cohort took place online on 13-14 March, involving 30 candidates shortlisted through prior academic evaluation. From 8-12 September 2025, the Graduate Studies Office organised the fifth INDP Orientation Week, marking the start of the programme’s taught component for the new cohort. Following Orientation Week, students began courses covering core topics in contemporary biology and neuroscience, with a strong practical component and emphasis on quantitative skills.

By September 2025, students from the previous cohort (INDP2024) had completed their coursework. During the first half of the year, they undertook lab rotations across different research groups, enabling them to explore ongoing research lines and select their doctoral project host lab. Throughout the programme, each student is supported by a thesis committee responsible for monitoring progress and providing continuous guidance.

INDP students benefit from a dynamic academic environment that includes weekly seminars by internal and external experts covering both basic and clinical research topics. They also have access to a wide range of scientific meetings and workshops, fostering a comprehensive and enriching academic experience.

international cancer doctoral programme

programme committee Catarina Brito, ITQB NOVA, PT; Isabel Palmeirim, CF, PT, Pedro Castelo Branco, Faculdade de Medicina e Ciências Biomédicas [Faculty of Medicine and Biomedical Sciences, FMCB], UAlg)
cf education committee Klaas van Gisbergen, CF, PT; Rita Fior, CF, PT
icdp 2025 cohort Adam Sghaier, CA; Ariana Pina, PT; Daniela Guedes, PT; Francisco Melo, PT; Germano Vicente, PT; Sofia Boavida, PT

total doctoral students 15
8 national
7 international
nationalities represented 8
Canada, China, Estonia, Germany, India, Netherlands, Poland, Portugal

With cancer research established as a strategic pillar of CF and the integration of highly specialised excellence groups in this field, the ICDP aims to become a global reference in advanced oncology training. The programme integrates fundamental research, clinical investigation, and medical experimentation to train the next generation of scientists, clinicians, and physician-scientists. Anchored in scientific excellence, state-of-the-art infrastructure, and CF’s unique clinical-research environment, the ICDP promotes a truly interdisciplinary approach, strengthening the link between basic science and clinical practice and contributing to therapeutic innovation and improved cancer care.

The selection process for the programme’s third cohort took place in April 2025. Nine candidates were pre-selected based on academic and professional records and online interviews. In the final stage, five students were admitted, joined by one student already supported by external funding from FCT.

The formal start of ICDP2025 occurred in September 2025, when the six new students joined the INDP2025 cohort during Orientation Week organised by the Graduate Studies Office. The event aimed to promote early academic integration and active engagement with the CF’s scientific community.

During the taught phase, students received in-depth training on the cellular and molecular mechanisms underlying cancer development and progression, including dysregulated proliferation, genetic and non-genetic drivers of oncogenesis, tumour heterogeneity, invasion and metastasis, and tumour-host interactions. To consolidate their scientific trajectory and define their thesis topics, students completed three lab rotations, gaining hands-on experience across different research approaches.

The programme is fully accredited, with degrees awarded jointly by FMCB UAlg and ITQB NOVA.

fundamentals of medicine

Translational medicine requires a shared scientific and clinical language between researchers and clinicians. However, the lack of structured medical training among many researchers can limit the effectiveness of interdisciplinary collaboration.

The Postgraduate Programme in Fundamentals of Medicine (PG-FoM), organised by FMCB UAlg in partnership with CF since 2020, was designed to address this gap. The one-year programme is open to researchers at different career stages and provides structured training in anatomy, physiology, pathology, and pharmacology across major organ systems.

The curriculum is organised into integrated, system-based modules built around real clinical cases. Teaching follows a Problem-Based Learning (PBL) model, originally developed at McMaster and Maastricht Universities, promoting student-centred learning, independent knowledge acquisition, critical reasoning, and collaborative problem-solving. This approach encourages researchers to link biomedical mechanisms with clinical manifestations and therapeutic strategies, strengthening the integration between basic science and clinical practice.

The second edition of the Advanced Course in Fundamentals of Medicine (CA-FoM), which began in September 2024, concluded in June 2025. Of the ten participating researchers, nine completed the course successfully, achieving final grades between 12.4 and 17.3 (on a 0-20 scale).

The third edition started in September 2025, maintaining the same format. As in previous years, the programme was open to external applicants, receiving 22 applications. Five CF researchers and four external participants were selected, including two postdoctoral researchers from the International Iberian Nanotechnology Laboratory (Braga), who travel weekly to attend classes.

Four graduates from the first edition of the PG-FoM who chose to pursue medical training completed their medical degrees in May 2025. CF now counts four senior basic-science researchers trained in medicine, further strengthening its translational research capacity and the link between fundamental research and clinical practice.



clinical seminars

As part of its scientific and academic activities, 33 clinical seminars were held, aimed at promoting knowledge exchange and discussion of relevant developments in research and clinical practice. Speakers included a diverse range of profiles:

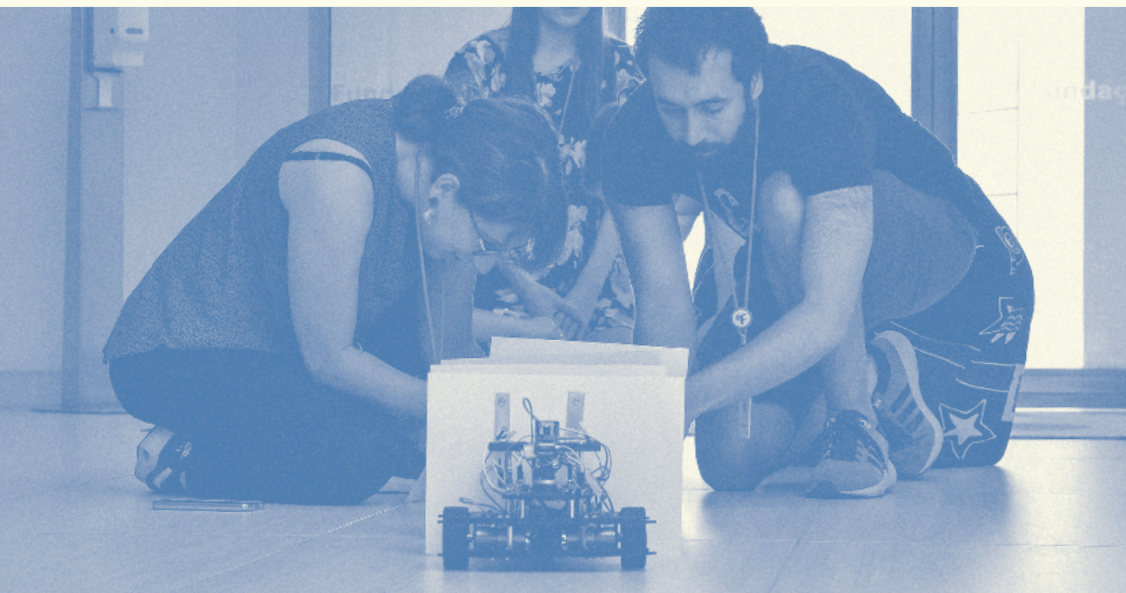
- 6 sessions by physicians pursuing or holding a PhD at CF
- 4 sessions focused on the activities of CF's clinical units and services, covering neuropsychiatry, radiation oncology, exercise oncology, and the biobank
- 16 sessions led by CF researchers, clinicians, or clinician-scientists
- 7 sessions featuring external speakers

Each seminar attracted an average audience of 40-60 participants, including physicians, nurses, and researchers. Collectively, these seminars provided a regular forum for disseminating knowledge and fostering interaction between clinicians, researchers, and students, strengthening interdisciplinary collaboration and supporting the continuous advancement of both clinical practice and research at CF.

cajal advanced neuroscience training programme

The CAJAL Advanced Neuroscience Training Programme continued its activities at CF, offering intensive three-week courses led by internationally renowned neuroscientists in a dynamic and interactive environment. The programme aims to provide students with hands-on learning experiences through small scientific projects.

This initiative is the result of a partnership between five institutions – the Federation of European Neuroscience Societies (FENS), International Brain Research Organization (IBRO), The Gatsby Charitable Foundation, University of Bordeaux, and CF – committed to establishing a centre of excellence for advanced neuroscience training in Europe. In 2025, two courses were held.



cajal course on interacting with neural circuits

8 – 27 june

venue director Christian Machens
venue manager Mariana Costa
scientific and technical manager Hugo Marques
project administrator Catarina Seabra
course directors Isaac Bianco, University College London, UK; Susana Lima, CF, PT; Tiago Branco, University College London, UK

The CAJAL course addressed one of neuroscience's central challenges: understanding how neural circuit activity gives rise to behaviour. Participants explored circuit architecture – including cell types, connectivity, and the spatiotemporal dynamics of activity in the intact brain – as well as strategies for establishing causal links between circuit function and behavioural outcomes through precise, targeted perturbations. The programme introduced state-of-the-art anatomical, genetic, optical, electrophysiological, optogenetic, and pharmacogenetic approaches, assessing their strengths, limitations, and applications across major model systems such as fruit flies, zebrafish, and mice.

The course combined lectures by leading international experts with intensive hands-on training in methods for mapping connectivity, recording and manipulating neural activity, and linking neural processes to behaviour. Each participant completed a supervised mini-project, applying these techniques in practice. The programme brought together a highly international cohort, with 24 keynote speakers from six countries and 15 teaching assistants (eight external). 20 students were selected from labs in 13 countries, with women representing 65% of participants.

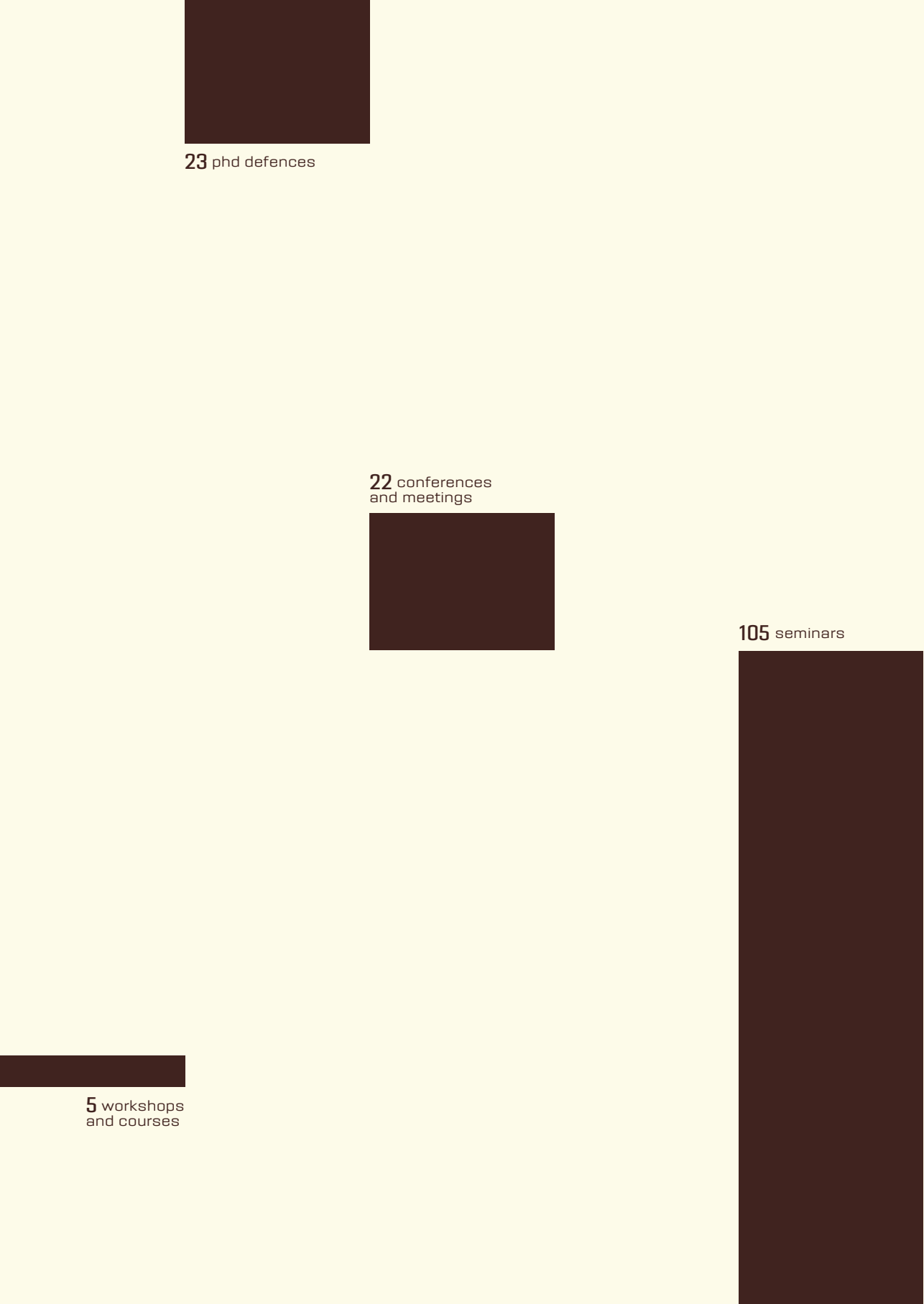
cajal course on neuroscience and artificial intelligence

14 july – 1 august

venue director Christian Machens
venue manager Mariana Costa
project administrator Catarina Seabra
course directors Fabian Sinz, University of Göttingen, DE; Leyla Isik, Johns Hopkins University, US; Mariya Toneva, Max Planck Institute, DE; Srinivas Turaga, HHMI Janelia Research Campus, US

The CAJAL course explored the rapidly expanding interface between neuroscience and AI, focusing on how modern deep learning methods can be used to model brain function and behaviour. With AI systems now achieving human-level performance in complex tasks such as visual recognition, language processing, and strategic planning, they provide powerful experimental models for testing hypotheses about the computational principles underlying biological intelligence. The programme also highlighted how recent advances in neural recording technologies – capable of capturing activity from thousands of neurons, detailed circuit anatomy, and whole-brain dynamics during behaviour – are generating large, multimodal datasets that can be analysed using these computational approaches.

Participants received a hands-on introduction to contemporary AI techniques and their application to neuroscience. Tutorials and project work covered key NeuroAI methodologies, including deep learning architectures for vision and language (such as convolutional neural networks and transformers), reinforcement learning algorithms, state-space models for neural time series, and machine-learning approaches to biophysical modelling of neural circuits. The course featured lectures from 12 invited keynote speakers representing five countries and was supported by four external teaching assistants. 24 students from labs in 14 countries were selected, with women representing half of the cohort.



23 phd defences

22 conferences
and meetings

105 seminars

5 workshops
and courses

scientific

events

CR hosted more than 150 scientific events across on-site, online, and hybrid formats, reflecting its ongoing dedication to connecting with the broader scientific community. The CR seminar programmes remained highly active, offering over 100 seminars throughout the year, more than 50 of which featured external speakers, including a public lecture by Nobel laureate Ardem Patapoutian. Key partnerships included collaborations with the Portuguese Society of Immunology for the organisation of its 50th Annual Meeting, the Portuguese Association for Cancer Research (ASPIC) for the Ovarian & Urologic Cancer Symposium, AWS for Healthcare & Life Sciences for the AWS GenAI for Health Summit, and the Centre for Responsible AI for the annual Responsible AI Forum.

cr symposium (#crsy25)
neuro-cybernetics at scale

15 – 17 october

The 2025 edition explored how behaviour emerges from complex feedback loops linking neural circuits, bodies, and diverse environments. Over three days, the symposium gathered researchers in experimental neuroscience, robotics, machine learning, control theory, and theoretical neuroscience to examine how principles of scaling and feedback may shape the future of systems neuroscience. The programme featured presentations by 15 distinguished speakers, a panel discussion on the future of neurocybernetics, selected talks from abstract submissions, and two poster sessions, alongside social and networking activities. The event adopted a hybrid format, enabling participation both in person and online.



crsy25 chairs Il Memming Park, CF, PT
Guillaume Hennequin, University of Cambridge, UK
Shreya Saxena, Yale University, US

keynote speakers Adrienne Fairhall, University of Washington, US
Auke Ijspeert, Ecole Polytechnique Fédérale de Lausanne, CH
Eva Dyer, University of Pennsylvania, US
Misha Ahrens, Janelia Research Campus, US

invited speakers Bing Wen Brunton, University of Washington, US
Chethan Pandarinath, Emory University and Georgia Tech and Meta Reality labs, US
Ehud Ahissar, Weizmann Institute of Science, IL
Eugenia Chialpe, CF, PT
Jesse Marshall, Meta Platforms Inc, US
Jonathan Pillow, Princeton University, US
Juan Álvaro Gallego, CF, PT
Máté Lengyel, University of Cambridge, UK and Central European University, AT
Shreya Saxena, Yale University, US
Srinivas Turaga, Janelia Research Campus, US
Taro Toyozumi, RIKEN Center for Brain Science, JP

speakers 15
posters 72
participants 320

countries Bangladesh, Canada, France, Germany, Ireland, Israel, Japan, Portugal, Switzerland, United Kingdom and United States



champalimaud internal seminar series

The Champalimaud Internal Seminar Series (CISS) is a weekly event designed to foster collaboration across CR and provide researchers with opportunities to practise public speaking and peer communication skills. Open to the entire CF community, the seminars take place in the Seminar Room and feature presentations from two different labs. All labs are included in a rotating schedule to ensure broad representation across the programme. This format enables researchers to share ongoing work, receive immediate feedback, and become familiar with each other's research. In 2025, the series delivered 28 seminars.

champalimaud open seminar

The COpS series is designed to strengthen connections within the community while promoting CR research to the public. Held in the main Auditorium, each seminar features two Group Leaders. This format encourages the sharing of innovative and ongoing research at CR, engaging not only the internal community but also local research institutes. In 2025, the series delivered eight seminars.

cr colloquia series

The CR Colloquia Series is a weekly seminar that encourages dialogue and collaboration around key questions in neuroscience, physiology, and cancer research. Each session features an invited speaker – from established leaders to emerging researchers – aimed at facilitating knowledge exchange and sparking synergies among CR researchers and the broader scientific community. Speakers are nominated by the community and faculty and curated by the CR Colloquia Committee to ensure a high-quality, diverse and well-balanced programme. Participants are encouraged to engage with speakers through weekly networking activities, enhancing connections and supporting exchanges of ideas. In 2025, the series delivered 31 seminars.

2025 CR Colloquia Committee
Carlos Minutti, Immunoregulation lab; Cristina João, Myeloma Lymphoma Research group; Daniel McNamee, Natural Intelligence lab; Ildefonso Pica, Theoretical Neuroscience lab; José Almeida, Computational Clinical Imaging lab; Margarida Caio, Stem Cells and Regeneration lab



ad hoc seminars

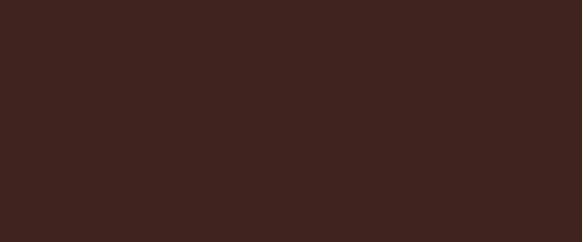
Ad hoc seminars feature external researchers in neuroscience, cancer, and physiology, invited by CR scientists to present their latest work. These sessions provide opportunities to discuss emerging approaches and current research trends, fostering collaboration and knowledge exchange among peers. In 2025, more than 15 ad hoc seminars took place at CR.

theory seminars

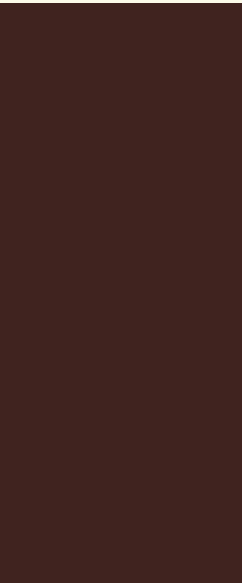
These sessions, which may include a tutorial in addition to the seminar, feature external theorists specialising in neuroscience and related fields, and aim to stimulate interactive discussion within the CR community. In 2025, approximately 10 speakers participated in this programme.

ai in medicine series

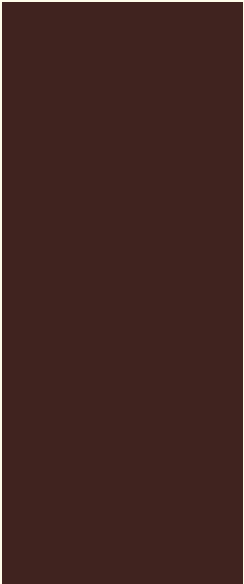
Organised by the Digital Surgery lab, this initiative delivered four sessions for the internal community, bringing together clinicians, researchers, and technologists to discuss and develop approaches at the intersection of AI and medicine.



retreats

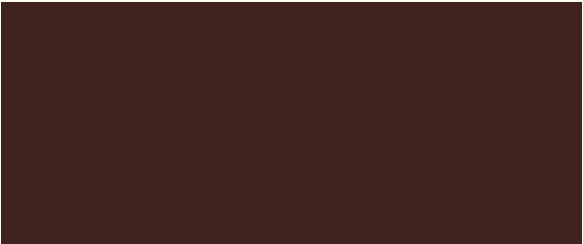


celebratory
events



clubs

social
gatherings



c u l t u r e

At the heart of CR culture is a shared commitment to scientific collaboration and the pursuit of excellence as a diverse, interdisciplinary collective endeavour. With the overarching aim of sustaining a cohesive and connected community, 2025 focused on strengthening long-standing programmes and initiatives that nurture this spirit, while creating new opportunities for co-creation, collective reflection and shared celebration.

town hall: cr retreat

12 may

The CR Council, which brings together representatives from across the CR community, organised a Town Hall focused on one of CR's key cultural landmarks: the Annual Retreat, which was paused this year. After collecting feedback from the community, the session was held in the main Auditorium to reflect on the retreat, rethink the event, and explore alternative ways to sustain CR's culture in its absence.

magusto

14 november

For the fifth consecutive year, the Support Units and Platforms organised the traditional Magusto celebration. Held at the Warehouse, this cheerful gathering brought the entire CF community together to mark the autumn season, with roasted chestnuts and traditional beverages.

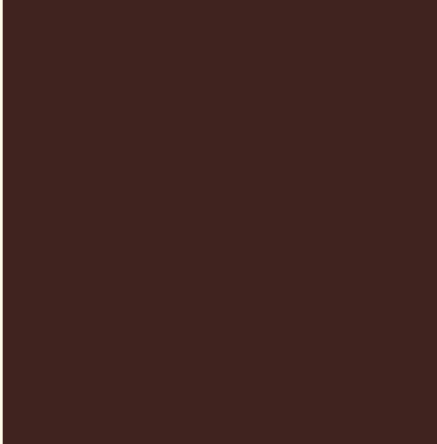


happy hour

Every Friday, the community comes together to unwind and celebrate another week in the journey of science. Each week, two CR groups collaborate to host these often themed gatherings, blending their diverse backgrounds, ideas, and creativity. The initiative fosters deeper connections and a stronger sense of belonging within the CR community.

baking lab

Once a month, members of the CR community bake and sell homemade cakes to raise funds for charitable causes. Supported initiatives span social and animal welfare, humanitarian aid, arts and culture, and environmental conservation. The event offers a warm and engaging way for the community to contribute to society beyond the lab.



2016 social media posts



51 internal newsletters



11 external newsletters



50 outreach activities



45 press releases
and news pieces



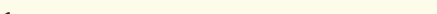
38 online series
and campaigns



33 science education
initiatives and programmes



5 internal community
building activities



1 exhibition – collection

science

communication

As a leading clinical and scientific institution, CF has a responsibility not only to deliver excellent healthcare and produce high-quality research, but also to ensure that its work is accessible, understandable, and meaningful to society. This responsibility is especially important in a context marked by growing social fragmentation and a widening gap between institutions.

At CF, science communication is understood as a shared, community-driven endeavour at the interface between scientific research and the wider world. Through collective efforts that promote coherence, continuity, and dialogue, these initiatives advance understanding of science and help strengthen public trust in research institutions. CF's science communication and outreach activities are promoted and facilitated by the Communication, Events and Outreach Team.



CF strengthened its public voice and expanded its reach through a combination of media engagement, design innovation, and high-impact editorial and campaign work. Across platforms, this translated into notable growth in visibility, improved efficiency, and stronger audience engagement, reinforcing CF's commitment to clear, accessible, and distinctive science communication.

Press and media activity remained robust, with 45 press releases and news items. Press releases generated an average of approximately 25 pieces of media coverage each. International coverage continued to grow, reflecting the global relevance of CF's research and clinical activities.

Design output increased substantially, with 91 projects completed – a 44% rise compared with 2024. This growth was supported by process optimisation, including the development of templates, guidelines, and standardised solutions, enabling the team to increase output while maintaining quality and visual coherence. Design also played an increasingly strategic role, contributing to consistency and broader participation across projects.

High-impact editorial and campaign initiatives further reinforced CF's identity. The Leafing Through Science podcast attracted over 5,000 website visits and more than 400 hours of engagement across platforms. Awareness campaigns – including the International Day of Women and Girls in Science, the 25 April commemorations, Postdoc Appreciation Week, and World Gynaecologic Cancer Day – combined timely scientific content with public engagement, amplifying CF's distinctive voice.

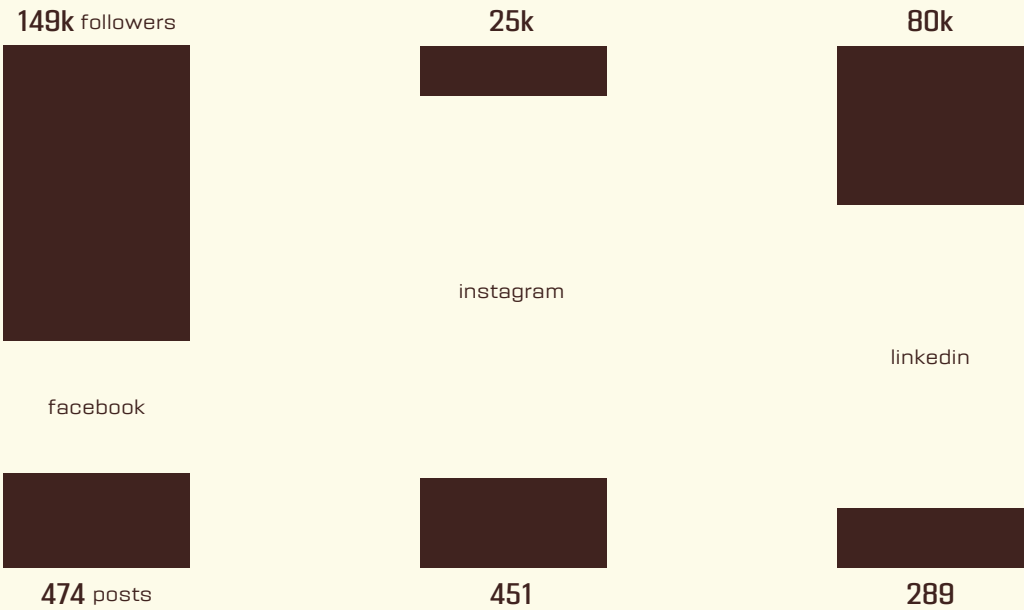
A major highlight of the year was the 20 Years, 20 Stories Collection which combined digital and physical formats to celebrate CF's achievements and engage both internal and external audiences. The online series reached around 144,000 impressions and views across social media, achieving "viral" performance by exceeding typical reach levels by five- to twenty-fold over the preceding 30 days.

online presence and visibility

CF maintained an active presence across major social media platforms, its website and newsletters, engaging audiences worldwide with scientific news, stories, and original content.

Social media channels saw substantial increases in impressions - particularly on Instagram (+94%) and LinkedIn (+85%) - reflecting expanded reach across platforms. Research-driven posts also resonated strongly: for example, on Instagram alone, the announcement of the first patient enrolled in a major EU-funded clinical trial exploring psilocybin therapy for people with life-limiting illnesses reached over 75,000 views, while news of the installation of a world-leading 18-Tesla MRI scanner drew more than 33,000 views.

Website performance continued to improve. The CF News section recorded 136,825 views (+34% vs 2024) and 84,726 active users (+23%), alongside 376,859 interactions (+26%). Engagement remained particularly strong, with an average of 4-5 interactions per user per year - well above typical benchmarks of 1-2. The newsletter also saw substantial growth, reaching 14,156 subscribers (+22.5%), and open rates increased markedly, from 7.7% to 25%, aligning with global benchmarks.





events: growth, innovation and reach

The team delivered 248 events - an average of one per working day and a 124% increase since 2022. These included 133 seminars, 43 community events, 23 thesis defences, 15 conferences, 8 courses and workshops, 8 scientific meetings, 2 public seminars, 1 webinar, and 11 other events, such as book presentations, recruitment interviews, special visits, and external evaluations. This breadth reflects both the scale and diversity of activity across CF.

Hybrid and technically complex formats became more prominent, showcasing innovation in event design and the growing integration of digital tools. Public and community-facing programming also expanded, strengthening engagement with external audiences.

Highlights included large-scale scientific symposia with bespoke visual and sonic identities, such as Moving Beyond, Medica AI: The Conference, and Psychedelic Therapy - From Evidence to Equity. The CR Symposium 2025 brought together 320 participants from 40 institutions across 11 countries, underscoring the global reach of CF's scientific community.

The year also saw significant investment in audiovisual infrastructure, alongside workflow optimisation and team expansion. Together, these improvements enhanced the quality, technical sophistication, and efficiency of events, ensuring high standards across both live and hybrid formats, even during peak periods.



Outreach activities at CF aim to strengthen the relationship between science, health, and society by fostering literacy, trust, and dialogue through sustained public engagement. In 2025, nearly 5,000 participants were reached through a diverse programme of educational initiatives, cultural and artistic projects, public events, and community-based activities. These efforts were supported by over 80 volunteers and 62 national and international partners, including schools, NGOs, science centres, research organisations, and public agencies.

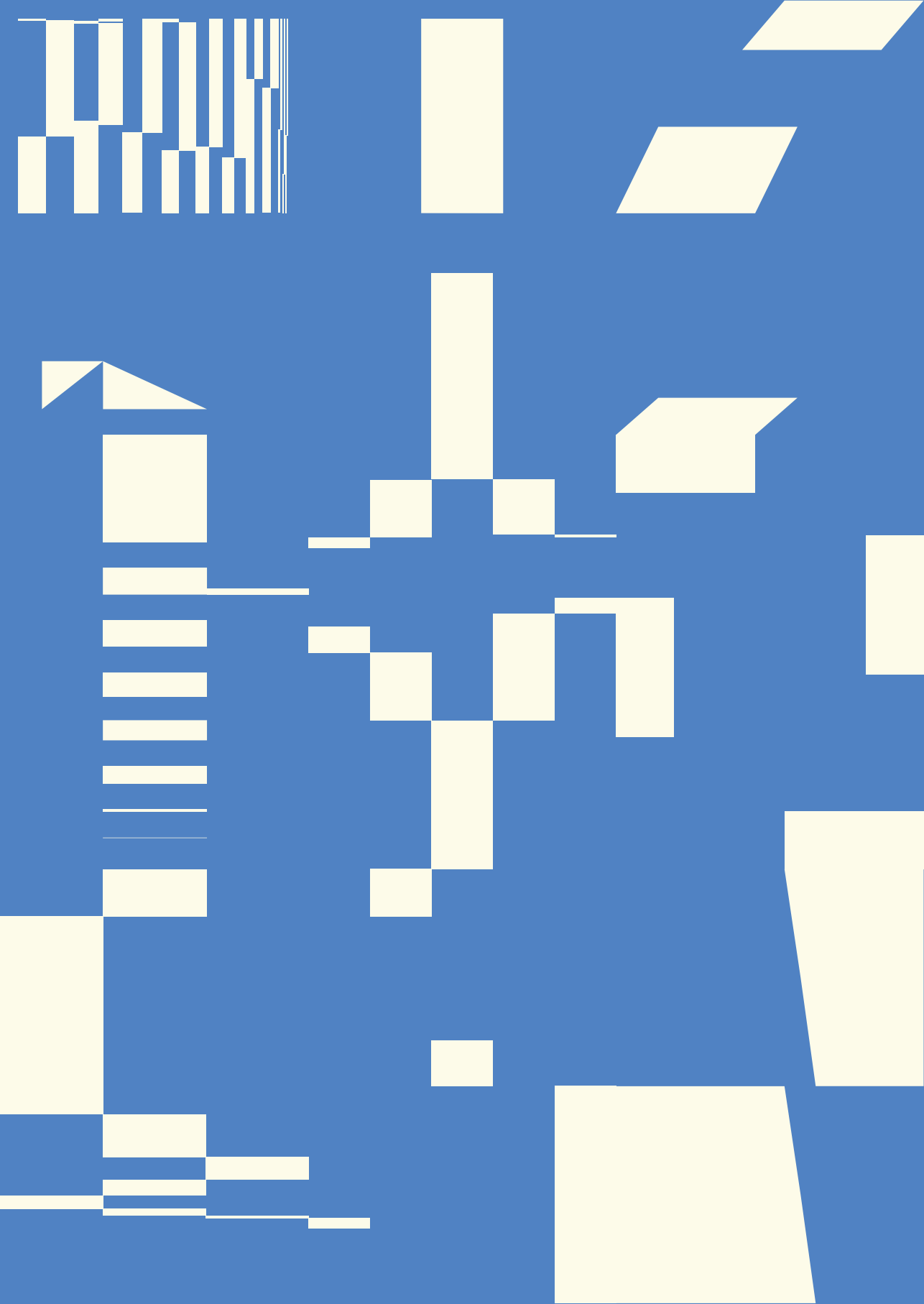
Activities ranged from large-scale events, such as the Oeiras Science Festival and European Researchers' Night, to CF's own Ar events, which brought science to the stage in innovative ways. TheatAr explored the neuroscience of human connection and the sense of self through live theatre, drawing a full audience to the CF auditorium, while (Not)Funny?! combined science and stand-up comedy in a Lisbon bar, engaging audiences in informal, interactive ways. These initiatives highlighted the creative integration of science and the arts, making complex concepts more accessible and memorable.

School-focused programmes and summer initiatives continued to expand, including school visits to CF, the Ciência di Noz Manera mentoring programme (engaging around 1,000 students and 150 members of the scientific community since 2022), and the Science on the Walls summer camps, a finalist in the Falling Walls competition. Community engagement also extended to equipment donations to organisations such as Moinho da Juventude (Cova da Moura, Amadora) and LifeShakers (Almada), creating new learning opportunities for young people.

Another highlight of 2025 was the capacity-building workshop-game Joga, Corta e Cola: Comunica Ciência, delivered in three editions across CF, the SciComPt conference, and the University of Coimbra. Feedback was overwhelmingly positive, with all participants recommending the workshop, 90% reporting it exceeded expectations, and 92% rating it as very interesting.



The year was also marked by strong collaborations with national agencies (e.g. Ciência Viva), municipalities (e.g. Oeiras), associations (e.g. Agência Espacial Portuguesa - Association of Space Explorers), and research organisations (e.g. GIMM Foundation). Engagement with the broader science communication community remained active through participation in national conferences (SciComPt in Madeira, Theatre about Science in Coimbra) and international events (Neuroscience and the Arts in Shanghai), as well as exchanges with institutions such as UAlg, the Sainsbury Wellcome Centre, and the Francis Crick Institute, and hosting of peers from ICBAS (University of Porto) and the International Iberian Nanotechnology Laboratory.



nitty

gritty

For those who enjoy the finer details, the following appendices provide an overview of publications, theses, external funding, scientific events, and outreach activities. For completeness, they also include the activities of the labs led by Albino J. Oliveira-Maia and Joaquim Alves da Silva, which joined CRN in late 2025 and are therefore not featured in the main body of this report.

publications

→ research articles

Alcacer C, Klaus A, Mendonça M, Abalde SF, Cenci MA, Costa RM. (2025) [Abnormal hyperactivity of specific striatal ensembles encodes distinct dyskinctic behaviors revealed by high-resolution clustering](#). Cell Reports. DOI: 10.1016/j.celrep.2025.115988.

Barbosa R, Bastos P, Pita Lobo P, Rodrigues CC, Valadas A, Correia Guedes L, Mano B, Alberto S, Paixão V, Rosa MM, Matias R, Martins D, Mendonça M, Coelho M. (2025) [Differential effects of levodopa and stimulation on post-surgery freezing of gait in subthalamic nucleus deep brain stimulation Parkinson's disease patients: a clinical and kinematic analysis](#). Movement Disorders Clinical Practice. DOI: 10.1002/mdc3.70170.

Beck AK, Souza C, Garrido MV, Barahona-Correa JB, Carmo JC, Lachmann T, Czernochowski D. (2025) [Neural correlates of semantic typicality during episodic memory retrieval in autism spectrum disorder](#). Scientific Reports. DOI: 10.1038/s41598-025-19086-4.

Bernal-Garcia S, Schlotter AP, Pereira DB, Recupero AJ, Polleux F, Hammond LA. (2025) [A deep learning pipeline for accurate and automated restoration, segmentation, and quantification of dendritic spines](#). Cell Reports Methods. DOI: 10.1016/j.crmeth.2025.101179.

Bertolini E, Münch D, Pascual J, Sgammeiglia N, Bruzzone M, Ribeiro C, Auer TO. (2025) [Evolution of taste processing shifts dietary preference](#). Nature. DOI: 10.1038/s41586-025-09766-6.

Bilreiro C, Andrade L, Henriques R, Loução N, Matos C, Shemesh N. (2025) [Diffusion tensor imaging and diffusion kurtosis imaging of the pancreas – feasibility, robustness and protocol comparison in a healthy population](#). Abdominal Radiology. DOI: 10.1007/s00261-025-04889-w.

Bilreiro C, Fernandes FF, Simões RV, Henriques R, Chavarrías C, Ianus A, Castillo-Martin M, Carvalho T, Matos C, Shemesh N. (2025) [Pancreatic intraepithelial neoplasia revealed by diffusion-tensor MRI](#). Investigative Radiology. DOI: 10.1097/RLI.0000000000001142.

Bimbard C, Takács F, Catarino JA, Fabre JMJ, Gupta S, Lenzi SC, Melin MD, O'Neill N, Orsolic I, Robacha M, Street JS, Gomes Teixeira JM, Townsend S, van Beest EH, Zhang AM, Churchland AK, Duan CA, Harris KD, Kullmann DM, Lignani G, Mainen ZF, Margrie TW, Rochefort NL, Wikenheiser A, Carandini M, Coen P. (2025) [An adaptable, reusable, and light implant for chronic Neuropixels probes](#). elife. DOI: 10.7554/eLife.98522.

Buijns SA; International Brain Laboratory; Bougrova K, Laranjeira IC, Lau PYP, Meijer GT, Miska NJ, Noel JP, Pan-Vazquez A, Roth N, Socha KZ, Urai AE, Dayan P. (2025) [Infinite hidden Markov models can dissect the complexities of learning](#). Nature Neuroscience. DOI: 10.1038/s41593-025-02130-x.

C Silva L, Constantino CS, Teixeira R, Castanheira JC, Oliveira FPM, Costa DC. (2025) [An AI-based solution for denoising fast-acquisition \[18F\]FDG PET: clinical feasibility and quantitative assessment](#). Journal of Imaging Informatics in Medicine. DOI: 10.1007/s10278-025-01638-9.

Canato S, Sarate R, Carvalho-Marques S, Maia Soares R, Song Y, Monteiro-Ferreira S, Vieugué P, Liagre M, Grossi G, Cardoso E, Dubois C, Conway EM, Schenone S, Sánchez-Danés A, Blanpain C. (2025) [Survivin promotes stem cell competence for skin cancer initiation](#). Cancer Discovery. DOI: 10.1158/2159-8290.CD-24-0263.

Caranova M, Soares JF, Pereira DJ, Lima AC, Sousa L, Batista S, Castelo-Branco M, Duarte JV. (2025) [Longitudinal identification of pre-lesional tissue in multiple sclerosis with advanced diffusion MRI](#). Journal of Neuroimaging. DOI: 10.1111/jon.70022.

Cazettes F, Reato D, Augusto E, Steinfeld R, Renart A, Mainen ZF. (2025) [Facial expressions in mice reveal latent cognitive variables and their neural correlates](#). Nature Neuroscience. DOI: 10.1038/s41593-025-02071-5.

Chocarro-Calvo A, Jociles-Ortega M, García-Martinez JM, Louphrasitthiphol P, Carvalho-Marques S, Vivas-García Y, Ramírez-Sánchez A, Chauhan J, Fiuzza MC, Duran M, Sánchez-Danés A, Goding CR, García-Jiménez C. (2025) [Fatty acid uptake activates an AXL-CAV1-β-catenin axis to drive melanoma progression](#). Genes & Development. DOI: 10.1101/gad.351985.124.

Chouvarda I, Colantonio S, Verde ASC, Jimenez-Pastor A, Cerdá-Alberich L, Metz Y, Zacharias L, Nabhani-Gebara S, Bobowicz M, Tsakou G, Lekadir K, Tsiknakis M, Martí-Bonmati L, Papanikolaou N. (2025) [Differences in technical and clinical perspectives on AI validation in cancer imaging: mind the gap!](#) European Radiology Experimental. DOI: 10.1186/s41747-024-00543-0.

Coelho R, Antas P, Fonseca AF, Oliveira D, Carvalho C, Pedro ML, Hall MJ, Falcão AS, Seabra MC, Lopes-da-Silva M. (2025) [Loss of REP-1 in retinal pigment epithelial cells leads to impaired phagosome processing and altered lysosomal pathway function](#). Molecular Biology of the Cell. DOI: 10.1091/mbc.E24-11-0497.

Collins EMD, Silva PTM, Ostrovsky AD, Renninger SL, Tomás AR, Diez Del Corral R, Orger MB. (2025) [Characterization of transgenic lines labeling reticulospinal neurons in larval zebrafish](#). eNeuro. DOI: 10.1523/ENEURO.0581-24.2025.

Constantino CS, Oliveira FPM, Machado M, Vinga S, Costa DC. (2025) [The use of maximum-intensity projections and deep learning adds value to the fully automatic segmentation of lesions avid for \[18F\]FDG and \[68Ga\]Ga-PSMA in PET/CT](#). Journal of Nuclear Medicine. DOI: 10.2967/jnumed.124.269067.

Cruz BF, Carriço P, Teixeira L, Freitas S, Mendes F, Bento D, Silva A. (2025) [A flexible fluid delivery system for rodent behavior experiments](#). eNeuro. DOI: 10.1523/ENEURO.0024-25.2025.

de Almeida JG, Rodrigues NM, Castro Verde AS, Mascarenhas Gaivão A, Bilreiro C, Santiago I, Ip J, Belião S, Matos C, Silva S, Tsiknakis M, Marias K, Regge D, Papanikolaou N; ProCAncer-I Consortium. (2025) [Impact of scanner manufacturer, endorectal coil use, and clinical variables on deep learning-assisted prostate cancer classification using multiparametric MRI](#). Radiology: Artificial Intelligence. DOI: 10.1148/ryai.230555.

Dias MF, Duarte JV, de Carvalho P, Castelo-Branco M. (2025) [Unravelling pathological ageing with brain age gap estimation in Alzheimer's disease, diabetes and schizophrenia](#). Brain Communications. DOI: 10.1093/braincomms/fcaf109.

Dimitriadis A, Kalliatakis G, Osuala R, Kessler D, Mazzetti S, Regge D, Diaz O, Lekadir K, Fotiadis D, Tsiknakis M, Papanikolaou N, ProCAncer-I Consortium, Marias K. (2025) [Assessing cancer presence in prostate MRI using multi-encoder cross-attention networks](#). Journal of Imaging. DOI: 10.3390/jimaging11040098.

Erginkaya M, Cruz T, Brotas M, Marques A, Steck K, Nern A, Torrão F, Varela N, Bock DD, Reiser M, Chiappe ME. (2025) [A competitive disinhibitory network for robust optic flow processing in Drosophila](#). Nature Neuroscience. DOI: 10.1038/s41593-025-01948-9.

Estrada MF, Amorim F, Ferreira da Silva F, Rebelo de Almeida C, Fontes M, Coelho R, Ferreira S, Canas-Marques R, Castillo-Martin M, Casanova J, Batarda ML, Yaniz-Galende E, LeFormal A, Marreiros A, Jacob F, Heinzelmann-Schwarz V, Leary A, Nabais H, Fior R. (2025) [zAvatar-test-A functional precision model to personalize ovarian cancer treatments: results from a co-clinical study](#). Cell Reports Medicine. DOI: 10.1016/j.xcrm.2025.102530.

Ezra-Nevo G, Henriques SF, Münch D, Francisco AP, Baltazar C, Elias AP, Deplancke B, Ribeiro C. (2025) [Lack of single amino acids transcriptionally tunes sensory systems to enhance microbiota intake](#). Current Biology. DOI: 10.1016/j.cub.2025.09.062.

Félix Morais R, Carvalho S, Vedor S, Pires R, Jesus T, Lemos R, Duro D, Lima M, Baldeiras I, Oliveira TG, Santana I. (2025) [Differentiating memory deficits in bvFTD, AD, and MCI: a propensity score and volumetric neuroimaging analysis of frontal and medial temporal lobe contributions](#). Assessment. DOI: 10.1177/10731911251361038.

Fernandez LM, Moreira Azevedo J, Santiago I, Castillo-Martin M, Cardoso B, Carvalho CT, Heald RJ, Parvaiz A. (2025) [A significant proportion of stage II and III rectal cancers, selected by precision magnetic resonance, can safely be managed by upfront total mesorectal excision surgery without neoadjuvant therapy](#). Diseases of the Colon & Rectum. DOI: 10.1097/DCR.0000000000003987.

Fernandez Velasco P, Griesbauer EM, Brunec IK, Morley J, Manley E, McNamee DC, Spiers HJ. (2025) [Expert navigators deploy rational complexity-based decision precaching for large-scale real-world planning](#). Proceedings of the National Academy of Sciences of the United States of America. DOI: 10.1073/pnas.2407814122.

Findling C, Hubert F; International Brain Laboratory; Acerbi L, Benson B, Benson J, Birman D, Bonacchi N, Buchanan EK, Bruijns S, Carandini M, Catarino JA, Chapuis GA, Churchland AK, Dan Y, Davatolhagh F, DeWitt EEJ, Engel TA, Fabbri M, Faulkner MA, Fiete IR, Freitas-Silva L, Gerçek B, Harris KD, Häusser M, Hofer SB, Hu F, Huntenburg JM, Khanal A, Krasniak C, Langdon C, Langfield CA, Latham PE, Lau PYP, Mainen Z, Meijer GT, Miska NJ, Mrsic-Flogel TD, Noel JP, Nylund K, Pan-Vazquez A, Paninski L, Pillow J, Rossant C, Roth N, Schaeffer R, Schartner M, Shi Y, Socha KZ, Steinmetz NA, Svoboda K, Tessereau C, Urai AE, Wells MJ, West SJ, Whiteway MR, Winter O, Witten IB, Zador A, Zhang Y, Dayan P, Pouget A. (2025) Brain-wide representations of prior information in mouse decision-making. Nature. DOI: 10.1038/s41586-025-09226-1.

Fischer K, Horno O, Raposo B, Godinho I, Ribeiro H, Veiga-Fernandes H, Martínez López M. (2025) High fat and sugar diet increases enteric cDC1 and oral antigen-specific tregs. Immunologic Research. DOI: 10.1155/jimr/6600076.

Galteau ME, Broadwater M, Chen Y, Desrosiers-Gregoire G, Gil R, Kaesser J, Kim E, Kiryağdı P, Lambers H, Liu YY, López-Gil X, MacNicol E, Mohebkhodaei P, De Oliveira RXN, Pereira CA, Reimann HM, Rivera-Olivera A, Selingue E, Sirmipilatze N, Strobelt S, Sumiyoshi A, Tham C, Tudela R, Vrooman RM, Wank I, Zhang Y, van Engelenburg WA, Baudewig J, Boretius S, Cash D, Chakravarty MM, Chuang KH, Ciobanu L, Devenyi GA, Faber C, Hess A, Homberg JR, Jelescu IO, Justicia C, Kawashima R, Niendorf T, Scheenen TWJ, Shemesh N, Soria G, Todd N, Wachsmuth L, Yu X, Zhang BB, Shih YI, Lee SH, Grandjean J. (2025) Activation mapping in multi-center retrospective rat sensory-evoked functional MRI datasets using a unified pipeline. Imaging Neuroscience. DOI: 10.1162/IMAG.a.157.

Gil R, Valente M, Fernandes FF, Shemesh N. (2025) Evidence for a push-pull interaction between superior colliculi in monocular dynamic vision mode. Communications Biology. DOI: 10.1038/s42003-025-08081-0.

Gokcen E, Jasper AI, Kohn A, Machens CK, Yu BM. (2025) Fast multigroup Gaussian process factor models. Neural Computation. DOI: 10.1162/neco.a.22.

Gong R, Huang B, Ralser A, Friedrich V, Mibus C, Engelsberger V, Koch MRA, Skerhut M, Giese T, Andrä I, Vieth M, van Gisbergen KPJM, Semper RP, Gerhard M, Mejías-Luque R. (2025) CagA-dependent Hobit+ gastric tissue-resident memory T cells confer full protection from Helicobacter pylori reinfection. Gut. DOI: 10.1136/gutjnl-2025-334781.

Griesbauer EM, Fernandez Velasco P, Coutrot A, Wiener JM, Morley JG, McNamee D, Manley E, Spiers HJ. (2025) London taxi drivers exploit neighbourhood boundaries for hierarchical route planning. Cognition. DOI: 10.1016/j.cognition.2024.106014.

Gutierrez-Castellanos N, Husain BFA, Dias IC, Nomoto K, Duarte MA, Ferreira L, Lacoste B, Lima SQ. (2025) A hypothalamic node for the cyclical control of female sexual rejection. Neuron. DOI: 10.1016/j.neuron.2024.10.026.

Haberl D, Ning J, Kluge K, Kumpf K, Yu J, Jiang Z, Constantino C, Monaci A, Starace M, Haug AR, Calabretta R, Camoni L, Bertagna F, Mascherbauer K, Hofer F, Albano D, Sciaga R, Oliveira F, Costa D, Nitsche C, Hacker M, Spielvogel CP. (2025) Generative artificial intelligence enables the generation of bone scintigraphy images and improves generalization of deep learning models in data-constrained environments. European Journal of Nuclear Medicine and Molecular Imaging. DOI: 10.1007/s00259-025-07091-8.

Hakkarainen T, Haavisto I, Nuutinen M, Hynninen Y, Poikonen-Saksela P, Mattson J, Kondylak H, Kolokotroni E, Mazzocco K, Sousa B, Manica I, Pat-Horenczyk R, Leskelä RL. (2025) Cost-effectiveness of a quality of life predictor to guide psychosocial support in breast cancer. Cancers. DOI: 10.3390/cancers18030439.

Hsu NS, Tang C, Mendes RV, Labão-Almeida C, Dos Reis CV, Coelho AR, Marques MC, Cabeza Cabrerizo M, Misteli R, Rooney TPC, Hyvönen M, Corzana F, Fior R, Bernardes GJL. (2025) Tumour-specific STING agonist synthesis via a two-component prodrug system. Nature Chemistry. DOI: 10.1038/s41557-025-01930-9.

International Brain Laboratory; Angelaki D, Benson B, Benson J, Birman D, Bonacchi N, Bougrova K, Bruijns SA, Carandini M, Catarino JA, Chapuis GA, Churchland AK, Dan Y, Davatolhagh F, Dayan P, DeWitt EE, Engel TA, Fabbri M, Faulkner M, Fiete IR, Findling C, Freitas-Silva L, Gerçek B, Harris KD, Häusser M, Hofer SB, Hu F, Hubert F, Huntenburg JM, Khanal A, Krasniak CS, Langdon C, Langfield C, Lau PYP, Mainen ZF, Meijer GT, Miska NJ, Mrsic-Flogel TD, Noel JP, Nylund K, Pan-Vazquez A, Paninski L, Pouget A, Rossant C, Roth N, Schaeffer R, Schartner M, Shi Y, Socha KZ, Steinmetz NA, Svoboda K, Urai AE, Wells MJ, West SJ, Whiteway MR, Winter O, Witten IB. (2025) A brain-wide map of neural activity during complex behaviour. Nature. DOI: 10.1038/s41586-025-09235-0.

Jakob MO, Sterczyk N, Boulekou S, Forster PM, Barleben L, Alzain N, Jarick KJ, Pirzgalska RM, Raposo B, Hansson K, Nyström EEL, Gondrand A, González-Acera M, Leclère PS, Lapson MS, Poggenseier S, Deshpande D, Velleman L, Breiderhoff T, Brunkhorst MF, Schüle AM, Guerra GM, Durek P, Mashreghi MF, Kühl AA, Chu C, Schneider C, Weidinger C, Siegmund B, Nordmann TM, Voehringer D, Patankar JV, Becker C, Birchenough GMH, Veiga-Fernandes H, Ronchi F, Kolesnichenko M, Diefenbach A, Klose CSN. (2025) Enteric nervous system-derived VIP restrains differentiation of LGR5+ stem cells toward the secretory lineage impeding type 2 immune programs. Nature Immunology. DOI: 10.1038/s41590-025-02325-1.

Justo-Henriques SI, Lemos R, Rahmatpour P, Silva RCG, Carvalho JO, Ribeiro O. (2025) Effectiveness of individual cognitive stimulation on cognition in mild Alzheimer's disease: a multicenter RCT. Psychogeriatrics. DOI: 10.1111/psyg.70109.

Kalokyri V, Tachos NS, Kalantzopoulos CN, Sfakianakis S, Kondylakis H, Zaridis DI, Colantonio S, Regge D, Papanikolaou N; ProCAncer-I consortium; Marias K, Fotiadis DI, Tsiknakis M. (2025) AI Model Passport: Data and system traceability framework for transparent AI in health. Computational and Structural Biotechnology Journal. DOI: 10.1016/j.csbj.2025.09.041.

Karademas EC, Roziner I, Mazzocco K, Pat-Horenczyk R, Sousa B, Oliveira-Maia AJ, Stamatakos G, Kondylakis H, Kolokotroni E, Almeida S, Lemos R, Mattson J, Simos P, Poikonen-Saksela P. (2025) The illness representations-physical well-being interplay over time in breast cancer patients. Health Psychology. DOI: 10.1037/hea0001499.

Karademas EC, Roziner I, Simos P, Mazzocco K, Pat-Horenczyk R, Sousa B, Oliveira-Maia AJ, Stamatakos G, Cardoso F, Kolokotroni E, Lemos R, Marzorati C, Mattson J, Greta P, Travado L, Poikonen-Saksela P. (2025) Changes over time in self-efficacy to cope with cancer and well-being in women with breast cancer: a cross-cultural study. Psychology & Health. DOI: 10.1080/08870446.2023.2202205.

Krauel K, Brauer H, Breitling-Ziegler C, Freitag CM, Luckhardt C, Mühlherr A, Schütz M, Boxhoorn S, Ecker C, Castelo-Branco M, Sousa D, Pereira HC, Crisóstomo J, Schlechter F, Wrachtrup Calzado I, Siemann J, Moliadze V, Splittgerber M, Damiani G, Salvador RN, Ruffini G, Nowak R, Braboszcz C, Soria-Frisch A, Thielscher A, Buyx AM, Siniatchkin M, Dempfle A, Prehn-Kristensen A. (2025) Prefrontal transcranial direct current stimulation in pediatric attention-deficit/hyperactivity disorder: a randomized clinical trial. JAMA Network Open. DOI: 10.1001/jamanetworkopen.2024.60477.

Lagarto JL, Herrando AI, Rego R, Fernández LM, Azevedo J, Domingos H, Vieira P, Parvaiz A, Shcheslavskiy VI, Silva PG, Castillo Martin M. (2025) Identification of colorectal malignancies enabled by phasor-based autofluorescence lifetime macroimaging and ensemble learning. Biophotonics Discovery. DOI: 10.1117/1.BIOS.2.3.032705.

Lapo Pais M, Crisóstomo J, Abrunhosa A, Castelo-Branco M. (2025) PET/fMRI demonstrates that bariatric surgery may reverse striatal dopaminergic dysfunction in women with obesity. Communications Medicine. DOI: 10.1038/s43856-025-01079-z.

Lemos R, Areias-Marques S, Lazaridis A, Zils J, Martins C, Almeida S, Alves L, Brieber D, Oliveira-Maia AJ. (2025) The cognitive functions dementia battery: a novel computerized tool for neurocognitive disorders. Aging and Disease. DOI: 10.14336/AD.2025.0412.

Lenschow C, Mendes ARP, Ferreira L, Lacoste B, Marques H, Gutierrez-Castellanos N, Quilgars C, Bertrand SS, Lima SQ. (2025) A galanin-positive population of lumbar spinal cord neurons modulates sexual arousal and copulatory behavior in male mice. Nature Communications. DOI: 10.1038/s41467-025-63877-2.

Lopez-Blanch L, Rodríguez-Marin C, Mantica F, Iñiguez LP, Permanyer J, Kita EM, Mackensen T, Codina-Tobias M, Romero-Ferrero F, Fernandez-Albert J, Cuadrado M, Bustelo XR, de Polavieja G, Irimia M. (2025) Phenotypic impact of individual conserved neuronal microexons and their master regulators in zebrafish. eLife. DOI: 10.7554/eLife.104275.

Lourenço D, Lopes R, Caetano J, Barahona F, Rodrigues J, Queirós AC, Carneiro EA, João C. (2025) BioMarrow: an accessible and reproducible 3D patient-derived bone marrow model for advancing research and clinical applications. Translational Oncology. DOI: 10.1016/j.tranon.2025.102643.

Ludwig VU, Prieur L, Rennie SM, Beswerchij A, Weintraub D, Berry B, Wey J, Candido K, Platt ML. (2025) Synchronous smiles and hearts: dyadic meditations enhance closeness and prosocial behavior in virtual and in-person settings. Mindfulness. DOI: 10.1007/s12671-025-02588-7.

Lungu R, Fernandes FF, Pires Monteiro S, Outeiro TF, Shemesh N. (2025) Neural and vascular contributions to sensory impairments in a human alpha-synuclein transgenic mouse model of Parkinson's disease. Journal of Cerebral Blood Flow & Metabolism. DOI: 10.1177/0271678X251338952.	Morais RF, Pires R, Jesus T, Lemos R, Duro D, Lima M, Baldeiras I, Oliveira TG, Santana I. (2025) Cognitive impairment in neurodegenerative diseases: a trans-diagnostic approach using a lesion-symptom mapping analysis. Neuroscience. DOI: 10.1016/j.neuroscience.2025.03.034.	Pignata A, Frieser D, Gonzalez-Fierro C, Hsiao CC, Engelenburg HJ, Alis M, Fijalkow I, Cazaentre V, Nozeran L, Miranda-Capet R, Dufourd E, Vermeulen T, Aida A, Le Coz C, Van Gisbergen K, Blanchard N, Hamann J, Smolders J, Liblau RS, Masson F. (2025) Tissue-resident memory CD4+ T cells infiltrate the CNS in progressive multiple sclerosis and contribute to chronic autoimmunity in mice. Science Translational Medicine. DOI: 10.1126/scitranslmed.adp8109.	Rodrigues AC, de Almeida JG, Rodrigues N, Moreno R, Castro Verde AS, Mascarenhas Gaivão A, Bilreiro C, Santiago I, Ip J, Belião S, Silva S, Domingues I, Tsiknakis M, Marias K, Regge D, Papanikolaou N; ProCAncer-I Consortium. (2025) Improving clinically significant prostate cancer detection with a multimodal machine learning approach: a large-scale multicenter study. Radiology: Imaging Cancer. DOI: 10.1148/rycan.240507.	Santos S, Niculae V, McNamee DC, Martins AFT. (2025) Hopfield-Fenchel-Young networks: a unified framework for associative memory retrieval. Journal of Machine Learning Research. URL: http://jmlr.org/papers/v26/24-1961.html	Sousa D, Ferreira A, Pereira HC, Amaral J, Crisóstomo J, Simões M, Martins R, Mouga S, Duque F, Oliveira G, Castelo-Branco M. (2025) Specific dynamic facial expression evoked responses show distinct perceptual and attentional features in autism connected to social communication and GABA phenotypes. Scientific Reports. DOI: 10.1038/s41598-025-12376-x.
Manica I, Almeida S, Lemos R, Sousa B, Oliveira-Maia AJ. (2025) Trait mindfulness is protective for development of psychological distress in women with early breast cancer. Health Psychology and Behavioral Medicine. DOI: 10.1080/21642850.2025.2517599.	Moreno C, d'Almeida OC, Crisóstomo J, Canário N, Gomes L, Castelo-Branco M. (2025) Habit-learning and decision-making circuits are susceptible to glycemic variability in type 2 diabetes: a longitudinal study. Frontiers in Neuroscience. DOI: 10.3389/fnins.2025.1430185.	Piot C, Pereira da Costa M, Biram A, Minutti CM, Lim KHJ, Green M, Mikolajczak A, Jenkins RP, Meader L, Buck MD, Cardoso A, Rogers N, Sahai E, Reis E Sousa C. (2025) Spatial organisation of tumour cDC1 states correlates with effector and stem-like CD8+ T cells location. European Journal of Immunology. DOI: 10.1002/eji.70011.	Rodrigues NM, de Almeida JG, Verde ASC, Gaivão AM, Bireiro C, Santiago I, Ip J, Belião S, Matos C, Vanneschi L, Tsiknakis M, Marias K, Regge D, Silva S; ProCAncer-I Consortium; Papanikolaou N. (2025) Effective reduction of unnecessary biopsies through a deep-learning-assisted aggressive prostate cancer detector. Scientific Reports. DOI: 10.1038/s41598-025-99795-y.	Šestan M, Raposo B, Rendas M, Brea D, Pirzgalska R, Rasteiro A, Aliseychik M, Godinho I, Ribeiro H, Carvalho T, Wueest S, Konrad D, Veiga-Fernandes H. (2025) Neuronal-ILC2 interactions regulate pancreatic glucagon and glucose homeostasis. Science. DOI: 10.1126/science.adi3624.	Sousa M, Bujalski P, Cruz BF, Louie K, McNamee DC, Paton JJ. (2025) A multidimensional distributional map of future reward in dopamine neurons. Nature. DOI: 10.1038/s41586-025-09089-6.
Martín-Sánchez G, Machens CK, Podlaski WF. (2025) Three types of remapping with linear decoders: a population-geometric perspective. PLoS Computational Biology. DOI: 10.1371/journal.pcbi.1013545.	Noel JP, Balzani E, Acerbi L, Benson J; International Brain Laboratory; Savin C, Angelaki DE. (2025) A common computational and neural anomaly across mouse models of autism. Nature Neuroscience. DOI: 10.1038/s41593-025-01965-8.	Pires Monteiro S, Hirschler L, Barbier EL, Figueiredo P, Shemesh N. (2025) High-resolution perfusion imaging in rodents using pCASL at 9.4 T. NMR in Biomedicine. DOI: 10.1002/nbm.5288.	Rosenberg T, Möller S, Abildgaard N, Nørgaard JN, Lysén A, Tsykonova G, Joao C, Vangsted A, Schjesvold F, Nielsen LK. (2025) Health-related quality of life during carfilzomib-lenalidomide-dexamethasone consolidation: findings from the Multiple Myeloma CONPET study. European Journal of Haematology. DOI: 10.1111/ejh.14358.	Severo F, Valente M, Shemesh N. (2025) Functional MRI reveals subcortical auditory push-pull interactions requiring intercollicular integrity. Imaging Neuroscience. DOI: 10.1162/IMAG.a.155.	Trindade-Correia S, Correia V, Delgado F, Baptista M, Cabral IA, Carvalho T, Macedo L, Nunes M, Andrade PZ, Cardoso F, Chesné J, Braga Malta DF, Pañeda C, Veiga-Fernandes H, Cardoso V. (2025) Engineered neuromedin U promotes type 2 innate immunity and renoprotection in acute kidney injury. Journal of the American Society of Nephrology. DOI: 10.1681/ASN.0000000747.
Mastrogioseppe F, Carmona J, Machens CK. (2025) Stochastic activity in low-rank recurrent neural networks. PLoS Computational Biology. DOI: 10.1371/journal.pcbi.1013371.	Nørgaard JN, Abildgaard N, Lysén A, Tsykunova G, Vangsted AJ, João C, Remen N, Osnes L, Stokke C, Connelly JP, Revheim MR, Schjesvold F. (2025) Progression-free and overall survival after KRd consolidation in FDG PET/CT positive patients after ASCT: a phase II study (CONPET). Clinical Lymphoma, Myeloma & Leukemia. DOI: 10.1016/j.clml.2025.10.020.	Pirzgalska RM, Henriques-Alves B, Raposo B, de Sousa E, Torres J, Ryu J, Godinho-Silva C, Rendas M, Pereira M, Godinho I, Ribeiro H, Correia V, Jakob MO, Forster PM, Wilhelm C, Klose CSN, Rio-Tinto R, Link VM, Carvalho T, Minutti CM, Ferreira M, Veiga-Fernandes H. (2025) Neuroepithelial VIP-VIPR1 interactions differentially control enteric type 1 and type 2 immunity. Nature Immunology. DOI: 10.1038/s41590-025-02326-0.	Sahu P, Monteiro-Ferreira S, Canato S, Soares RM, Sánchez-Danés A, Hannezo E. (2025) Mechanical control of cell fate decisions in the skin epidermis. Nature Communications. DOI: 10.1038/s41467-025-62882-9.	Simoes RV, Henriques RN, Olesen JL, Cardoso BM, Fernandes FF, Monteiro MAV, Jespersen SN, Carvalho T, Shemesh N. (2025) Deuterium metabolic imaging phenotypes mouse glioblastoma heterogeneity through glucose turnover kinetics. eLife. DOI: 10.7554/eLife.100570.	van den Dijssel J, Konijn VAL, Duurland MC, de Jongh R, Koets L, Veldhuisen B, Raaphorst H, Turksma AW, Freen-van Heeren JJ, Steenhuis M, Rispens T, van der Schoot CE, van Ham SM, van Lier RAW, van Gisbergen KPJM, Ten Brinke A, van de Sandt CE. (2025) Age and latent cytomegalovirus infection do not affect the magnitude of de novo SARS-CoV-2-specific CD8+ T cell responses. European Journal of Immunology. DOI: 10.1002/eji.202451565.
Mendes RV, Ribeiro JM, Gouveia H, Rebelo de Almeida C, Castillo-Martin M, Brito MJ, Canas-Marques R, Batista E, Alves C, Sousa B, Gouveia P, Ferreira MG, Cardoso MJ, Cardoso F, Fior R. (2025) Zebrafish Avatar testing preclinical study predicts chemotherapy response in breast cancer. npj Precision Oncology. DOI: 10.1038/s41698-025-00882-0.	Pagge C, Caballero-Insaurriaga J, Oliviero A, Foffani G, Ammann C. (2025) Distinct hemispheric responsiveness of corticospinal excitability to transcranial static magnetic field stimulation: a pilot study. Transcranial Magnetic Stimulation. DOI: 10.1016/j.transm.2025.100166.	Pirzgalska RM, Henriques-Alves B, Raposo B, de Sousa E, Torres J, Ryu J, Godinho-Silva C, Rendas M, Pereira M, Godinho I, Ribeiro H, Correia V, Jakob MO, Forster PM, Wilhelm C, Klose CSN, Rio-Tinto R, Link VM, Carvalho T, Minutti CM, Ferreira M, Veiga-Fernandes H. (2025) Neuroepithelial VIP-VIPR1 interactions differentially control enteric type 1 and type 2 immunity. Nature Immunology. DOI: 10.1038/s41590-025-02326-0.	Salvador R, Correia BF, Grossa D, Martins T, Soares Baal SC, Saraiva DP, Cristóvão-Ferreira S, Pereira IL, Rebelo de Almeida C, Fior R, Jacinto A, Mathias C, Braga S, Cabral MG. (2025) HLA-DR expression in cytotoxic T lymphocytes: a key to boost the therapeutic potential of T cell-based strategies for breast cancer. Frontiers in Immunology. DOI: 10.3389/fimmu.2025.1653970.	Singh A, Vijver SV, Aglmous-Talibi H, Jukic N, Chen P, Crawley S, Mondal K, Zhou J, Niederauer C, Matharu Z, Li B, Fan B, van der Vlist M, Kaplan DD, Rivera LB, Sissons J, Sitrin J, Ganzinger KA, Inês Pascoal Ramos M, Meyaard L. (2025) The scavenger receptor MARCO is a ligand for the immune inhibitory receptor LAIR-1 and regulates its function in cis. Science Signaling. DOI: 10.1126/scisignal.ado2768.	van den Dijssel J, Menon T, McQuiltan HA, Eltherington O, Gonzalez A, Baghdasarian S, Soemardy C, Di Carlo D, van Gisbergen KPJM, Ten Brinke A, van de Sandt CE. (2025) Linking epitope-specific T-cell receptors to IFNγ secretion using nanovial technology. European Journal of Immunology. DOI: 10.1002/eji.202451666.
Mohiuddin M, Póvoa V, Fior R, Sinicrope FA. (2025) Novel CDK2/CDK9 inhibitor fadraciclib targets cell survival and DNA damage pathways and synergizes with encorafenib in human colorectal cancer cells with BRAF(V600E). Oncogenesis. DOI: 10.1038/s41389-025-00574-1.					

Vaz SC, Corion CLS, Goeman J, Zeilemaker AM, Hezemans R, de Geus-Oei LF, Pereira Arias-Bouda LM. (2025) [Can molecular breast imaging with Tc-99m sestamibi safely rule out malignancy in pathologic nipple discharge?](#) Clinical Nuclear Medicine. DOI: 10.1097/RLU.0000000000005851.

Vaz SC, Voormolen NMC, Hasan F, de Geus-Oei LF, Pereira Arias-Bouda LM. (2025) [Locoregional staging of locally advanced luminal-like lobular breast cancer: first descriptive case series comparing prone 18F-FACBC PET/CT and breast MRI](#). Clinical and Translational Imaging. DOI: <https://DOI.org/10.1007/s40336-025-00721-z>

Verkerk T, de Waard AA, Koomen SJJ, Sanders J, Jorritsma T, Pappot AT, Zandhuis ND, Zhang T, Wuhrer M, Hoogendijk AJ, van Alphen FPJ, van den Biggelaar M, Stockinger HSJ, van Gisbergen KPJM, Spaapen RM, van Ham SM. (2025) [Tumor-expressed SPPL3 supports innate antitumor immune responses](#). European Journal of Immunology. DOI: 10.1002/eji.202451129.

Viana Meyler S, Rennie SM. (2025) [Face perception and synchrony disruption in theatre masks](#). New Ideas in Psychology. DOI: 10.1016/j.newideapsych.2024.101143.

Zaridis DI, Pezoulas VC, Mylona E, Kalantzopoulos CN, Tachos NS, Tsiknakis N, Matsopoulos GK, Regge D, Papanikolaou N, Tsiknakis M, Marias K, Fotiadis DI. (2025) [Simptatab: an automated machine learning framework for radiomics-based bi-parametric MRI detection of clinically significant prostate cancer](#). Bioengineering. DOI: 10.3390/bioengineering12030242.

→ **reviews and perspectives**

Baber RW, Magalhães-Patricio MÂ, Pires MV, Correia V, Lozano-Gil JM, Guimarães JC, Brown CC, Dalod M, Minutti CM. (2025) [Ontogenetic diversification of type 2 conventional dendritic cells in the bone marrow: a central logic for peripheral immunity](#). Immunological Reviews. DOI: 10.1111/imr.70077.

Carey MR. (2025) [Working together to build strong scientific communities](#). Nature Reviews Neuroscience. DOI: 10.1038/s41583-025-00967-6.

de Almeida JG, Alberich LC, Tsakou G, Marias K, Tsiknakis M, Lekadir K, Marti-Bonmati L, Papanikolaou N. (2025) [Foundation models for radiology-the position of the AI for Health Imaging \(AI4HI\) network](#). Insights into Imaging. DOI: 10.1186/s13244-025-02056-9.

Dias IC, Gutierrez-Castellanos N, Lenschow C, Lima SQ. (2025) [Ready or not: neural mechanisms regulating female sexual behavior](#). Current Opinion in Neurobiology. DOI: 10.1016/j.conb.2025.103069.

Drapela S, Garcia BM, Gomes AP, Correia AL. (2025) [Metabolic landscape of disseminated cancer dormancy](#). Trends in Cancer. DOI: 10.1016/j.trecan.2024.10.005.

Godinho-Silva C, Rendas M, Veiga-Fernandes H. (2025) [Neuro-ILC interactions in host physiology and defence](#). European Journal of Immunology. DOI: 10.1002/eji.70037.

Haimerl C, Rodrigues FS, Paton JJ. (2025) [Time, control, and the nervous system](#). Annual Review of Neuroscience. DOI: 10.1146/annurev-neuro-112723-025348.

Martí-Bonmati L, Blanquer I, Tsiknakis M, Tsakou G, Martinez R, Capella-Gutierrez S, Zullino S, Meszaros J, Bron EE, Celpi JL, Riklund K, Chaabane L, Schlemmer HP, Aznar M, Serrano Candelas P, Gordebeke P, Hierath M; EUCAIM Consortium; European Society of Radiology. (2025) [Empowering cancer research in Europe: the EUCAIM cancer imaging infrastructure](#). Insights into Imaging. DOI: 10.1186/s13244-025-01913-x.

McIntyre RS, Kwan ATH, Mansur RB, Oliveira-Maia AJ, Teopiz KM, Maletic V, Suppes T, Stahl SM, Rosenblat JD. (2025) [Psychedelics for the treatment of psychiatric disorders: interpreting and translating available evidence and guidance for future research](#). American Journal of Psychiatry. DOI: 10.1176/appi.ajp.20230902.

Oliveira C, Oliveira F, Constantino C, Cardoso F, Brito MJ, Alves C. (2025) [Predictability of pretreatment contrast-enhanced MRI for pathological complete response after neoadjuvant chemotherapy in breast cancer patients: validation of the literature results](#). European Journal of Radiology. DOI: 10.1016/j.ejrad.2025.112485.

Oliveira-Maia AJ, Seybert C. (2025) [Dilemmas in psychedelic medicine: from ethics to regulation and equity](#). European Neuropsychopharmacology. DOI: 10.1016/j.euroneuro.2024.11.003.

Pais ML, Crisóstomo J, Abrunhosa A, Castelo-Branco M. (2025) [Central dopamine receptors: radiotracers unveiling the role of dopaminergic tone in obesity](#). Journal of Molecular Medicine. DOI: 10.1007/s00109-024-02501-0.

Pascoal Ramos MI, van der Vliet M, Meyaard L. (2025) [Inhibitory pattern recognition receptors: lessons from LAIR1](#). Nature Reviews Immunology. DOI: 10.1038/s41577-025-01181-2.

Rajan G, Orger MB. (2025) [Neuroscience: retinal information flow governs visual behavior in zebrafish](#). Current Biology. DOI: 10.1016/j.cub.2025.09.038.

Ribeiro C, Oliveira-Maia AJ. (2025) [From cognition in the body to the body in cognition](#). Current Biology. DOI: 10.1016/j.cub.2025.08.062.

Schäfer L, Altunay B, Heesch A, van Nijntatten T, Vaz S, Juweid ME, Mottaghy FM. (2025) [Current approaches of nuclear molecular imaging in breast cancer](#). Cancers. DOI: 10.3390/cancers17132105.

Seybert C, Schimmers N, Silva L, Breeksema JJ, Veraart J, Bessa BS, d'Orsi D, Schoevers RA, Oliveira-Maia AJ. (2025) [Quality of reporting on psychological interventions in psychedelic treatments: a systematic review](#). The Lancet Psychiatry. DOI: 10.1016/S2215-0366(24)00333-X.

Tap SC, Thomas K, Páleníček T, Stenbæk DS, Oliveira-Maia AJ, van Dalen J, Schoevers R. (2025) [Concomitant use of antidepressants and classic psychedelics: a scoping review](#). Journal of Psychopharmacology. DOI: 10.1177/026988811251368360.

Ventura F, Frias P, Rodrigues da Silva D, McGirr A, Cotovio G, Oliveira-Maia AJ. (2025) [Efficacy, effectiveness, and safety of transcranial magnetic stimulation for bipolar depression: a systematic review and meta-analysis](#). Biological Psychiatry: Global Open Science. DOI: 10.1016/j.bpsgos.2025.100618.

→ **conference proceedings**

Ioannidis GS, Nikiforaki K, Dimitriadis A, Goumenakis M, Trivizakis E, Papanikolaou N, Regge D, Tsiknakis M, Marias K. (2025) [Explainable AI radiomics in prostate cancer aggressiveness prediction using different quantitative diffusion MRI models](#). Annual International Conference of the IEEE Engineering in Medicine and Biology Society. DOI: 10.1109/EMBC58623.2025.11254453.

Jouary A, Mata JM, Rance D, de Polavieja GG, Machens CK, Orger MB. (2025) [Bridging scales between chemical space and behavioral phenotype](#). Learning Meaningful Representations of Life (LMRL) Workshop, International Conference on Learning Representations (ICLR). URL: <https://openreview.net/forum?id=DJI46006tF>.

Liang A, Ságodi Á, Sokó P (2025). [Symmetry-regularized learning of continuous attractor dynamics](#). NeurIPS 2025 Workshop on Symmetry and Geometry in Neural Representations (NeurReps 2025). URL: <https://openreview.net/forum?id=W8Gf7CYCoB>.

Monteiro M, Almeida J, Papanikolaou N, Carvalho T, Faísca P. (2025) [Deep learning-based classification of c-kit immunohistochemical patterns in canine cutaneous mast cell tumours](#). Journal of Comparative Pathology. DOI: 10.1016/j.jcpa.2025.10.015.

Pezoulas VC, Mylona E, Tachos NS, Zaridis D, Apostolidis K, Papanikolaou N, Regge D, Marias K, Tsiknakis M, Fotiadis DI. (2025) [Utilizing synthetic data for privacy-preserving AI modeling in radiomics: a case study](#). Annual International Conference of the IEEE Engineering in Medicine and Biology Society. DOI: 10.1109/EMBC58623.2025.11253537.

Santos S, Farinhas A, McNamee DC, Martins A. (2025) [Video: a training-free approach to long video understanding via continuous-time memory consolidation](#). Proceedings of the 42nd International Conference on Machine Learning (ICML 2025). URL: <https://openreview.net/forum?id=afDhWQ1ZDO¬elD=6bkjSV726s>.

Vermani A, Nassar J, Jeon H, Dowling M, Park IM. (2025). [Meta-dynamical state space models for integrative neural data analysis](#). International Conference on Learning Representations (ICLR). URL: <https://openreview.net/forum?id=SRpq5QBpED>.

→ **preprints**

Berg S, Beckett IR, Costa M, Schlegel P, Januszewski M, Marin EC, Nern A, Preibisch S, Qiu W, Takemura SY, Fragniere AM, Champion AS, Adjavon DY, Cook M, Gkantia M, Hayworth KJ, Huang GB, Katz WT, Kämpf F, Lu Z, Ordish C, Paterson T, Stürner T, Trautman ET, Whittle CR, Burnett LE, Hoeller J, Li F, Loesche F, Morris BJ, Pietzsch T, Pleijzier MW, Silva V, Yin Y, Ali I, Badalamente G, Bates AS, Beresford RJ, Bogovic J, Brooks P, Cachero S, Canino BS, Chairisawatsuk B, Clements J, Crowe A, de Haan Vicente I, Dempsey G, Donà E, Dos Santos M, Dreher M, Dunne CR, Eichler K, Finley-May S, Flynn MA, Hameed I, Hopkins GP, Hubbard PM, Kiassat L, Kovalyak J, Lauchie SA, Leonard M, Lohff A, Longden KD, Maldonado CA, Moitra I, Moon SS, Mooney C, Munnelly EJ, Okeoma N, Olbris DJ, Pai A, Patel B, Phillips EM, Plaza SM, Richards A, Salinas JR, Roberts RJ, Rogers EM, Scott AL, Scuderi LA, Seenivasan P, Capdevila LS, Smith C, Svirskas R, Takemura S, Tastekin I, Thomson A, Umayam L, Walsh JJ, Whittome H, Xu CS, Yakal EA, Yang T, Zhao A, George R, Jain V, Jayaraman V, Korff W, Meissner GW, Romani S, Funke J, Knecht C, Saalfeld S, Scheffer LK, Waddell S, Card GM, Ribeiro C, Reiser MB, Hess

HF, Rubin GM, Jefferis GSXE. (2025) [Sexual dimorphism in the complete connectome of the Drosophila male central nervous system](#). bioRxiv. DOI: 10.1101/2025.10.09.680999.

Cotovio G, Descalco N, Caballero-Insaurriaga J, Martins D, Faro Viana F, Fonseca C, Ramos J, Maia A, Oliveira J, Loucao N, Siddiqi SH, Fox MD, Barahona-Correa JB, Oliveira-Maia AJ. (2025) [Obsessive-compulsive disorder secondary to focal brain lesions: from lesions to networks](#). medRxiv. DOI: 10.1101/2025.01.09.25320060.

Firbas Nisantzis P, Gonçalves C, de Polavieja GG. (2025) [C.La.P.: enhancing transformer-based genomic signal modeling by integrating DNA sequences and chromatin accessibility data](#). bioRxiv. DOI: 10.1101/2025.02.19.638643.

Haimerl C, Machens CK. (2025) [Representational drift without synaptic plasticity](#). bioRxiv. DOI: 10.1101/2025.07.23.666352.

International Brain Laboratory, Bayer HM, Birman D, Chapuis G, DeWitt EEJ, Freitas-Silva L, Langdon C, Laranjeira I, Lau P, Paninski L, Picard S, Tessereau C, Urai AE, Whiteway MR, Winter O. (2025) [20 lessons in team science: learning from the experience of the International Brain Laboratory](#). PsyArXiv. DOI: 10.31234/osf.io/rfzch.v1.

Jouary A, Silva PTM, Laborde A, Mata JM, Marques JC, Collins EMD, Peterson RT, Machens CK, Orger MB. (2025) [Megabouts: a flexible pipeline for zebrafish locomotion analysis](#). eLife. DOI:10.7554/eLife.107859.1.

Kim H, McNamee DC, Jeong N, Lee SW. (2025) [Topological spatial coding for rapid generalization in the hippocampal formation](#). bioRxiv. DOI: 10.1101/2025.08.26.669250.

Mackensen T, Iniguez LP, Soares Mullen T, Rodríguez-Marin C, Kroll F, Zuccarini G, Fernandez-Albert J, Sancho-Vila L, Permanyer J, Bianco IH, Orger MB, Rihel J, Irimia M. (2025) [Neural microexons modulate arousal states via cAMP signalling in zebrafish](#). bioRxiv. DOI: 10.1101/2025.04.24.650407.

Maia A, Descalço N, Fernandes S, Fonseca C, Quendera T, Castro-Rodrigues P, Marques F, Costa AD, Morgado P, Barahona-Corrêa B, Oliveira J, Oliveira-Maia AJ. (2025) [Immune \(dys\)function in obsessive-compulsive disorder](#). medRxiv. DOI: 10.1101/2025.04.23.25326223.

Martin-Maroto F, Abderrahaman N, Mendez D, de Polavieja GG. (2025) [Algebraic machine learning: learning as computing an algebraic decomposition of a task](#). arXiv. DOI: 10.48550/arXiv.2502.19944

Martin-Maroto F, Ricciardo A, de Polavieja GG. (2025) [The pairwise distributive law of semilattice congruences](#). arXiv. DOI: 10.48550/arXiv.2511.00892

Martins AL, Laborde A, Orger MB. (2025) [Sardine: a modular framework for developing data acquisition and near real-time analysis applications](#). bioRxiv. DOI: 10.1101/2025.08.05.668834.

Meijer GT, Catarino JA, Freitas-Silva L, Laranjeira I, International Brain Laboratory, Mainen ZF. (2025) [Serotonin drives choice-independent reconfiguration of distributed neural activity](#). bioRxiv. DOI: 10.1101/2025.08.01.668048.

Nour MM, McNamee DC, Fradkin I, Dolan RJ. (2025). [Charting trajectories of human thought using large language models](#). arXiv. DOI: 10.48550/arXiv.2509.14455.

Ságodi A, Park IM. (2025). [Dynamical archetype analysis: autonomous computation](#). arXiv. DOI: 10.48550/arXiv.2507.05505.

Santos S, Farinhas A, McNamee DC, Martins AFT. (2025) [Modern Hopfield networks with continuous-time memories](#). arXiv. DOI: 10.48550/arXiv.2502.10122.

Tastekin I, de Haan Vicente I, Beresford RJ, Morris BJ, Beckett I, Schlegel P, Costa M, Jefferis GSXE, Ribeiro C. (2025) [From sensory detection to motor action: the comprehensive Drosophila taste-feeding connectome](#). bioRxiv. DOI: 10.1101/2025.08.25.671814.

Tastekin I, de Haan Vicente I, Beresford RJ, Otto N, Dempsey G, Waddell S, Ribeiro C. (2025) [Connectomics reveals a feed-forward swallowing circuit driving protein appetite](#). bioRxiv. DOI: 10.1101/2025.08.25.671815.

Thomas K, Gibbs R, Marques H, Carey MR, Sober SJ. (2025) [Motor unit mechanisms of speed control in mouse locomotion](#). bioRxiv. DOI: 10.1101/2024.12.29.628022.

Torrents J, Costa T, de Polavieja GG. (2025) [New idtracker.ai: rethinking multi-animal tracking as a representation learning problem to increase accuracy and reduce tracking times](#). eLife. DOI: 10.7554/eLife.107602.2.

Webler RD, Pines AR, Chiulli N, Cotovio G, Darby RR, Jiang J, Joutsa J, Li N, Oliveira-Maia AJ, Peng S, Taylor JJ, Siddiqi SH. (2025) [An atlas and evidence-based appraisal framework of psychiatric brain stimulation targets generated by causal network mapping](#). medRxiv. DOI:10.1101/2025.02.25.25322842.

→ protocols and guidelines

Almeida S, Castro-Rodrigues P, Barahona-Corrêa JB, Baptista TM, Grácio J, Oliveira-Maia AJ. (2025) [Cross-cultural adaptation and psychometric validation of a structured interview for psychiatric assessment](#). Journal of Visualized Experiments. DOI: 10.3791/68710.

Bolli N, D'Agostino M, Bagratuni T, Boccadoro M, Cavo M, Driessen C, Einsele H, Engelhardt M, Gay F, Gutiérrez NC, Hájek R, Holien T, João C, Kaiser M, Kortüm KM, Leypoldt L, Moreau P, Musto P, Ocio EM, Raab MS, Rasche L, Schjesvold F, Sevcikova T, Terpos E, Touzeau C, Van de Donk NWCJ, van Duin M, Weisel K, Zamagni E, Cupedo T, Sonneveld P, Terragna C. (2025) [European Myeloma Network Group Consensus Statement on the use of next-generation sequencing for prognostic stratification of newly diagnosed multiple myeloma](#). Hemasphere. DOI: 10.1002/hem3.70216.

Cotovio G, Seybert C, Rodrigues da Silva D, Faro Viana F, Estrela JP, Pereira P, Oliveira-Maia AJ. (2025) [Conventional repetitive transcranial magnetic stimulation for depression: a step-by-step protocol](#). Journal of Visualized Experiments. DOI: 10.3791/68891.

Descalco N, Cotovio G, Maia A, Almeida S, da Silva DR, Viana FF, Estrela JP, Pereira P, Grácio J, Oliveira-Maia AJ. (2025) [Protocol for repetitive transcranial magnetic stimulation with symptom provocation to treat obsessive-compulsive disorder](#). Journal of Visualized Experiments. DOI: 10.3791/68971.

Jelescu IO, Grussu F, Ianus A, Hansen B, Barrett RLC, Aggarwal M, Michielse S, Nasrallah F, Syeda W, Wang N, Veraart J, Roebroeck A, Bagdasarian AF, Eichner C, Sepehrband F, Zimmermann J, Soustelle L, Bowman C, Tendler BC, Hertanu A, Jeurissen B, Verhoye M, Frydman L, van de Looij Y, Hike D, Dunn JF, Miller K, Landman BA, Shemesh N, Anderson A, McKinnon E, Farquharson S, Dell'Acqua F, Pierpaoli C, Drobnjak I, Leemans A, Harkins KD, Descoteaux M, Xu D, Huang H, Santin MD, Grant SC, Obenaus A, Kim GS, Wu D, Le Bihan D, Blackband SJ, Ciobanu L, Fieremans E, Bai R, Leergaard TB, Zhang J, Dyrby TB, Johnson GA, Cohen-Adad J, Budde MD, Schilling KG. (2025) [Considerations and recommendations from the ISMRM diffusion study group for preclinical diffusion MRI: Part 1: In vivo small-animal imaging](#). Magnetic Resonance in Medicine. DOI: 10.1002/mrm.30429.

Lekadir K, Frangi AF, Porras AR, Glocker B, Cintas C, Langlotz CP, Weicken E, Asselbergs FW, Prior F, Collins GS, Kaissis G, Tsakou G, Buvat I, Kalpathy-Cramer J, Mongan J, Schnabel JA, Kushibar K, Riklund K, Marias K, Amugongo LM, Fromont LA, Maier-Hein L, Cerdá-Alberich L, Martí-Bonmatí L, Cardoso MJ, Bobowicz M, Shabani M, Tsiknakis M, Zuluaga MA, Fritzsche MC, Camacho M, Linguraru MG, Wenzel M, De Bruijne M, Tolsgaard MG, Goisauf M, Cano Abadía M, Papanikolaou N, Lazrak N, Pujol O, Osuala R, Napel S, Colantonio S, Joshi S, Klein S, Aussó S, Rogers WA, Salahuddin Z, Starmans MPA; FUTURE-AI Consortium. (2025) [FUTURE-AI: international consensus guideline for trustworthy and deployable artificial intelligence in healthcare](#). BMJ. DOI: 10.1136/bmj-2024-081554.

Pires AM, Barreto JP, Caetano J, Soares MJ, Galdes C, Fernandes B, Coucelo M, Chacim S, Coelho H, Correia C, Cruz AP, Cunha M, Cunha MR, Cunha N, Ferraz P, Freitas JG, Henrique R, Lisboa S, Lúcio P, Paiva A, Pedrosa C, Ramos I, Sarmento-Ribeiro AB, Seabra P, Sevilha J, Sousa MJR, Sousa S, Sousa T, Tavares M, Trigo F, Roque A, Bergantim R, João C, On Behalf Of The Portuguese Multiple Myeloma Group. (2025) [Multiple myeloma laboratory diagnostics made simple: practical insights and key recommendations](#). Journal of Clinical Medicine. DOI: 10.3390/jcm14197115.

Rodrigues da Silva D, Delgado A, Faro Viana F, Seybert C, Pereira P, Borges J, Cotovio G, Oliveira-Maia AJ. (2025) [Assessing primary motor cortex excitability and excitability modulation by pairing transcranial magnetic stimulation with electromyography](#). Journal of Visualized Experiments. DOI: 10.3791/68897.

Schilling KG, Grussu F, Ianus A, Hansen B, Howard AFD, Barrett RLC, Aggarwal M, Michielse S, Nasrallah F, Syeda W, Wang N, Veraart J, Roebroek A, Bagdasarian AF, Eichner C, Sepehrband F, Zimmermann J, Soustelle L, Bowman C, Tendler BC, Hertanu A, Jeurissen B, Verhoye M, Frydman L, van de Looij Y, Hike D, Dunn JF, Miller K, Landman BA, Shemesh N, Anderson A, McKinnon E, Farquharson S, Dell'Acqua F, Pierpaoli C, Drobnjak I, Leemans A, Harkins KD, Descoteaux M, Xu D, Huang H, Santin MD, Grant SC, Obenaus A, Kim GS, Wu D, Le Bihan D, Blackband SJ, Ciobanu L, Fieremans E, Bai R, Leergaard TB, Zhang J, Dyrby TB, Johnson GA, Cohen-Adad J, Budde MD, Jelescu IO. (2025) [Considerations and recommendations from the ISMRM diffusion study group for preclinical diffusion MRI: Part 2-Ex vivo imaging: added value and acquisition](#). Magnetic Resonance in Medicine. DOI: 10.1002/mrm.30435.

Schilling KG, Howard AFD, Grussu F, Ianus A, Hansen B, Barrett RLC, Aggarwal M, Michielse S, Nasrallah F, Syeda W, Wang N, Veraart J, Roebroeck A, Bagdasarian AF, Eichner C, Sepehrband F, Zimmermann J, Soustelle L, Bowman C, Tendler BC, Hertanu A, Jeurissen B, Verhoye M, Frydman L, van de Looij Y, Hike D, Dunn JF, Miller K, Landman BA, Shemesh N, Anderson A, McKinnon E, Farquharson S, Dell'Acqua F, Pierpaoli C, Drobnjak I, Leemans A, Harkins KD, Descoteaux M, Xu D, Huang H, Santin MD, Grant SC, Obenaus A, Kim GS, Wu D, Le Bihan D, Blackband SJ, Ciobanu L, Fieremans E, Bai R, Leergaard TB, Zhang J, Dyrby TB, Johnson GA, Cohen-Adad J, Budde MD, Jelescu IO. (2025) [Considerations and recommendations from the ISMRM Diffusion Study Group for preclinical diffusion MRI: Part 3-Ex vivo imaging: data processing, comparisons with microscopy, and tractography](#). Magnetic Resonance in Medicine. DOI: 10.1002/mrm.30424.

→ editorials, comments and replies

Correia AL. (2025) [Lung signals drive cancer-associated blood clots](#). Nature. DOI: 10.1038/d41586-025-01130-y.

Mendonça MD, Ferreira P, da Silva JA. (2025) [Ipsilateral association between rest tremor and striatal binding is likely spurious](#). Movement Disorders. DOI: 10.1002/mds.30099.

Oliveira FPM, Constantino CS, Costa DC. (2025) [Interhemispheric cortical thickness asymmetry is an imaging biomarker of dementia type](#). European Radiology. DOI: 10.1007/s00330-025-11535-y.

Padhani AR, Papanikolaou N. (2025) [Deep learning's false positive burden may threaten the MRI harm reduction mandate in screening](#). European Radiology. DOI: 10.1007/s00330-025-12228-2.

Vaz SC, Groheux D, van Nijnatten T, Antunovic L, Cardoso F, Mottaghy F, Cardoso MJ, Riedl C, de Geus-Oei LF, Ulaner GA. (2025) [Editorial Commentary: Should "heterogeneous response" be considered as new category for assessing treatment response in patients with breast cancer?](#) European Journal of Nuclear Medicine and Molecular Imaging. DOI: 10.1007/s00259-024-07042-9.

Zens KD, van Gisbergen KPJM. (2025) [Not just passing through: bone marrow as a home for diverse resident T cells](#). European Journal of Immunology. DOI: 10.1002/eji.70083.

→ case report

Fontes M, Garcez D, Ruivo J, Albuquerque C, Viegas C, da Cruz-Ribeiro M, Lima J, Mafra M, Marques JB, Fior R. (2025) [Glioblastoma zebrafish Avatars guide therapeutic decisions in a patient with gliosarcoma: a case report](#). Communications Medicine. DOI: 10.1038/s43856-025-01314-7.

→ books / book chapters

Roque A, Gerales C, João C, Bergantim R, editors. (2025) [HOT TOPICS: Amiloidose AL e outras gamapatias monoclonais de significado clínico](#). Permanyer. ISBN: 978-8410072978.

Martins S, Oliveira I, Sampaio M, Strimpakos G, Antunes G, Monteiro J, Certal AC. (2025) [Exploring ultra-fast freezing protocols for zebrafish sperm cryopreservation](#). In: Disner GR, editor. Zebrafish Model in Medical Research. IntechOpen. DOI: 10.5772/intechopen.1013519.

Paton J. (2025) [Dopamine and the temporal control of behavior](#). In: Cragg SJ, Walton ME, editors. Handbook of Behavioral Neuroscience. Volume 32. Elsevier. DOI: 10.1016/B978-0-443-29867-7.00016-5.

theses

phd

→ february

Tiago Costa [Controllability of real and artificial agents](#) Supervisors: Gonzalo de Polavieja, Alfonso Renart

Elena Collins [The neural control of gait switching in larval zebrafish](#) Supervisor: Michael Orger

Nuno Rito [The competitive advantage of using your head: gaze control for high performance courtship pursuit in Drosophila](#) Supervisor: Eugenia Chiappe

→ march

Frederico Severo [Auditory subcortical circuitry in rodents: insights into push-pull interactions from advanced functional MRI](#) Supervisor: Noam Shemesh

Thomas Mullen [A dynamical systems approach to understanding motor control](#) Supervisor: Michael Orger

André Marques [Multimodal network computations for encoding self-motion velocity at the single-cell level](#) Supervisor: Eugenia Chiappe

→ april

Mafalda Valente [Investigating the role of auditory cortex in decisions about sound lateralization](#) Supervisor: Alfonso Renart

Ana Raquel Silva [Neuronal regulation of dendritic cell function](#) Supervisors: Henrique Veiga-Fernandes, María Martínez López

Tiago Quendera [Dissecting complex human behaviour: from the lab, through the clinic and beyond](#) Supervisors: Zachary Mainen, Albino J. Oliveira-Maia

→ may

Kcenia Bougrova [The activity of neuromodulators during decision making](#) Supervisor: Zachary Mainen

Joaquim Contradanças [Whole-brain mechanisms of delay and trace conditioning in larval zebrafish](#) Supervisor: Michael Orger

Miguel Paço [Principles of flexible coordination and anticipation in Drosophila courtship pursuit](#) Supervisor: Eugenia Chiappe

→ june

Lucas Martins [Speeding up the experiment-to-model lead time: using a flexible microscope platform to explore the neural correlates of the short-term memory of larval zebrafish](#) Supervisor: Michael Orger

Mirjam Heinemans [Social modulation of defensive responses in Drosophila](#) Supervisors: Marta Moita, Clara Ferreira (University of Northumbria)

→ july

Teresa Serradas Duarte [Contributions of the basal ganglia and cerebellum to discrete and continuous behavioral control](#) Supervisors: Joe Paton, Megan Carey

→ october

Inês Dias [Love me or leave me: hypothalamic circuits linking the reproductive cycle to female sexual behavior](#) Supervisor: Susana Lima

Ayesha Vermani [Identifying invariant representations underlying neural computation](#) Supervisor: Il Memming Park

Rita Figueiredo [Mapping metabolism in a whole animal at single-cell resolution](#) Supervisor: Carlos Ribeiro

Merit Kruse [Mechanisms of cross-modal transfer in cerebellar associative learning](#) Supervisor: Megan Carey

Sofia Freitas [Temporal control at multiple timescales: distinct behavioral and neural signatures of when and how to act](#) Supervisors: Alfonso Renart, Joe Paton

→ november

Joana Carmona [Modeling the directionality of interactions between cortical areas](#) Supervisor: Christian Machens

Jaime Arlandis [Psychedelics, population dynamics, and the generation of experience](#) Supervisors: Zachary Mainen, Daniel McNamee

msc

→ february

Margarida Domingos
[Functional characterization of 3D multiple myeloma models in the context of drug resistance](#)
Supervisor: Emilie Arnault Carneiro

→ march

Anastasia Simonoff
[Cortex in the loop: using digital twins to model hierarchical processing in mouse visual cortex](#)
Supervisors: Kerstin Ritter (BCCN Berlin), Leopoldo Petreanu

→ june

João Pimenta
[Investigating the role of the superior colliculus in decision commitment in a sound lateralization task](#)
Supervisor: Alfonso Renart

→ july

Jessica Rodrigues
[Interplay between cell-free DNA and circulating tumor cells with the immune profile in multiple myeloma and its precursor stages](#)
Supervisor: Ana Queirós

Raquel Colucas
[Striatal activity and synaptic features underlying dystonic muscle contraction](#)
Supervisors: Filipa Barros, Daniela Pereira

→ august

Lieke Mooij
[Putting fibroblasts in the spotlight: illuminating the role of PVR in pancreatic cancer-associated fibroblasts](#)
Supervisors: Inês Ramos, Klaas van Gisbergen, Onno Kranenburg (Utrecht UMC)

→ november

Marta Silva Ferreira
[Generation of newly genetically modified lines in biomedical fish model species](#)
Supervisors: Ana Raquel Tomás, Joana Monteiro
Co-supervisor: Fani Neto (Institute for Research and Innovation in Health (i3S), University of Porto)

Lena Jansen
[Neuro-immune regulation of metastatic breast cancer in the liver](#)
Supervisor: Ana Luísa Correia

João Dias
[Mechanistic interpretability of story generation in large language models](#)
Supervisors: Daniel McNamee, Chrysoula Zerva (Instituto Superior Técnico)

Marta Matos
[Characterization of radioresistance mechanisms in triple negative breast cancer using the zAvatar model](#)
Supervisor: Bruna Costa

Mariana Pinto
[Exploring the impact of bevacizumab in the dynamics of macrophages in breast cancer zebrafish xenografts](#)
Supervisors: Marta Estrada, Cátia Rebelo de Almeida

Martim Gamboa
[AI-empowered personalized cancer treatment screening leveraging deep learning for high-throughput analysis of zebrafish xenografts in precision oncology](#)
Supervisors: Marta Estrada, Estíbal Gomes-Mariscal (ITQB)

Marta Almeida
[Comparison of voxel-wise absorbed dose distributions derived from 177Lu-PSMA activity recovered by two SPECT reconstruction methods: QSEM and Astonish](#)
Supervisors: Paulo Ferreira, Jorge Sampaio (Faculty of Sciences, University of Lisbon)

→ december

Cátia Pinheiro Ramos
[Lesional anorexia nervosa – anorexia nervosa after a brain lesion: a systematic review](#)
Supervisor: Gonalo Cotovio

Bruna Santos
[Blinding the ear: rethinking the control for transcutaneous auricular vagus nerve stimulation](#)
Supervisor: Ana Fernandes

Luísa Dias
[Personalized dosimetry in radionuclide therapy: SPECT simulations with Monte Carlo-SIMIND](#)
Supervisors: Paulo Ferreira, João Cruz (NOVA School of Science and Technology)

Adriana Rusu
[Uncovering functional imaging correlates of rest tremor and other motor symptoms in Parkinson’s disease](#)
Supervisor: Marcelo Mendona

Beatriz Santos
[Towards refinement of neuro-modulation targets in obsessive-compulsive disorder: insights from causal network mapping](#)
Supervisor: Gonalo Cotovio

João Martins
[Single-cell profiling in zebrafish xenografts: insights into cancer resistance](#)
Supervisors: Vanda Póvoa, Ana Rita Grosso (FCT-NOVA)

Mónica Alfaiate
[Reproducibility study of tumor extracted features in 118F FDG and 68GaGa-PSMA PET/CT images](#)
Supervisors: Francisco Oliveira, Ricardo Vigário (NOVA School of Science and Technology)

Inês Cardoso
[Performance evaluation of the Philips Vereos PET system via Monte Carlo simulation in GATE based on NEMA NU 2-2018 standards](#)
Supervisors: Paulo Ferreira, Nuno Matela (Faculty of Sciences, University of Lisbon)

external funding

The list below includes external competitive funds that were awarded during 2025, as well as external competitive funds that were awarded previously and were actively running at CF during 2025.

→ institutional projects

Comissão de Coordenação e Desenvolvimento Regional de Lisboa e Vale do Tejo

Adolfo Firpo
Coordination: GIMM
[Rede Nacional de Biobancos-No Lisboa](#) (Biobanco.PT@LIS)
Call/Programme: Infraestruturas científicas - LISBOA2030-2024-15
Active period: 01/01/25-31/12/27

André Mozes
Coordination: FARM-ID
[FLxFlow - Centro em Lisboa para Aplicações Avançadas de Citometria de Fluxo Espectral](#) (FLxFlow-HDSpct)
Call/Programme: Infraestruturas científicas - LISBOA2030-2024-15
Active period: 01/01/25-31/12/27

CF
[CF-IPMed: enhancing the transfer of scientific and technological knowledge to foster innovation in personalized medicine in oncology in Portugal](#)
Call/Programme: SACCCT
- Proteção da propriedade intelectual e industrial
Active period: 01/11/24-31/10/27

John Krakauer
Other CF researchers
involved: Joe Paton
[Infraestrutura Científica em Terapêuticas Digitais](#) (RiDT)
Call/Programme: Infraestruturas científicas - LISBOA2030-2024-15
Active period: 01/01/25-31/12/27

Comissão de Coordenação e Desenvolvimento Regional do Norte (CCDR-N)

CF
[Casa de Pomarchão I Encontros Improváveis no Barroco a Norte](#)
Call/Programme: Cultura - Iniciativas Âncora Regionais (“Rotas do Norte”)
Active period: 22/09/25-21/09/27

→ research projects/grants

ARIA

Juan Gallego
Coordination: University of Newcastle
[Precision 4D control of cortical circuit function](#)
Call/Programme: Precision Neurotechnologies
Active period: 01/10/25-31/01/29

Associação Portuguesa Contra a Leucemia (APCL)

Cristina João
[High-throughput personalized drug screening for multiple myeloma using 3D ex vivo model](#)
Call/Programme: 6a edição da Bolsa de Investigação em Mieloma Múltiplo
Active period: 01/01/25-31/12/25

Beug Foundation

Ana Luísa Correia
[Harnessing neuron-NK cell interactions to prevent metastasis](#)
Call/Programme: Metastasis Prize
Active period: 2022-2027

BIAL Foundation

Jaime Gracio (Oliveira-Maia lab)
Other CF researchers
involved: Marta Moita
[Assessing cardiac activity as a predictor of freezing behaviour in humans. A translational approach](#)
Call/Programme: Programme of grants for scientific research 2022/2023
Active period: 01/03/23-28/02/26

Marcelo Mendona (Oliveira-Maia lab)
[Uncovering causal mechanisms of Freezing of Gait using Deep Brain Stimulation](#) (FOSI)
Call/Programme: Prémio Maria de Sousa
Active period: 01/01/26-31/12/28

Brain & Behavior Research Foundation (BBRF)

Gonalo Cotovio (Oliveira-Maia lab)
[Improving obsessive-compulsive disorder treatments: from lesions to neuromodulation targets](#)
Call/Programme: Young Investigator Grants
Active period: 01/01/24-31/12/25

Cancer Research Institute (CRI)

Rita Fior
[A new discovery platform to find innate immune modulators for cancer immunotherapy](#)
Call/Programme: CRI Technology Impact Award
Active period: 01/09/23-31/08/25

Chan Zuckerberg Initiative (CZI)

Carlos Ribeiro
[Mapping fatty acid synthesis in an entire organism, in space and time](#)
Call/Programme: Measuring Metabolism Across Scales
Active period: 01/12/23-30/11/25

Choroideremia Research Foundation (CRF)

Luísa Lemos (Seabra lab)
Pathways of retinal pigment epithelium degeneration in choroideremia
Call/Programme: Randy Wheelock Award
Active period: 01/01/24-30/06/25

Miguel Seabra & Pedro Antas
CRISPR-based gene editing for Choroideremia
Call/Programme: Choroideremia Research Foundation Grant
Active period: 01/07/25-30/06/28

Comissão de Coordenação e Desenvolvimento Regional de Lisboa e Vale do Tejo

Catarina Certal
Coordination: SPAROS
Demonstração de um alimento fortificado em péptidos bioactivos na redução de efeitos de stress em peixes
Call/Programme: SIID - I&D Empresarial - Projetos Demonstradores em Copromoção
Active period: 01/07/25-31/12/26

DSIT

Albino J. Oliveira-Maia
Coordination: King's College London
Generative artificial intelligence in mental health: an international collaborative proof-of-concept study in OCD, for a stronger life sciences sector in the UK
Call/Programme: DSIT Tactical Fund Business Case: Call 6
Active period: 01/10/25-31/03/26

Dystonia Medical Research Foundation (DMRF)

Joaquim Alves da Silva
Striatal neural correlates of overuse dystonia
Call/Programme: Basic and Clinical Aspects of Dystonia
Active period: 01/04/25-28/03/27

European Commission (EC)

Albino J. Oliveira-Maia
Reinforcement learning from postingestive calories: from body to brain in health and disease (CalorieRL)
Call/Programme: ERC-2020-STG
Active period: 01/11/20-31/10/25

Albino J. Oliveira-Maia
Coordination: UMC Groningen
Psilocybin therapy for psychological distress in palliative care patients (PsyPal)
Call/Programme: HORIZON- HLTH-2023-DISEASE-03-01
Active period: 01/01/24-31/12/27

Albino J. Oliveira-Maia
Modulating feeding behavior: from brain lesions to non-invasive brain stimulation targets (FoodConnect)
Call/Programme: ERC Proof of Concept 2023
Active period: 19/06/24-18/12/25

Albino J. Oliveira-Maia
Coordination: University of Groningen
Interdisciplinary network for training, education, and growing research into applications of and therapeutic expertise around psychedelics (INTEGRATE)
Call/Programme: HORIZON- MSCA-2024-DN-01
Active period: 01/03/26-28/02/29

Carlos Minutti
Conventional dendritic cells – ecology, diversity, and function (cDCFun)
Call/Programme: ERC Starting Grant 2023
Active period: 01/01/24-31/12/28

Christian Machens
Other CF researchers

involved: Joe Paton
Coordination: KU Leuven
ELEVATE: event-based learning, vision, and control for embodied systems
Call/Programme: HORIZON -MSCA-2024-DN-01
Active period: 01/01/26-01/01/30

Eugenia Chiappe
Neural circuits for error correction (ECofly)
Call/Programme: ERC-2022-CoG
Active period: 01/01/24-31/12/29

Eva Batista (Fátima Cardoso, Unidade de Mama, CCC)
Coordination: Universitair Medisch Centrum Utrecht
Artificial intelligence for early detection of non-communicable disease risk in people with breast cancer (ARTILLERY)
Call/Programme: HORIZON-HLTH-2022-STAYHLTH-01-04-two-stage
Active period: 01/05/23-30/04/28

Gonzalo de Polavieja
Coordination: Proyetos Y Sistemas de Mantenimiento SL - EPROSIMA EPROS
ALMA: Human Centric Algebraic Machine Learning – ‘ALMA’
Call/Programme: H2020-EIC-FETPROACT-2019
Active period: 01/09/20-28/02/25

Gonzalo de Polavieja
Coordination: University of Copenhagen (UCPH)
Unified computational solutions to disentangle biological interactions in multi-omics data (FindingPheno)
Call/Programme: Horizon 2020 - Multi-omics for genotype-phenotype associations (BIOTEC-07-2020)
Active period: 01/03/21-28/02/25

Henrique Veiga-Fernandes
Understanding gene environment interaction in alcohol-related hepatocellular carcinoma (GENIAL)
Call/Programme: HORIZON-MISS-2021-CANCER-02-03
Active period: 01/01/23-31/12/27

Henrique Veiga-Fernandes
Architecture of peripheral neuroimmune circuits and synapses (NeurImmKisses)
Call/Programme: ERC-AdG-2022
Active period: 01/01/24-31/12/28

Joaquim Alves da Silva
Disentangling self-paced from cued action initiation in the motor thalamus (DisSeCT)
Call/Programme: ERC-2025-StG
Active period: 01/10/25-30/09/30

Marta Moita
Actively frozen – contextual modulation of freezing and its neuronal basis (A-FRO)
Call/Programme: ERC-2018-CoG
Active period: 2019-31/07/25

Megan Carey
Cerebellar circuits for locomotor learning in space and time (LOCOLEARN)
Call/Programme: ERC 2019-CoG
Active period: 01/05/20-30/04/25

Megan Carey
Sculpting cerebellar activity across timescales (SCULPTABELLUM)
Call/Programme: ERC-2024-AdG

Michael Orger
AI-enhanced zebrafish screening: a low-cost solution for high-throughput biomedical research (Megabouts)
Call/Programme: ERC-2025-PoC
Active period: 01/10/25-31/03/27

Nikolaos Papanikolaou
Coordination: IDRYMA Technologias Kai Erevnas – Foundation for Research and Technology Hellas
An AI Platform integrating imaging data and models, supporting precision care through prostate cancer’s continuum – ‘ProCancer-I’
Call/Programme: H2020-SC1-FA-DTS-2019-1
Active period: 10/10/20-31/03/25

Nikolaos Papanikolaou
EUropean Federation for CAncer IMages (EUCAIM)
Call/Programme: DIGITAL-2022-CLOUD-AI-02-CANCER-IMAGE
Active period: 01/01/23-31/12/26

Rita Fior
Enhancing non-communicable disease research excellence through zebrafish capacity (ZeNCure)
Call/Programme: HORIZON-WIDERA-2023-ACCESS-02-01
Active period: 01/10/23-30/09/26

European Hematology Association (EHA)

Carlos Minutti
A nutrition-immunity axis mediating conventional dendritic cell development in the bone marrow
Call/Programme: Kick-off Grant
Active period: 01/01/25-31/12/25

European Molecular Biology Organization (EMBO)

Ana Luisa Correia
Tissue-specific immune regulation of disseminated tumor cell dormancy
Call/Programme: EMBO Installation Grants
Active period: 01/01/23-31/12/25

European Partnership for Personalised Medicine (EP PerMed)

Rita Fior
Coordination: Institut Mar d'Investigacions Mèdiques Parc de Recerca Biomèdica de Barcelona (PRBB)
Setting up and validating improved strategies for the identification and eradication of the poor prognosis fetal-type colorectal tumors
Call/Programme: EP PerMed – PMTargets
Active period: 01/07/26-31/12/27

Fight Kids Cancer

Adriana Sánchez-Danés
Establishment of the first preclinical genetic mouse models of Group 4 Medulloblastoma (FIGHT4MB)
Call/Programme: Fight Kids Cancer 2023-2024 Call for Proposals
Active period: 01/01/25-31/12/28

Fundação AstraZeneca (FAZ)

Adriana Sánchez-Danés
Unveiling brain plasticity during pediatric cancer development (BALANCE)
Call/Programme: Premio FAZ Ciencia
Active period: 15/04/23-14/04/26

FCT

Adriana Sánchez-Danés
Uncovering the mechanisms of resistance to cancer formation in the developing brain
Call/Programme: R&D Projects in All Scientific Domains - SR&TD
Active period: 01/03/23-28/02/26

Adriana Sánchez-Danés
Uncovering the role of the immune tumour microenvironment in paediatric melanoma progression and therapy response (MELT)
Call/Programme: Projetos Exploratórios em todos os Domínios Científicos
Active period: 01/01/26-30/06/27

Alexandre Leitão (Moita lab)
Brain connectivity in a genetically diverse context
Call/Programme: Projetos Exploratórios em todos os Domínios Científicos
Active period: 20/02/25-19/08/26

Alfonso Renart
The neural basis of Weber’s Law (WeberNeural)
Call/Programme: FCT 2021 SR&TD
Active period: 17/01/22-16/01/25

Ana Luisa Correia
Restoring tissue physiology to prevent metastatic disease (MetZero)
Call/Programme: ERC-Portugal
Active period: 01/09/23-31/08/26

Ana Luísa Correia Coordination: INESC-ID <u>Mosaic integration and synthetic generation of multi-omic data for the discovery of precision cancer medicines</u> Call/Programme: Projetos de I&D em todos os Domínios Científicos Active period: 01/07/25-30/06/28	Carlos Ribeiro <u>Characterizing neural circuits controlling exploration-exploitation tradeoffs in nutrient foraging decisions</u> (Explore/Exploit) Call/Programme: FCT 2021 SR&TD Active period: 01/01/22-31/12/25	Joaquim Alves da Silva <u>Disentangling cued from self-paced actions in corticostriatal circuits</u> Call/Programme: Individual Call to Scientific Employment Stimulus 3rd Edition - Junior Researcher Active period: 01/09/21-31/08/27	Maria Luísa Vasconcelos <u>Neuronal circuits underlying egg laying behavior in the fruit fly</u> (Neuregglyay) Call/Programme: FCT 2021SR&TD Active period: 01/01/22-30/09/25	IAPMEI – Agência para a Competitividade e Inovação	Joe Paton <u>Dopamine, impulsivity, and multi-scale, hierarchical control of behavior</u> Call/Programme: CaixaResearch Health Active period: 01/09/25-31/08/28
Andrada Ianus (Shemesh lab) <u>To wait or to operate after neoadjuvant therapy in locally-advanced rectal cancer: magnetic resonance imaging can provide the answer</u> Call/Programme: RESTART Active period: 23/12/23-22/06/25	Claudia Feierstein <u>Dissecting the contribution of neurotransmitter systems to neural dynamics in oculomotor circuits</u> Call/Programme: Projetos Exploratórios em todos os Domínios Científicos Active period: 17/02/25-16/08/26	Joaquim Alves da Silva <u>Deciphering the neural circuits underlying cueing in Parkinson’s Disease</u> Call/Programme: Projetos de I&D em todos os Domínios Científicos Active period: 01/05/25-30/04/28	Michael Orger <u>Neural circuits mediating behavioral consequences of social isolation</u> Call/Programme: Projetos Exploratórios em todos os Domínios Científicos Active period: 20/02/25-19/08/26		Leopoldo Petreanu <u>Circuit mechanisms for associating high-order cortical activity with expected sensory representations in health and disease</u> (UPDOWNBOUND) Call/Programme: HEALTH RESEARCH 2022 CALL Active period: 31/12/22-30/12/25
Bruna Velosa Ferreira (João lab) Other CF researchers involved: António Lopez Beltran <u>Integration of neuronal signals by tumour-infiltrating natural killer and myeloma cells</u> Call/Programme: R&D Projects in All Scientific Domains - PeX Active period: 01/02/23-31/01/25	Cristina Godinho-Silva (Veiga-Fernandes lab) <u>Circadian regulation of pulmonary immunity by neuroendocrine signals</u> (CircImmuneReg) Call/Programme: FCT 2021 SR&TD Active period: 01/01/22-31/12/25	Joe Paton (CF) <u>Champalimaud Research FCT Unit</u> Call/Programme: EQUIPAR+2: Investimento Nacional para o Reforço de Equipamento Científico em Unidades I&D Active period: 01/01/25-30/06/26	Rafael Neto Henriques (Shemesh lab) <u>Next-generation stroke imaging via correlation tensor magnetic resonance</u> Call/Programme: Projetos de I&D em todos os Domínios Científicos Active period: 21/08/25-19/08/28	la Caixa Foundation	Liga Portuguesa Contra o Cancro – Núcleo Regional do Sul (LPCC-NRS)
Bruno Costa-Silva Coordination: NOVA.ID.FCT <u>Innovative approaches for pancreatic cancer: decoding and manipulating immune response to short sialylated O-glycans</u> (InnO-Glyco) Call/Programme: R&D Projects in All Scientific Domains - SR&TD Active period: 01/03/23-28/02/26	Inês Ramos (van Gisbergen lab) <u>Illuminating the role of inhibitory receptors on cancer associated fibroblasts through optogenetics</u> Call/Programme: Projetos Exploratórios em todos os Domínios Científicos Active period: 01/02/25-31/07/26	Joe Paton (CF) <u>Champalimaud Research FCT Unit</u> Call/Programme: Programa Plurianual de Financiamento de Unidades de I&D 2023/2024 Active period: 01/01/25-31/12/29	Raquel Lemos (Oliveira-Maia lab) <u>Cognitive motor interference to predict postoperative delirium</u> Call/Programme: Projetos Exploratórios em todos os Domínios Científicos Active period: 01/02/25-31/07/26	Ana Luísa Correia <u>Spatiotemporal dynamics of organ-specific microenvironments in breast cancer metastasis</u> Call/Programme: CaixaResearch Health Active period: 01/12/24-30/11/27	Adriana Sánchez-Danés <u>Development of the first preclinical model of the most common paediatric brain cancer</u> (ModelCANCER) Call/Programme: Bolsa Investigação em Oncologia Active period: 12/04/24-11/04/26
Catarina Certal Coordination: NOVA Medical School <u>Metabolic driven regenerative mechanisms in the retina</u> Call/Programme: Projetos de I&D em todos os Domínios Científicos Active period: 22/12/25-20/12/28	João Lagarto <u>Label-free optical imaging for improved margin assessment in Mohs surgery</u> Call/Programme: Projetos Exploratórios em todos os Domínios Científicos Active period: 01/02/25-31/07/26	Klaas van Gisbergen <u>Harnessing resident memory T cells in tumor tissue for cancer immunotherapy</u> Call/Programme: Projetos de I&D em todos os Domínios Científicos Active period: 22/12/25-20/12/28	Rita Fior <u>Ovarian cancer avatars for personalized therapy, a combination of in vivo & ex-vivo models to guarantee a test for every patient</u> (Z&CTSAvatars) Call/Programme: FCT 2021 SR&TD Active period: 01/01/22-31/12/25	Carlos Minutti Coordination: CIC bioGUNE <u>Advanced platform for targeting tumor-associated glycans</u> Call/Programme: CaixaResearch Health Active period: 31/12/25-31/12/28	Pedro Saint-Maurice (Fátima Cardoso, Unidade de Mama, CCC) <u>Impact of physical exercise on wearable-based measures of sleep and exposure to light at night among adults undergoing active treatment for breast cancer</u> Call/Programme: Bolsa Investigação em Oncologia Active period: 04/02/25-03/02/26
Christa Rhiner <u>Unravelling local and systemic communication promoting brain repair and homeostasis</u> (BrainSySTEMic) Call/Programme: ERC-Portugal Active period: 07/02/24-06/02/27	João Marques (Mainen lab) <u>How working memory guides decisions in zebrafish larvae</u> Call/Programme: Projetos Exploratórios em todos os Domínios Científicos Active period: 01/01/24-30/06/26	Marcelo Mendonça (da Silva lab) <u>Uncovering non-invasive brain stimulation targets for Freezing of Gait in Parkinson’s Disease by integrating results from lesion studies, deep brain stimulation, and individualized MRI</u> Call/Programme: Projetos de I&D em todos os Domínios Científicos Active period: 01/05/25-30/04/28	Roksana Pirzgalska (Veiga-Fernandes lab) <u>A brain-gut circuit responsible for intestinal immunity and physiology</u> (Brain2Gut) Call/Programme: SR&TD Project Grants Active period: 15/03/21-14/03/25	Carlos Ribeiro <u>From metabolic space to neuronal space: mapping how nutrients affect brain function and behavior</u> (BrainMetaboSpace) Call/Programme: Health Research 2023 Active period: 31/12/23-30/12/26	Rita Fior <u>zAvatar test-guided therapeutic decision vs standard of care – a phase II multicentric randomized clinical trial, in relapsed ovarian cancer and in metastatic breast cancer</u> Call/Programme: Bolsas de Investigação em Oncologia - LPCC-NRS/Terry Fox Active period: 14/04/23-13/04/25
		Marcelo Mendonça (Oliveira-Maia lab) <u>Interventions in home-based dementia care: evidence to inform public policy</u> Call/Programme: Science4Policy Active period: 01/09/25-31/03/26	Susana Lima <u>Whole-brain profiling of neuronal circuits involved in sexual behavior</u> (SexTrap) Call/Programme: Projetos Exploratórios em todos os Domínios Científicos Active period: 23/02/26-22/08/27	Christa Rhiner <u>Unravelling pro-regenerative signaling modules in the injured brain</u> Call/Programme: Health Research 2023 Active period: 01/12/23-30/11/26	

Liga Portuguesa Contra o Cancro/Oeiras Valley

Rita Fior
[AI-empowered high-throughput analysis of patient-derived zebrafish xenografts for personalized cancer treatment](#)
Call/Programme: Oncology Research in the era of Artificial Intelligence
Active period: 01/09/25-31/08/27

The Michael J. Fox Foundation for Parkinson's Research (MJFF)

Joe Paton
[Differential targeting of molecularly identified striatal neurons as a therapeutic strategy for minimizing non-motor side effects of dopamine replacement](#)
Call/Programme: Circuits and Cellular Targets for Parkinson's Symptoms - Preclinical studies
Active period: 01/09/23-31/08/25

National Institutes of Health (NIH)

Christian Machens
[Understanding feedforward and feedback signaling between neuronal populations](#)
Call/Programme: BRAIN Initiative: Targeted BRAIN Circuits Projects - TargetedBCP (RFA-NS-21-013)
Active period: 15/03/22-28/02/25

Il Memming Park
Coordination: Princeton University
[Adaptive statistical algorithms for learning and control of neural dynamics](#)
Call/Programme: BRAIN Initiative: Theories, Models and Methods for Analysis of Complex Data from the Brain (R01 Clinical Trial Not Allowed)
Active period: 15/09/22-15/09/25

Pfizer/SCML

Bruna Costa (Fior lab)
[zAvatar-test forecasts patient's treatment outcome in colorectal cancer: a co-clinical study towards personalized medicine](#)
Call/Programme: Prémios Pfizer de Investigação Clínica e Investigação Básica - Clínica
Active period: 01/01/26-01/01/28

Simons Foundation

Christian Machens
Coordination: University of Pittsburgh
[Communication between neural populations: circuits, coding, and behavior](#)
Call/Programme: Simons Collaboration on the Global Brain Culmination Awards
Active period: 01/09/23-31/08/25

Christian Machens
[Cajal advanced neuroscience training courses](#)
Call/Programme: Neuroscience Collaborations - Conferences and Courses Awards
Active period: 01/09/24-31/08/27

Francesca Mastrogiuseppe (Machens lab)
[Mechanisms of learning in cortical neural networks](#)
Call/Programme: SFI-AN-NC-GB-Independence Postdoctoral
Active period: 01/09/25-31/09/25

Olivier Winter (CF)
[Extending the IBL Core infrastructure to new collaborations and scientific questions](#)
Call/Programme: Neuroscience Collaborations - International Brain Laboratory Awards
Active period: 01/01/26-31/12/30

Samuel Sober (Emory University) and Megan Carey
Coordination: Emory University
[Simons-Emory International Consortium on Motor Control](#)
Call/Programme: Chief Scientist Fund-Targeted
Active period: 01/03/20-28/02/25

Zachary Mainen
[International Brain Laboratory](#)
Call/Programme: Simons Collaboration on the Global Brain International Brain Laboratory Award
Active period: 01/08/23-31/07/25

University College London/ Wellcome Trust

Zachary Mainen
[International Brain Laboratory](#)
Call/Programme: Strategic Support - Science application
Active period: 01/04/20-31/03/25

VolkswagenStiftung

Michael Orger
[How spontaneous behaviour emerges from brain-wide neural network dynamics](#)
Call/Programme: VWS-VolkswagenStiftung (Life)
Active period: 01/01/19-31/07/25

ZonMw - the Netherlands Organisation for Health Research and Development

Klaas van Gisbergen
[Immunological memory of the tissues: how the tumor microenvironment shapes T-cell responses](#)
Call/Programme: NWO Talent Programme Vici 2021
Active period: 08/11/23-03/03/27

→ **individual funding and fellowships**

BIAL Foundation

Ana Rita Cruz (Costa-Silva lab)
[Extracellular vesicles binding to IFN as regulators of IFN signaling and antitumor immunity](#)
Call/Programme: Premio Maria de Sousa
Active period: 01/02/23-31/01/25

Dystonia Medical Research Foundation (DMRF)

Filipa Barros (da Silva lab)
[The role of basal ganglia pathways engaged in skilled forelimb movement in a mouse model of DYT1 dystonia](#)
Call/Programme: Postdoctoral Fellowships
Active period: 15/03/23-14/03/25

EASO-Novo Nordisk Foundation

Roksana Pirzgalska (Veiga-Fernandes lab)
[EASO-Novo Nordisk Foundation New Investigator Award: Basic Science](#)
Call/Programme: EASO - NNF Obesity Prizes and Awards 2025
Active period: 01/01/26-31/12/26

European Commission - Marie Skłodowska-Curie Actions (MSCA)

Alice Geminiani (Carey lab)
[Supervised mechanisms for locomotor learning in the cerebellum](#) (SuperLoco)
Call/Programme: MSCA Postdoctoral Fellowships
Active period: 01/10/24-30/09/26

Ana Lúcia Rebelo (Sánchez-Dánes lab)
[Uncovering the cell of origin of Group 4 medulloblastoma \(ORIGIN4MB\)](#)
Call/Programme: MSCA Postdoctoral Fellowships /ERA Fellowships
Active period: 01/04/24-31/03/26

Ana Rita Cruz (Costa-Silva lab)
[Evasion of antitumor immunity and immunotherapy by melanoma extracellular vesicles](#) (Evasion)
Call/Programme: MSCA Postdoctoral Fellowships
Active period: 01/06/23-31/05/25

Claire Rusch (Chiappe lab)
[Sensorimotor integration, motor planning and learning in fly](#) (SIMPLIFLY)
Call/Programme: MSCA Postdoctoral Fellowships
Active Period: 01/09/23-31/08/25

Corinna Gebehart (Chiappe lab)
[The role of ascending proprioceptive information in decision-making processes in walking Drosophila](#) (BottomUpFly)
Call/Programme: MSCA Postdoctoral Fellowships
Active period: 01/09/24-31/08/26

Maria Iliopoulou (Minutti lab)
[Nutritional Retinoic Acid as an early cDC2A fate instructive signal in the bone marrow](#) (cDcIVA)
Call/Programme: HORIZON -TMA-MSCA-PF-EF
Active period: 01/05/25-30/04/27

Nuno Machado (Vasconcelos lab)
[Neuronal control of fine movement components of egg laying in fruit fly](#) (Neuron to Egg Laying)
Call/Programme: MSCA Postdoctoral Fellowships /ERA Fellowships
Active period: 01/09/24-31/08/26

European Molecular Biology Organization (EMBO)

Matthjis oude Lohuis (Petreanu lab)
Other CF researchers involved: Christian Machens
[Communication in the brain: flexible signalling with fixed lines](#)
Call/Programme: Postdoctoral Fellowships
Active period: 15/02/24-14/02/26

FCT

Adrianna Bielowka (Sánchez-Danés lab)
[The role of extracellular vesicles in neuroblastoma progression](#)
Call/Programme: 2023 FCT PhD Research Fellowships
Active period: 01/09/23-31/08/27

Ana Machado (Fior lab)
[Fishing for new immunotherapy compounds to boost innate-tumor rejection](#)
Call/Programme: 2021 FCT PhD Research Fellowships
Active period: 01/11/21-31/10/25

Ana Queirós (João lab)
[Understanding epigenetic mechanisms in haematological disorders](#)
Call/Programme: 2022 FCT PhD Research Fellowships
Active period: 01/07/22-30/06/28

Ana Rasteiro (Veiga-Fernandes lab)
[Deciphering pulmonary neuroimmune circuits in health and disease](#)
Call/Programme: 2022 FCT PhD Research Fellowships
Active period: 01/08/23-31/07/27

Ana Sofia Marques (Sánchez-Danés lab)
[Uncovering the similarities and differences in metastasis formation in adult and paediatric skin cancer](#) (MetAP)
Call/Programme: 2021 FCT PhD Research Fellowships
Active period: 01/08/22-30/09/26

Andreia Gonçalves (Correia lab)
[Deciphering the role of tissue innervation in metastatic breast cancer dormancy](#)
Call/Programme: 2024 FCT PhD Research Fellowships
Active period: 01/09/24-31/08/28

Arjun Reeja (Correia lab)
[Decoding hepatic stellate cell dynamics during breast cancer liver metastasis](#)
Call/Programme: 2025 FCT PhD Research Fellowships
Active period: 01/09/25-31/08/29

Arjun Reeja (Rhiner lab)
[Glia-secreted factors in tumorigenesis](#)
Call/Programme: 2025 FCT PhD Research Fellowships
Active period: 01/09/25-31/08/29

Cátia Rebelo de Almeida (Fior lab) <u>Dissecting a new molecular mechanism underlying bevacizumab mode of action – more than an anti-angiogenic therapy</u> Call/Programme: 2021 FCT PhD Research Fellowships Active period: 01/01/22-21/12/25	Diogo Soares Melo (Oliveira-Maia Lab) <u>Learning from postingestive feedback to understand food seeking across health and disease</u> Call/Programme: 2023 FCT PhD Research Fellowships Active period: 01/08/24-31/07/28	Jaime Arlandis (Mainen lab) <u>State representations and attention to behaviorally relevant information</u> Call/Programme: 2021 FCT PhD Research Fellowships Active period: 01/09/21-31/08/25	Miguel Donderis (Machens lab) <u>Theoretical approaches to neural dynamics using spiking neural networks</u> Call/Programme: 2025 FCT PhD Research Fellowships Active period: 01/09/25-31/08/29	Rafael Henriques (Shemesh lab) <u>Correlation Tensor MRI: a paradigm shift for stroke imaging</u> Call/Programme: 2022 FCT PhD Research Fellowships Active period: 01/10/22-30/09/28	Sílvia Henriques (Ribeiro lab) <u>Identifying the metabolites that mediate the effect of commensal bacteria on food choice in <i>Drosophila melanogaster</i></u> Call/Programme: 2022 FCT PhD Research Fellowships Active period: 01/07/22-30/06/28
Charlotte Rosher (Moita lab) <u>The startle response as a reset that facilitates adaptive defensive responses to threat</u> Call/Programme: 2023 FCT PhD Research Fellowships Active period: 01/09/23-31/08/27	Filipa Barahona (João Lab) <u>Contribution of noninvasive biomarkers for multiple myeloma prognosis assessment (COMPASS)</u> Call/Programme: 2021 FCT PhD Research Fellowships Active period: 01/10/21-30/09/25	Kerem Sarikaya (Petreanu lab) <u>Dynamics of cortical interneuron coupling with local and long-range networks</u> Call/Programme: 2025 FCT PhD Research Fellowships Active period: 01/09/25-31/08/29	Miguel Patrício (Minutti lab) <u>Disentangling within cDC2 heterogeneity – the non-redundant functional properties of cDC2As and cDC2Bs</u> Call/Programme: 2025 FCT PhD Research Fellowships Active period: 01/09/25-01/09/29	Raquel Lemos (Oliveira-Maia lab) <u>Cognitive-motor dual-task as a measure of cognitive reserve in patients treated with brain radiotherapy</u> Call/Programme: CEEC Individual 2018 Active period: 01/08/20-31/07/26	Sofia Boavida (Saint-Maurice lab) <u>Impact of supervised physical exercise on wearable-based measures of sleep and circadian disruption among adults undergoing hormone therapy for breast cancer</u> Call/Programme: 2025 FCT PhD Research Fellowships Active period: 01/09/25-31/08/29
Daniel Silva (Oliveira-Maia lab) <u>Assessing freezing behavior and its physiological underpinnings in humans: from health to disease</u> Call/Programme: 2023 FCT PhD Research Fellowships Active period: 01/07/24-30/06/28	Filipa Barros (da Silva lab) <u>DysCo: cholinergic effects on the striatal control of dystonic muscular contraction</u> Call/Programme: Individual Call to Scientific Employment Stimulus - Junior Level Active period: 01/03/23-2/28/29	Marcel Graetz (McNamee lab and Renart lab) <u>Investigating sequential attentional policies in capacity-limited artificial neural networks</u> Call/Programme: 2025 FCT PhD Research Fellowships Active period: 01/09/25-31/08/29	Naz Belkaya (Renart lab) <u>Neural basis of the decision bound in perceptual decision-making</u> Call/Programme: 2021 FCT PhD Research Fellowships Active period: 01/08/22-30/09/26	Raquel Sequeira (van Gisbergen lab) <u>T-cell dynamics in breast cancer metastases</u> Call/Programme: 2025 FCT PhD Research Fellowships Active period: 01/09/25-22/08/29	Tânia Carvalho Coordination: University of California, Davis <u>Advanced training in experimental and comparative pathology at the University of California, Davis aimed at ACVP board certification</u> Call/Programme: FCT Mobility Programme Active period: 15/04/25-14/08/25
Daniela Cuffs (Rhiner lab) <u>Deciphering damage-induced brain-body communication: implications for organismal homeostasis and cancer formation</u> Call/Programme: 2025 FCT PhD Research Fellowships Active period: 01/09/25-01/09/29	Guillermo Martin (Machens lab) <u>Constrained optimization through spiking neural networks</u> Call/Programme: 2025 FCT PhD Research Fellowships Active period: 01/09/25-31/08/29	Marco Colnaghi (Moita lab and Renart lab) <u>Study of threat-induced freezing responses as lawful dynamic behavioural states</u> Call/Programme: 2024 FCT PhD Research Fellowships Active period: 01/09/24-31/08/28	Pedro Correia Ferreira (da Silva lab) <u>Uncovering the mechanisms of tremor in Parkinson's Disease</u> Call/Programme: 2023 FCT PhD Research Fellowships Active period: 01/09/23-31/08/27	Roksana Pirzgalska (Veiga-Fernandes lab) <u>Neuroimmune control of the intestinal mucosa: from nutrient absorption to immune responses</u> Call/Programme: CEEC Individual 2018 Active period: 01/08/20-31/07/26	Tianci Zhong (Veiga-Fernandes lab) <u>Uncovering sympathetic neural dynamics in lung homeostasis, injury, and repair</u> Call/Programme: 2025 FCT PhD Research Fellowships Active period: 01/09/25-31/08/29
Daniela Pereira (da Silva Lab) Call/Programme: Individual Call to Scientific Employment Stimulus Active period: 01/06/19-31/05/25	Hyungju Jeon (Park lab) <u>Active learning for real-time neural dynamics inference</u> Call/Programme: 2024 FCT PhD Research Fellowships Active period: 01/09/24-31/08/28	Marta Forcella (Carey lab) <u>Cerebellar granule cell population activity in the context of sensorimotor behavior</u> Call/Programme: 2024 FCT PhD Research Fellowships Active period: 01/09/24-31/08/28	Pedro Rocha (McNamee lab) <u>Neural representations of learning and decision-making in mild cognitive impairment during navigation in naturalistic virtual environments</u> Call/Programme: 2024 FCT PhD Research Fellowships Active period: 01/09/24-31/08/28	Rory Beresford (Ribeiro lab) <u>Identifying the circuit mechanisms mediating nutrient specific feeding changes during reproduction in <i>Drosophila</i> females</u> Call/Programme: 2021 FCT PhD Research Fellowships Active period: 01/08/22-30/09/26	Human Frontier Science Program
David Brea-López (Veiga-Fernandes lab) <u>Regulation of intestinal immunity by brain-derived signals</u> Call/Programme: Individual Call to Scientific Employment Stimulus Active period: 01/06/19-31/05/25	Inês Dias (Lima lab) <u>Hypothalamic circuits linking the reproductive cycle to female sexual behavior</u> Call/Programme: 2021 FCT PhD Research Fellowships Active period: 01/09/21-31/08/25	Merit Kruse (Carey lab) <u>Investigating the role of contextual information in the granule cell layer during cerebellar associative learning</u> Call/Programme: 2020 FCT PhD Research Fellowships Active period: 01/08/21-01/08/25	Pedro Silva (Orger lab) <u>How a conserved circuit drives distinct locomotor behaviors in two closely related fish</u> Call/Programme: 2023 FCT PhD Research Fellowships Active period: 01/09/23-31/08/27	Sara Ferreira (Sánchez-Danés lab) <u>Uncovering the cell populations that mediate tumour growth and metastasis formation in paediatric neuroblastoma (PopUP)</u> Call/Programme: 2025 FCT PhD Research Fellowships Active period: 01/09/25-31/08/29	Coralie Hérent (Carey lab) Cell-specific functional connectivity of cerebellar outputs for locomotor learning Call/Programme: HFSP Postdoctoral Fellowships Active period: 01/09/22-31/8/25
Devanshi Shah (Petreanu lab) <u>Dissecting the influence of feedback on lower-order cortical areas</u> Call/Programme: 2025 FCT PhD Research Fellowships Active period: 01/09/25-31/08/29	Inês Laranjeira (Mainen lab and McNamee lab) <u>The role of representation learning in inter-individual behavioral and neural variability</u> Call/Programme: 2023 FCT PhD Research Fellowships Active period: 01/09/23-31/08/27		Prannay Reddy (Paton lab) <u>A cross-striatal study identifying population-specific targets for managing impulse control disorders induced by Parkinson's treatment</u> Call/Programme: 2025 FCT PhD Research Fellowships Active period: 01/09/25-31/08/29		Juan Sanchez (Rhiner lab) <u>Unraveling the cellular and molecular dynamics of adult neurogenic niches</u> Call/Programme: HFSP Postdoctoral Fellowships Active period: 01/05/24-30/04/27

la Caixa Foundation

Cláudia Carvalho (Seabra lab)
[Nonviral CRISPR-based gene editing for inherited retinal diseases](#)
Call/Programme: Doctoral INPhINIT Fellowships
– Retaining Call 2025
Active period: 01/01/26-31/12/29

José Espejo Valle-Inclán
[Origin and evolution of oncogene amplifications in pancreatic cancer](#)
Call/Programme:
Postdoctoral Junior Leader Fellowships – Incoming
Active period: 15/06/25-15/06/28

María Martínez Lopez (Veiga-Fernandes lab)
[Dendritic cells bridging neuromodulation and immunity](#)
Call/Programme: Junior Leader Fellowships (Retaining)
Active period: 01/11/22-31/10/25

NWO – Dutch Research Council

Matthijs oude Lohuis (Petreanu lab)
Other CF researchers involved: Christian Machens
[Communication in the brain: flexible signalling with fixed lines](#)
Call/Programme: NWO Talent Programme – Rubicon 2022-3
Active period: 01/06/23-31/05/25

Schmidt Science Fellows

Bruna Martins Garcia (Correia lab)
Call/Programme: Schmidt Science Fellows
Active period: 01/07/24-30/06/26

Simons Foundation

Caroline Haimerl (Paton lab)
[Multiarea computations for multiscale behavior](#)
Call/Programme: Simons Collaboration on the Global Brain
Transition to Independence Award
Active period: 01/09/24-31/08/26

Caroline Haimerl (Machens lab)
[Tunable neural networks for goal-directed and context-dependent actions](#)
Call/Programme: 2025 Shenoy Undergraduate Research Fellowship in Neuroscience (SURFIN)
Active period: 01/09/25-31/05/26

Francesca Mastrogiuseppe (Machens lab)
[Mechanisms of learning in cortical neural networks](#)
Call/Programme: Simons Collaboration on the Global Brain
Transition to Independence Award
Active period: 01/09/23-31/08/25

→ educational and outreach projects

Animal Research Tomorrow (ART)

Benjamin Zarov (Paton lab)
[The sound of \(neuro\)science](#)
Call/Programme: ART Science Communication (SciComm) Grants
Active period: 15/04/24-15/04/25

scientific events

* Champalimaud Internal Seminar Series (CISS)
** Champalimaud Open Seminar Series (COpS)

→ january

10 Happy Hour > Fisher Scientific

Clinical Seminar
Noam Shemesh
[Mapping disease with advanced MRI at Champalimaud: from visual deficits to pancreatic cancer](#)

13 CISS
Yasna Forghani
[AI for breast cancer digital twins](#)
José Almeida
[Machine learning for prostate cancer diagnosis in the ProCAnceR-I project](#)

14 Theory Seminar Series
> Tutorial
Kevin Alcedo, Instituto Superior Técnico
[Learning my first world model](#)

15 Theory Seminar Series > Seminar
Pedro U. Lima, Instituto Superior Técnico
[Sequential decision-making in robotics](#)

16 CR Colloquia
Carolina Rezaval, University of Birmingham
[Is love blind? Mating proximity gates threat perception](#)

17 Clinical Seminar
Henrique Veiga-Fernandes
[Neuroimmune ecosystems in health and disease](#)

Happy Hour
> Orger lab & Gouveia lab

20 COpS

Carlos Minutti
[Conventional dendritic cells – ecology, diversity, and function](#)

Neuro Faculty Retreat

23 CR Colloquia
Noel de Miranda, Leiden University Medical Center
[Understanding and harnessing cancer immunity: from biology to therapy](#)

24 Clinical Seminar
Adriana Sánchez-Dannés
[Insights into skin cancer from mouse models](#)

24 Happy Hour
> Veiga-Fernandes lab & Lima lab

27 CISS
Natalia Barrios
[Glu1A-dependent cardiac activity reflects habituation while freezing](#)
Carolina Filipe
[To multi-session forecasting and beyond](#)

Baking lab – Animal Techs

29 Innovation Speaker Series
Catarina Abreu, Market Access Strategy Director, RealChemistry
[Market access 101: turning innovation into real-world impact](#)

30 CR Colloquia
Kevin Franks, Duke University
[Respiration coordinates the logic of odor coding in the piriform cortex](#)

31 Clinical Seminar
Albino J. Oliveira-Maia
[Cognition in patients with cancer: from symptoms to impairment](#)

Happy Hour
> Moita lab & Sánchez-Danés lab

→ february

3 CISS
Gonçalo Cotovio
[Obsessive-compulsive disorder secondary to focal brain lesions: from lesions to networks](#)
Rita Alves
[Ultrafast fMRI reveals increased striatal coupling following stroke](#)

3 – 4 Meeting
[Alternative Mathematical Approaches in AI \(ALTAI2025\)](#)

4 Theory Seminar Series
> Tutorial
Tatiana Engel, Princeton University
[Representational spaces of recurrent neural networks](#)

5 Theory Seminar Series
> Seminar
Tatiana Engel, Princeton University
[Unifying neural population dynamics, manifold geometry, and single-cell selectivity](#)

6 CR Colloquia
Nikolaos Konstantinidis, Institut Jacques Monod
[Development and evolution of neuronal diversity in the insect visual system](#)

7 Clinical Seminar
Carla Oliveira
[Exploring breast cancer response prediction to neoadjuvant baseline FDG-PET/CT and MRI, FAP tumor expression and clinicopathological factors](#)

Happy Hour
> Correia lab & Renart lab

10 CISS
Ana Cristina Ojalvo
[Unraveling pro-regenerative mechanisms in the brain: from flies to mice](#)

13 CR Colloquia
Helena Florindo, University of Lisbon
[Unveiling solid tumor microenvironment for revolutionary nano-immunotherapies](#)

Ar Event

[TheatAr – The neuroscience of human connections and sense of self in theatre](#)

14 Ad Hoc Seminar
Omri Barak, Israel Institute of Technology
[When predict can also explain: few-shot prediction to select better neural latents](#)

Clinical Seminar
Pedro Vaz
[Improving early non-invasive cancer detection in clinics](#)

Happy Hour
> de Polavieja lab & Minutti lab

17 CISS
Coralie Hérent
[Cerebellar output circuits for locomotor learning](#)
Virginia Palieri
[Studying the role of self-motion estimation in action selection](#)

19 Theory Seminar Series
Friedemann Zenke, Friedrich Miescher Institute & University of Basel
[Learning invariant representations through predictive synaptic plasticity](#)

19 – 22 Conference
[2025 Champalimaud Colorectal Cancer Conference: Straight to Surgery](#)

20 CR Colloquia
Judith E Allen, University of Manchester
[Type 2 cytokines: a story of macrophages, matrix & metazoan parasites](#)

Invited Locomotion Seminar
Boris Chagnaud, University of Graz
[Pectoral control – lessons from fish](#)

21 Clinical Seminar
Inês Pires da Silva
[From lab to bedside: how translational research can inform clinical practice?](#)

21 Happy Hour
> Rhiner lab & Ribeiro lab

24 COpS
Megan Carey
[Creating coordination in the cerebellum](#)

26 Ad Hoc Seminar
Sergio Casas-Tinto, Instituto de Salud
[Inheritable stress hallmark determines brain fitness and glioma progression](#)

27 CR Colloquia
Ann Clemens, University of Edinburgh
[Neurobiology of kinship behavior](#)

28 Ad Hoc Seminar
Johannes Seelig, Max Planck Institute for Neurobiology of Behavior – caesar
[Sleep and memory in Drosophila](#)

Clinical Seminar
Carlo Greco; Stefano Arcangeli, University of Milan
[Single fraction ablative radiotherapy for organ-confined prostate cancer: getting ready for prime time](#)

Happy Hour
> van Gisbergen lab & Papanikolaou lab

→ **march**

5 Theory Seminar Series
Máté Lengyel, University of Cambridge
[Simple principles underlying complex neural responses](#)

Ad hoc Seminar
Dafna Ben Bashat, Tel Aviv University
[Enhancing diagnosis with multi-contrast MRI and AI-driven analysis](#)

6 CR Colloquia
Delfim Duarte, IPO-Porto and i3S, University of Porto
[Niche remodeling and iron metabolism in acute myeloid leukemia](#)

7 Clinical Seminar
Joaquim Alves da Silva
[Connecting circuits and symptoms: a neuroscientific bridge between basic and clinical research](#)

7 Happy Hour
> Petreanu lab & Alves da Silva lab

10 CISS
Renato Sousa
[Evidence for a parallel learning system in striatal dopamine](#)
Lucas Martins
[A working memory-like assay in larval zebrafish](#)

Ad hoc Seminar
Tosif Ahamed, Janelia Research Farm Campus
[Understanding responses to dynamically complex visual motion in mouse V1](#)

ISPA Students Visit
(ABBE platform)

12 Outreach
Ciência di Noz Manera (CNM)

13 CR Colloquia
Rita Teodoro, NOVA Medical School
[Under pressure: how mechanical forces influence structural plasticity](#)

14 Clinical Seminar
José Pereira Leal
[Biomarkers in liver cancer – from the bench to the bedside](#)

Happy Hour
> Machens lab & Fior lab

17 CISS
Inês Ramos
[Resident CD39+ pancreatic fibroblasts promote pancreatic tumour growth](#)
Vitaly Balan
[Principles of lentiviral vector \(LV\) design for smart cell therapies](#)

18 Theory Seminar Series
> Tutorial
Wiktor Mlynarski, Ludwig Maximilian University of Munich
[Two meanings of information theory in neuroscience and biology](#)

19 Theory Seminar Series
> Seminar
Wiktor Mlynarski, Ludwig Maximilian University of Munich
[Building a theory of sensory coding for active behaviour](#)

20 CR Colloquia
Pauline Spéder, Institut Pasteur
[Home sweet home: structure and function of the neurogenic niche in health and disease](#)

21 Clinical Seminar
António Jacinto
[NOVA Institute for Medical Systems Biology](#)

Happy Hour
> Carey lab & Chiappe lab

24 CISS
Hina Kosakamoto
[Tyrosine as a nutrient signal: governing protein response in Drosophila](#)
Benjamin Zarov
[A proposal for a LEAF \(Lab Efficiency Assessment Framework\) Program at Champalimaud Research](#)

Workshop
Workshop InVerso

25 – 27 Conference
[Spatial omics and AI: bridging discovery and translational medicine](#)

26 Visit
Grupo B Braun – Comissão de Controlo de Infecção Hospitalar

27 CR Colloquia
Jean-Pascal Lefaucheur, Henri Mondor University Hospital, Université Paris-Est
[Therapeutic perspectives of non-invasive brain stimulation: the example of chronic pain management](#)

28 Clinical Seminar
João Santinha
[AI in oncology: enhancing efficiency, decision-making, treatment, and follow-up](#)

28 Happy Hour
> Maeurer lab & Seabra lab

31 COpS
Michael Orger
[Zebrafish: tiny brains, big decisions](#)
Albino J. Oliveira-Maia
[From causes to mechanisms of OCD](#)

31 mar – **2** apr Curso Intensivo
[Estratégias avançadas de terapia de exposição e prevenção de resposta para a POC](#)

→ **april**

1 Ad Hoc Seminar
Jennifer Bizley, University College London
[How does auditory cortex construct sound scenes?](#)

1 – 3 Meeting
[Moving Beyond Consortium](#)

3 CR Colloquia
Ilaria Malanchi, The Francis Crick Institute
[Emergency granulopoiesis and cancer progression](#)

3 – 4 Conference
[Moving Beyond 2025: unveiling the transformative role of physical activity in the prevention and treatment of cancer](#)

4 Happy Hour
> Mainen lab & Castillo-Martin lab

7 CISS
Camila Sarmiento
[Predicting rectal cancer treatment response from high-resolution histopathological images via AI](#)

9 CR Colloquia
Christoph Scheiermann, University of Geneva
[Circadian interactions between the brain and the immune system](#)

9 – 11 Conference
[50th Immunology Portuguese Society Annual Meeting](#)

11 Happy Hour
> Oliveira-Maia lab & McNamee lab

14 CISS
Jonathan Cook
[A hypothalamic genitosensory feedback circuit dynamically structures male sexual performance](#)

15 AI in Medicine Series
João Santinha
[What’s hype, what’s real?](#)

22 International Cancer Doctoral Programme (ICDP) Interviews

23 Ad hoc Seminar
Samuel Aparício, BC Cancer Research Institute
[Origins and consequences of gene dosage mutations in cancer](#)

27 Workshop
[Beyond Clarity Workshop](#)
(It Memming Park)

28 Theory Seminar
> Tutorial
Gustav Markkula, University of Leeds
[Modelling intermittent control: some tools and ideas](#)

29 Theory Seminar > Seminar
Gustav Markkula, University of Leeds
[Moving and interacting in traffic: computational modelling of human behaviour in real-world locomotion](#)

→ **may**

5 CISS
Sahar Tehrani
[Do past inflammatory events influence the output of cDC poiesis?](#)
Adrianna Bielowska
[Development of novel transgenic mouse models of neuroblastoma](#)

7 Theory Seminar Series
Jaime de la Rocha, IDIBAPS
[Forgetting and cognitive control during short-term memory](#)

8 CR Colloquia
Ricardo A. Fernandes, University of Oxford
[Targeting TCR and co-receptor signalling in T cells using engineered ligands](#)

9 Clinical Seminar
Gonçalo Bernardes, University of Cambridge
[Translational chemical biology](#)

Happy Hour
> Costa lab & Ribeiro lab

12 Town Hall
[CR Retreat](#)

Public Session
[Recomendações multidisciplinares sobre o uso clínico de substâncias psicotrópicas](#)

13 AI in Medicine Series
João Santinha
[Basic concepts of machine and deep learning](#)

15 CR Colloquia
Patricia Altea Manzano, Centro Andaluz de Biología Molecular y Medicina Regenerativa (CABIMER)
[Emerging roles of lipid metabolism in cancer metastasis](#)

16 Clinical Seminar
Berta Sousa
[Cancer-related cognitive impairment in breast cancer: a longitudinal multi-center study](#)

16 Happy Hour
> Park lab & Veiga-Fernandes lab

19 COpS
Adriana Sánchez-Danés
[Exploring the crosstalk between the tumour-intrinsic & extrinsic drivers of cancer](#)
Christian Machens
[How neural circuits compute](#)

20 Public Lecture
Ardem Patapoutian, Scripps Research
[May the force be with you! Piezo channels in mechanosensory biology](#)

22 CR Colloquia
Iñaki Martín-Subero, IDIBAPS Barcelona
[An epigenetic journey into the origin, evolutionary dynamics and progression of chronic lymphocytic leukemia](#)

22 – 23 Meeting
Artillery Consortium Annual Meeting

23 Ad hoc Seminar
Jennifer Resnik, Ben Gurion University
[The effects of repeated stress on sound processing and perception](#)

Theory Seminar Series
> Tutorial
José Príncipe, University of Florida
[Advances in kernel adaptive filtering](#)

Theory Seminar Series
> Seminar
José Príncipe, University of Florida
[Multivariate statistical dependence](#)

Clinical Seminar
Mireia Castillo-Martin
[How can the Champalimaud Foundation Biobank support your research project?](#)

Happy Hour
> Paton lab & João lab

26 CISS
Raquel Mendes
[Zebrafish avatars: predicting breast cancer therapy response for personalized medicine](#)
Saheli Roy
[Survival of self vs survival of species: a fly's perspective](#)

29 CR Colloquia
Michele Basso, University of Washington
[Deep decisions: uncovering the subcortical role in perceptual choice](#)

30 Happy Hour
FCT Unit Results Toast
> CEO Team

31 Visit
[Visita Especial Especial](#)

→ **june**

2 CISS
Adrien Jouary
[Zebrafish computational ethology: inferring latent physiological states from behavior](#)
Davide Crombie
[Psychedelics and neural population activity](#)

5 Welcome Sunset
[The European Innovation Council Board and the Portuguese ecosystem get-together](#)

6 Ad hoc Seminar
Federica Antonelli, Istituto Italiano di Tecnologia
[Multi-brain neuronal dynamics causally modulate emotion discrimination in mice](#)

Clinical Seminar
Bruna Ferreira
[A clinical-scientific journey into extracellular vesicles in multiple myeloma](#)

6 Happy Hour
> Maeurer lab & Petreanu lab

16 COpS
Nikolaos Papanikolaou
[AI/Radiomics 2.0: how to safely translate research results to the clinics](#)
Joe Paton
[A new society of mind](#)

17 AI in Medicine Series
João Santinha
[Generative AI in healthcare](#)

Ad hoc Seminar
Pablo Tano, University of Geneva
[Internal representations for adaptive behavior](#)

18 Conference
[AWS GenAI for Health Summit](#)

23 CISS
Jorge Ramirez
[Purkinje cell mixed selectivity enhances the quality, versatility and robustness of locomotor representations](#)
Matthijs oude Lohuis
[The contribution of interarea projections to shared cortical dynamics](#)

26 CR Colloquia
Pedro Moura Alves, University of Porto
[Connections in the AHR: a ticket to multiple destinations in host-microbe interactions and therapy](#)

27 Megan Carey ERC Toast

Happy Hour
> Marques-Santinha lab
& Sánchez-Danés lab

30 CISS
Margarida Domingos
[High-throughput personalized drug screening for multiple myeloma using a 3D ex vivo model](#)
Masha Aliseychik
[Neuroimmune interactions during allergic inflammation: vagal pathways and brain activation patterns](#)

→ **july**

3 CR Colloquia
John Widloski, University of California
[Fluid memory: explorations in hippocampal replay](#)

4 Happy Hour
> Moita lab & Renart lab

7 CISS
Naz Belkaya
[Understanding reaction time in sensory discrimination via licking responses](#)
Corinna Gebehart
[Angular self-motion estimation for action selection in walking Drosophila](#)

8 José Mário Leite
Book Presentation
[A Princesa Arménia de Bragança](#)

10 CR Colloquia
Maria Casanova Acebes, Centro Nacional de Investigaciones Oncológicas
[Circadian programs in tumor-associated neutrophils](#)

11 Happy Hour
> Lima lab & Correia lab

14 CISS
Ana Castro Verde
[Rad-path correlation of deep learning models for prostate cancer detection](#)
Leonardo Lordello
[Immunomonitoring strategy in neoadjuvant pembrolizumab in combination with anthracycline/cyclophosphamide versus carboplatin/paclitaxel for the treatment of patients with early-stage, TIL-positive, triple-negative breast cancer \(KeyPARTNER\)](#)

15 Workshop
[EATRIS Spotlight – Digital health and AI research: from regulation to implementation](#)

16 Conference
Medica AI - The Conference

17 Mama Help
Luzia Travado
[Conta-me como foi: superar desafios](#)

18 Happy Hour
> de Polavieja lab & Fior lab

21 CISS
Rafael Henriques
[Correlation tensor imaging: a new paradigm for mapping microstructure beyond MRI resolution – applications in normal tissues, stroke and cancer](#)
Pedro Ferreira
[Exploring different degeneration patterns in Parkinson's disease patients with and without tremor using striatal microstructural gradients](#)

→ **september**

4 Course
[Hands-on molecular tools – a beginner's crash course \(MTTP\)](#)

5 Lecture
[AI & Law Lecture](#)

Clinical Seminar
Eleni Frangou, University College London
[Navigating through the re-design of a multi-arm, multi-stage \(MAMS\) trial: statistical considerations and beyond](#)

8 CISS
João Marques
[Larval zebrafish have a sophisticated short-term memory that shares core features with mammalian working memory](#)
Alexandre Leitão
[No such thing as a stereotypical brain?](#)

12 Clinical Seminar
Cláudia Nunes dos Santos, NOVA Medical School and NIMSB
[Exploring the neuroprotective potential of diet: from metabolites to nutritional interventions](#)

Happy Hour
> 2025 INDP & ICDP Students

13 Conference
[YEC Global Summit – Youth Economic Circle Portugal](#)

15 CISS

Catarina Barbosa Matos

Monocyte regulation in metastatic breast cancer dormancy

Ana Beatriz Machado

Fishing for new immunotherapy compounds to boost innate-tumor rejection

15 – 17 Course

Pathology Updates Course 2025

17 Ad hoc Seminar

Reza Shadmehr, Johns Hopkins School of Medicine

Multi-brain neuronal dynamics causally modulate emotion discrimination in mice

18 CR Colloquia

Álvaro Aytes-Meneses, Institut d'Investigació Biomèdica de Bellvitge

Models and mechanisms of prostate cancer therapy resistance

19 Clinical Seminar

Tiago Marques

One patient, one approach: digital twins and the new era of personalized medicine

Happy Hour

> Paton lab & Papanikolaou lab

19 – 20 Conference

Neuro-ophthalmology: from bench to bedside, and back

22 CISS

Francisco Azevedo

Left, west or what works best? Arbitration between representations in striatal circuits

David Mendez

Algebraic machine learning: learning as computing an algebraic decomposition of a task

22 Conference

Conference on gynaecological and urological cancers: prevention, treatment and challenge - ASPIC, MOG, CF

23 Ad hoc Seminar

Takumi Kamiyama,

University of Tsukuba

Parasitoid wasp venoms induce imaginal disc degradation in Drosophila for successful parasitism

25 CR Colloquia

Martin Guillems, VIB-IRC Center

for Inflammation Research

DeLiVERing in vivo CRISPR

screens to study hepatic

cell-cell interactions

25 Ad hoc Seminar

Pip Coen, University

College London

Mouse frontal cortex learns to add evidence across modalities

Toast

Joaquim Alves da Silva ERC Toast

26 Clinical Seminar

Giuseppe Diaferia

Histologically resolved transcriptional states reveal the basis of nerve invasion in pancreatic cancer

Happy Hour

> Carey lab & João lab

26 – 27

Conference

International Kidney and

Monoclonal Gammopathy

(IKMG) Research Group Meeting

29 COpS

Il Memming Park

Effective neural dynamical system

29 – 30 Meeting

PsyPal Consortium

General Meeting

30 AI in Medicine Series

Cláudia Constantino

Basics of coding for AI in medical imaging

→ october

1 PsyPal Symposium

Pink October - Session 1

Eva Batista & José Carlos

Marques, Liga Portuguesa

Contra o Cancro

Rastreio mamário personalizado: como e porquê?

In collaboration with MamaHelp

Ad hoc Seminar

Seng Bum Michael Yoo,

Sungkyunkwan University

Adaptive feedback control as a mechanism for sequence learning

2 CR Colloquia

Gero Miesenboeck,

University of Oxford

The electron leak hypothesis of sleep

3 Happy Hour

> Warehouse

Clinical Seminar

Helena Cruz

AI and ethical-legal reflections - CINDERELLA project insights

8 iMed Conference Workshop

Master switch: resetting neural networks one pulse at a time

9 CR Colloquia

Ana Raquel Maceiras, GIMM

Diving into the immune system using single-cell genomics

10 Meeting

Postdoc Bi-Annual Lunch Meeting

Clinical Seminar

Maria Francisca Moraes-Fontes

The targets of immune adverse events in cancer immunotherapy by combined check-point inhibitors resemble those seen in IPEX patients

Happy Hour

> Chiappe lab & van Gisbergen lab

15 – 17 CR Symposium 2025

Neuro-Cybernetics at Scale

17 Clinical Seminar

Laura Fernandez

Conditional survival in patients with rectal cancer managed by watch & wait - changing impact of risk factors over time

20 CISS

Daniela Silva

Tracking the origin of tumor-fighting T cells in breast cancer metastasis

Locomotion Series Club Series

Rémi Ronzano, University

College London

From reflexive behaviours to motor adaptation: how spinal circuits shape movements in a changing environment

22 Ad hoc Seminar

Eran Lottem, Hebrew

University of Jerusalem

Orbitofrontal cortex is necessary for flexible perceptual inference in mice

23 CR Colloquia

Christine Constantinople, New

York University

Neural circuit mechanisms of value-based decision-making

24 Clinical Seminar

Pedro Saint-Maurice

& Carla Malveiro

The exercise oncology hub: a new beginning

Book Presentation

Lucinda Barros Moutinho

Cancro da mama: muito para além da dor

24 Happy Hour

> Mainen lab & Seabra lab

27 CISS

Hyungju Jeon

Planning to learn: active inference of latent dynamics for closed-loop neuroscience
Probing robustness of sensory processing in the mouse auditory cortex

29 oct – 1 nov Conference

2nd Botton-Champalimaud

International Pancreatic Cancer Conference

30 CR Colloquia Abdel

El Manira, Karolinska Institute

From spinal modules to collective coordination: principles of locomotor control

30 – 31 Course

Minimally invasive surgery train-the-trainer course (MISTT 2025)

31 Clinical Seminar

Albino J. Oliveira-Maia

From neuropsychiatry to digital neurotherapeutics

Happy Hour

> Costa lab & Castillo-Martin lab

→ november

3 COpS

Rita Fior

Zebrafish avatars for personalized medicine & discovery of innate immune mechanisms
Daniel McNamee
Physical unrealizability in the brain

4 – 5 Meeting

CF Scientific Advisory Board

Meeting

ZeNCure Annual Meeting

7 Clinical Seminar

Ana Maia

Immune (dys)function in obsessive-compulsive disorder: from causes to mechanisms

Happy Hour

> Veiga-Fernandes lab & Park lab

10 CISS

Siham Boumhaouad

Striatal circuit dynamics in a mouse model of task-specific dystonia

Sílvia Almeida

Psychological determinants of depression in patients with cancer

13 Ad hoc Seminar

Tommaso Vicanolo,

Spanish National Centre

for Cardiovascular Research

Immune regulation of circadian rhythms in tissues

CR Colloquia

Padro Nascimento Alves,

Hospital de Santa Maria

and University of Lisbon

Neurotransmitter circuit mapping of brain lesions - insights into the neural basis and therapeutics of stroke behavioral syndromes

14 Magusto

17 CISS

Joan Gort

A unified perspective on computation and stochastic spiking neural activity
Arina Dygay
Trachea-associated neurons influence the nutritional compass

Theory Seminar

Agostina Palmigiano,

University College London

Nonlinear inhibition shapes

tuned perturbation responses in cortical networks

18 Webinar

Let's talk about colorectal cancer

20 CR Colloquia

Filipe Pereira, Lund University and University of Coimbra

In vivo dendritic cell reprogramming for melanoma and beyond

21 Happy Hour

> Ribeiro lab & Rhiner lab

Clinical Seminar

Filipe Borges

Vascular invasion in pancreatic ductal adenocarcinoma (PDAC)

Course

Doente com mieloma múltiplo sob biespecíficos: desafios e boas práticas de enfermagem

24 CISS

Cláudia Carvalho

Nonviral CRISPR-based gene editing for inherited retinal diseases

Mónica Alfaiate

Reproducibility study of tumor extracted features in [18F]FDG and [68Ga]Ga-PSMA PET/CT images

25 Conference

Responsible AI Forum

Ad hoc Seminar

Thoralf Niendorf,

Max Delbrück Center

MRI of renal oxygenation: what is the physiological meaning of the imaging findings?

27 CR Colloquia

Iñaki Ruiz Trillo, Institut de Biologia

Evolutiva, CSIC-UPF

Embracing the unknown: the unicellular origins of animal multicellularity, immunity, cancer, and cognition - and the hunt for the missing ‘magnificent eight’

28 Happy Hour

> Oliveira-Maia lab & Orger lab

→ december

2 CISS

Scott Rennie

Latent subjective states: insights and interventions

William Walker

Modelling uncertainty in reinforcement learning

4 CR Colloquia

Ronen Segev, Ben-Gurion University

What can goldfish teach us about the neural basis of navigation?

5 Clinical Seminar

Cláudia Faria, GIMM

and University of Lisbon

Brain metastatic disease 360°: from patients to preclinical trials and back

Happy Hour

> da Silva lab & Machens lab

10 – 11 Curso

Colorectal MISST Immersive

Course

10 – 12 NIMSB Group

Leader Interviews

11 Exhibition

20 Years, 20 Stories Collection

CR Colloquia

Karin E. de Visser, The Netherlands

Cancer Institute and Leiden

University Medical Center

Unraveling tumor-immune crosstalk in breast cancer: towards personalised immune intervention strategies

12 CEO Happy Hour

15 COpS

Marta Moita

The use of defensive responses to study patterned sequences of behaviour

Joaquim Alves da Silva

Circuit mechanisms driving movement disorders

17 Christmas Gathering

BCRP/Breast Department

outreach

→ january

16 Ar Magazine Article

Eavesdropping on organs: immune system controls blood sugar levels

Talk / Round table

Simulação e alucinação: o que vem depois da arte?

Partner: Galeria Municipal do Porto

17, 24, 31 Online Campaign
Video series - Champalimaud Foundation, 20 years at the service of humanity

21 Ar Magazine Article

The potential - and pitfalls - of psychedelic therapies for psychiatric disorders

23 Courses and Training
Science Communication
Partner: ABC - UAlg

23 Ar Magazine Article
London taxi drivers have specialised human mental strategies for expertly navigating their city's streets, scientists find

27 Ar Magazine Article
Researchers uncover mechanisms of initiation and progression of the most common skin cancer in humans

28 School Visit to CF

Partner: Colégio Campo de Flores

School Visit to CF

Partner: Escola Secundária Loulé

29 International Animal Technicians Week

Internal activities: tours, meet-ups, special baking sale and quizzes

31 Workshop on

Science Communication

Ciência di Noz Manera mentoring programme

Partner: GIMM Foundation

→ february

6 Ar Magazine Article

The brand effect: how different MRI machines trip up AI

11 Ciência di Noz Manera - Phase I

Partners: Escola Dr Azevedo

Neves, Escola do Alto do Lumiar, IMM, RAISE

Online Campaign

International Women and Girls in Science

Kicking off the 4th edition of Ciência di Noz Manera mentoring programme

Science on the Walls

Visit to the Royal

Research Ship Discovery

Partners: British Embassy, RRS Discovery

School Visit

External Partner: Escola

Secundária Fernando Lopes

Graça

13 Ar Event

TheatAr: the neuroscience of human connections

and sense of self in theatre

Partners: Netherlands Institute

for Neuroscience; UCL Institute of

Cognitive Neuroscience; Playback

Theatre

28 School Visit

Partner: Centro Ciência Viva

de Bragança

28 Ar Magazine Article

How does our brain pull us into someone else's story?

→ march

5 Ar Magazine Article

FUTURE-AI: the roadmap to reliable clinical AI

10 School Visit

Partner: ISPA - Instituto

Universitário de Ciências

Psicológicas, Sociais e da Vida

11 – 12 Ciência di Noz Manera

– Phase II

Partners: Escola Dr Azevedo

Neves, Escola do Alto do Lumiar, GIMM, RAISE

12 Ar Magazine Article

The secret DNA circles fueling pancreatic cancer's aggression

19 School Visit

Partner: Spanish Institute

of Lisbon

25 School Visit

Partners: Escola Secundária

do Cartaxo, Academia

de Música de Santa Cecília

→ april

9 – 11 SciComPt Conference

Workshop: Joga, Corta, Cola:

Comunica Ciência

Talks: Identidade visual do

Metamersion, um ciclo de eventos

que cruza arte e ciência; Série

online “O que é isto?” - Olto

imagens, duas vozes, uma

identidade

Round tables: Coordenar equipas

(de comunicação de ciência);

quedas livres e paraquedas!;

Mercado de transferências

na comunicação de ciência;

Colaboração e competição, q.b.

13 Science on the Walls

Pop-up science market

Partner: DentuZona

14 – 24 Science on the Walls

Easter camp at Moinho da

Juventude, Amadora

Partners: Eco-Estilistas,

GIMM Foundation, Windcredible,

Business Council for Sustainable

Development (BCSD)

17 Podcast Episode
[Leafing Through Science - Episode 1: How the brain creates the body; whose leg is this? \(Part 1\)](#)

23, 30 Ciência di Noz Manera - Phase III
Partners: Escola Dr Azevedo Neves, Escola do Alto do Lumiar, IMM, RAISE

25 Online Campaign
Video marking the 51th anniversary of the Carnation Revolution in Portugal

30 Podcast Episode
[Leafing Through Science - Episode 1: How the brain creates the body; who moved my hand? \(Part 2\)](#)

→ **may**

1 Ar Magazine Article
[Researchers find neurons in the fruit fly's brain that tell it whether it's moving straight ahead... or not](#)

5 Offline and Online Campaign
[World Hand Hygiene Day](#)

7, 14, 21, 28 Ciência di Noz Manera - Phase III
Partners: Escola Dr Azevedo Neves, Escola do Alto do Lumiar, IMM, RAISE

8 Ar Magazine Article
[Parkinson's Disease might be detected much earlier with a simple brain scan](#)

10 MAAT x Festival Cumplicidades
[Speed dating with artists and neuroscientists](#)
Partners: MAAT - Museu de Arte, Arquitectura e Tecnologia, Festival Cumplicidades

14 Podcast Episode
[Leafing Through Science - Episode 2: Beyond the beat: the heart you didn't know you had](#)

15 Ar in a Bar Event
[\(Not\) Funny?!](#)
Partner: Xafarix Bar

16 Online Campaign
[National Scientists Day](#)

17, 20 Community
Painting Sessions
Preparation of the cover sleeves for the 2024 CR Annual Report

19 – 21 Pint of Science
at Fábrica Braço de Prata
[Neuro-cancer dialogues](#)
Partner: Pint of Science

20 School Visit
Partner: Escola Secundária Prof. Dr Flávio F. Pinto Resende - Cinfães

Visit from Clinical Trials Students
Partner: PharAcademy

21 School Visit
Partner: Penn Univ - USA

21 – 22 Oeiras Valley Science Festival Activities
[Talk on AI, Stands with Prism Goggles, Fruit Flies, Smell and Taste with the Brain](#)
Partner: Oeiras City Council

24 Podcast Episode
[EntreCultura: Literacia: saúde, arte e ciência, que equação?](#)
Partner: Instituto de Ciências Biomédicas Abel Salazar - Universidade do Porto

27 School Visit
Partner: Escola Secundária Cacilhas-Tejo

28 Podcast Episode
[Leafing Through Science - Episode 3: Inside OCD: white bears and blizzards](#)

30 Mostra Nacional de Ciência - Panel
[Incerteza e deslumbramento - o caminho da ciência e da inovação](#)
Partner: Fundação da Juventude

31 Visit from Astronauts
Partners: Agência Espacial Portuguesa, Association of Space Explorers

→ **june**

4 Ar Magazine Article
[Many possible futures: how dopamine in the brain might inform AI that adapts quickly to change](#)

5 Ar Magazine Article
[Wrapping up the 4th edition of the mentoring programme Ciência di Noz Manera](#)

11 Podcast Episode
[Leafing Through Science - Episode 4: Consciousness: from zombies to beast machines](#)

25 Podcast Episode
[Leafing Through Science - Episode 5: The brain below: mating marathons & the "love hormone" \(Part 1\)](#)

→ **july**

9 Podcast Episode
[Leafing Through Science - Episode 5: The brain below: clocks, cravings & changing tunes \(Part 2\)](#)

14 Ar Magazine Article
[Contactless device reveals timing of sleep disturbances due to breast cancer treatment](#)

23, 30 Online Campaign
[\(Re\)Leafing Through - Podcast Episodes 1 & 2](#)

→ **august**

6, 13, 20 Online Campaign
(Re)Leafing Through
- Podcast Episodes 3, 4 & 5

16 Ar Magazine Article
[Artificial intelligence can help in the non-invasive diagnosis of prostate cancer](#)

19 Participation in the programme Cientista Regressa à Escola
Partners: Native Scientists, Escola Básica de Mourão, Escola Básica de Granja, Escola Básica da Luz, Câmara Municipal de Mourão

→ **september**

2 – 6 Science on the Walls
[Summer camp at Cova da Moura, Amadora](#)
Partners: Moinho da Juventude, British Council

3 Ar Magazine Article
[Champalimaud Foundation joins global effort to create first brain-wide map of decision-making](#)

9 INDP & ICDP Orientation Week - Workshop
[Joga, Corta, Cola: Comunica Ciência](#)

11 Podcast Episode
[Leafing Through Science - Episode 6: Hurricanes in the brain: why cures elude \(Part 1\)](#)

19 Online Campaign - Video
[Postdoc Appreciation Week](#)

20 Online Campaign
[World Gynaecologic Cancer Day](#)

23 Ar Magazine Article
[More than a reflex: how the spine shapes sex](#)

24 Podcast Episode
[Leafing Through Science - Episode 6: Hurricanes in the brain: a new plan for neuroscience \(Part 2\)](#)

27 European Researchers' Night
[What Am I Looking At? \(Ciência + Animais\) x Speed Dating = Isto promete!](#)
[Uma Viagem Microscópica](#)
Partners: Pavilhão do Conhecimento - Ciência Viva, ITQB NOVA and Marina de Oeiras

29 Ar Magazine Article
John Krakauer - [From lab to life: reimagining neurotechnology at the CRN](#)

30 Science Snapshot Video
[Scientists read mice's 'thoughts' from their faces](#)

Science Snapshot Video - [Scientists read mice's 'thoughts' from their faces](#)

→ **october**

1 Pink October - Public Session
[Rastreio mamário personalizado: quando e porquê?](#)
Partners: Liga Portuguesa Contra o Cancro, MamaHelp

6 Ar Magazine Article
Juan Álvaro Gallego - [\(Re-\)Wiring brain and movement](#)

7 Science Kitchen
[Immersive dining experience - exploring science through the senses](#)
Partners: Paulo Amado, Edições do Gosto, David Jesus, MAPA, L'AND Vineyards, André Cruz, Feitoria, Altis, Marlene Vieira, Marlene, ZUMZUM Gastrobar, Marlene Vieira Food Corner at the Time Out Market, Ana Patrícia Correia, MaruPiu, ADLC, Audiovisuais, Alug'aqui, Fagor Professional, Makro, Nutrifresco, Prochef, SARA, @simplesmente vinho, Vividfarms

8 Podcast Episode
[Leafing Through Science - Episode 7: The science of imagination: away from the here and now \(Part 1\)](#)

Pink ctober
- Social Media Campaign
[Launching BCRP LinkedIn showcase page](#)

13 Workshop
[Joga, Corta, Cola: Comunica Ciência](#)
Partners: Centre for Neuroscience and Cell Biology, Centre for Innovative Biomedicine and Biotechnology, Centre for Interdisciplinary Studies, University of Coimbra

15 – 31 Pink ctober
[Interactive Mural](#)
Interactive space at the Breast Unit

19 – 25 Image Neuroscience and the Arts - 23rd Conference on International Exchange of Professionals - Talk
[From the unknown to the everyday - a world moved by creative and critical thinking](#)
Partners: Neurocognitive Image lab, Shanghai International Studies University

21 TEDxNOVA
- The Edge of Possible - Talk
[Levels of uncertainty: a map of AI ethics](#)
Partners: TEDxNOVA 2025, Nova University in Lisbon

23 – 25 Theatre about Science
International Conference - Talk
[TheatAr - a science outreach event on the intersection of theatre and neuroscience](#)
Partner: Theatre about Science International Conference

24 October Pink - Book Launch
[Cancro da mama: muito para além da dor](#)
Partner: Atlantic Books

29 School Visit
Partner: Escola Secundária Jorge Peixinho

→ **november**

1 Talk
[Future Archeology](#)
Partner: Mucho Flow, Guimarães

6 School Visit
Partner: Escola secundária Jorge Peixinho

12 School Visit
Partner: Fundação Salesianos

12 Podcast Episode
Leafing Through Science -
Episode 7: The science of
imagination: measuring the
invisible (Part 2)

14 Ar Magazine Article
Where science met the kitchen:
inside the first science kitchen at
the Champalimaud Foundation

17 Talk
Andar Dormir Comer Falar
Partners: Apneia Colectiva,
Bridges of the Unknown Art-
Science Residency Programme

18 20 Years, 20 Stories Collection:
Welcoming Internationals
A welcome beyond borders
- with Diego Carrasco
A community to carry you
through - with Mert Erginkaya

18 School Visit
Partner: Escola Secundária
Quinta do Marquês

20 20 Years, 20 Stories
Collection: Freedom to Try
A head with many hats
- with Albino J. Oliveira-Maia
Believing it into being
- with Marta Moita

24 Ar Magazine Article
Your gut's railway switch:
how the "second brain" decides
between attack and repair

25 20 Years, 20 Stories
Collection: Global Footprint
Local roots, global reach
- with Rui Costa
From school to global impact:
an international journey
- with Tiago Santos

26 Ar Magazine Article
In insects, the evolution
of feeding preferences is
rooted in the brain, and not
only in the peripheral taste
sensors, scientists find

27 20 Years, 20 Stories Collection:
Unexpected Career Paths
Letters to the future:
between mind and machine
- with Nuno Loureiro
Here's to new beginnings
- with Vânia Conde

28 School Visit
Partner: ISPA - Instituto
Universitário de Ciências
Psicológicas, Sociais e da Vida

→ **december**

2 School Visit
Partner: Agrupamento de Escolas
Dr Mário Fonseca Lousada

20 Years, 20 Stories Collection:
Technology and Tools Through Time
Humanity of and in the future
- with João Santinha
Bonsai and beyond: building
tools that build minds
- with Gonçalo Lopes

4 School Visit
Partners: Instituto Politécnico
de Setúbal, Universidade de Évora

20 Years, 20 Stories Collection:
Behind the Scenes
The invisible engine
- with Joaquim Teixeira
A story about curiosity,
ingenuity and reinvention
- with Cátia Feliciano

9 20 Years, 20 Stories Collection:
Linking Research and Clinic
An institution built for connection
- with Henrique Veiga-Fernandes
Between bench and bedside -
with Maria João Cardoso

10 Ar Magazine Article
Building an AI that "sees"
like we do

11 20 Years, 20 Stories Collection:
Building Community
Crossing bridges: connecting
people and purpose
- with Joe Paton
Building bridges: connecting
care and community
- with António Parreira

12 Special Happy Hour
Launching of 20 Years,
20 Stories Collection
CF Exhibition Centre

15 dec 2025 – 16 jan 2026
Public Exhibition
20 Years, 20 Stories Collection
CF Exhibition Centre

16 20 Years, 20 Stories
Collection: Then and Now
From a blank slate to
a grown institution
- with Zachary Mainen
The frontier of our dreams
- with Maria João Villas-Boas

17 Ar Magazine Article
Why transcranial magnetic brain
stimulation stands out as a
promising therapeutic solution
for bipolar depression

18 20 Years, 20 Stories
Collection: Defining Moments
An intangible spirit of
adventure and community
- with Megan Carey
A phone call and a blank page
- with Leonor Beleza

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