



# Foreword

#### Luis Serrano DIRECTOR



This past year has been remarkable for the CRG, marked by significant milestones and notable achievements. Celebrating our 20th anniversary, we organized a special symposium that highlighted our transformation from a modest laboratory into a globally recognized research institute. Over two decades, we have proudly hosted over 1,100 scientists and published nearly 4,000 papers, setting a strong foundation for the next few years of pioneering research.

It has also been a time for big changes. A significant transition occurred as we bid farewell to our colleagues at the Centro Nacional de Análisis Genómico (CNAG), which gained full independence on July 1st. CNAG now stands as the largest genomic analysis centre in Spain, engaging in substantial projects with researchers both locally and internationally. Best of luck to them!

In this annual report, we highlight our many successes ranging from new technological platforms, successful funding bids and new business collaborations. These accomplishments reflect the dedication and resilience of our researchers and operational staff. I am immensely proud of their efforts and excited for the future advancements we will achieve together.

Thank you for your continued support.

# A look back at the year

#### INSTITUTIONAL

To celebrate turning 20, we organised a special symposium which reflected on our journey from small lab in provisional spaces to a world-renowned research institute. Under the leadership of our two directors, we've been home to over 1,100 scientists and published nearly 4,000 papers to date. **To another 20 years!** 

We officially said **goodbye to our colleagues at the Centro Nacional de Análisis Genómico** (CNAG), which became a fully independent research institute on the 1st of July. It is the largest centre for genomic analysis in Spain, and is already carrying out large-scale projects with researchers from Catalonia, Spain and the international research community. In February, we **inaugurated the Joint Electron Microscopy Center at ALBA (JEMCA)**, a joint initiative with many other research institutes across Catalonia. The new facility, unique in Spain, features advanced microscopes for structural biology and materials science, enhancing our research capabilities and consolidating our position as a leader in core technologies.

We established the Committee to Assist Science Evaluation (CASE) at the CRG to enhance the transparency, equity, and effectiveness of our group leader evaluations, reinforcing our commitment to promoting excellence in science within our community. Dr. Nadia Halidi took part of a global initiative to help develop **the first unified guidelines for microscopy image reproducibility**. These guidelines aim to enhance scientific transparency and accuracy, marking a significant step towards improving data reliability in publications.

In April, **we launched 'InstaTalks'**, a series of live Instagram events featuring influencers interviewing young women scientists from the CRG. The series was viewed by more than 100 thousand users, highlighting the challenges and achievements of women in science to a younger, socialmedia savvy generation.



#### **FUNDING**

Dr. Elvan Böke was awarded a **2-million-euro ERC Consolidator Grant** for her research on oocytes. The funding will help Dr. Böke make continued breakthroughs in female fertility issues. Elvan has previously secured ERC Starting Grant in 2017, highlighting her continued contribution to understanding the fundamental mechanisms that keep oocytes healthy over many decades.

Dr. Isabelle Vernos was granted funding by the "la Caixa" Foundation to **validate new therapeutic targets for breast cancer**, focusing on the TTLL11 enzyme. This research could lead to more effective treatments, enhancing the efficacy of existing therapies and reducing their side effects. Dr. Juan Valcárcel is part of a UK-Spain consortium which **secured a 10-million-euro ERC Synergy Grant**. The funding supports his project, UNLEASH, aimed at understanding and manipulating the alternative splicing of genes—a breakthrough that could lead to new treatments for previously untreatable diseases.

Dr. Verena Ruprecht was also awarded an ERC Synergy Grant for the BREAKDANCE project. Alongside colleagues at EMBL Barcelona, the team will **decode cellular processes** that break symmetry during animal development, a fundamental aspect of biology that could have significant implications across various fields. Dr. Arnau Sebe Pedros received a 3.8 million euro grant from the Gordon and Betty Moore Foundation to **lay the groundwork for the Biodiversity Cell Atlas**, an ambitious quest to chart the diversity of cell types on Earth. The researchers will develop, test and benchmark techniques required to chart cell types in many different species.

#### **BUSINESS**

In March, we announced our collaboration with German space biotechnology start-up yuri GmbH to **explore biological processes in microgravity conditions**. The partnership will help us leverage space-based environments to advance research in human health, agriculture, and beyond, potentially leading to new biotechnological applications and strengthening our role in the emerging space economy.

Through Dr. Luciano Di Croce, the CRG **entered a partnership with Almirall** to tackle non-melanoma skin cancer, blending our research capabilities with the pharmaceutical company's clinical expertise. The collaboration will focus on developing new models and therapies to better understand and treat one of the most common cancers globally. CRG scientists led by Dr. Luis Serrano and Dr. Ariadna Montero **launched Orikine Bio**, a biotech startup focused on developing cytokine-based therapies for autoimmune diseases. Backed by a  $\in$ 5.5 million seed investment, the company leverages a novel platform to create engineered cytokines with the potential to transform the treatment of many diseases.

In November, our researchers Ben Lehner and Andre Faure, alongside alumni Júlia Domingo and Pablo Baeza, **cofounded ALLO X**. The company has a unique systematic and scalable platform which can map allosteric sites in a large amount of proteins, including 'undruggable' or hardto-target therapeutic targets.

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# **Research highlights**

## A 'living medicine' to combat lung infections

Researchers led by Dr. Luis Serrano and CRG spin-off Pulmobiotics have developed a 'living medicine' using genetically modified *Mycoplasma pneumoniae* to combat drug-resistant lung infections caused by *Pseudomonas aeruginosa*. This new approach effectively dissolves biofilms and enhances antibiotic efficacy in treated mice.

The work opens new avenues for treating resistant pulmonary infections, one of the leading causes of mortality in hospital settings.





## 'Tiny but mighty' gene fragments controlling blood sugar

A collaborative study between Dr. Juan Valcarcel and Dr. Manuel Irimia discovered the pivotal role of microexons in pancreatic islets and their influence on insulin secretion and blood sugar levels, highlighting their potential as therapeutic targets in type-2 diabetes.

The tiny gene fragments offer new targets for the precise control of a disease with an increasingly significant global health burden.

## **Ribosomes adjust for heart's energy demands**

Work led by Dr. Eva Novoa has uncovered how ribosomes adapt to meet the heart's energy needs, switching from a maintenance mode to an energy-boost mode during heart recovery and stress, like myocardial infarction.

The work lays the foundation for the development of ribosome-targeted heart therapies.

## Detailed mapping of the human epigenome

Dr. Roderic Guigó has worked with an international team of scientists to create the most detailed map of four personal human epigenomes, cataloguing epigenomic marks across various tissues, which could revolutionize personalized medicine by tailoring treatments to individual epigenomic profiles.

The work greatly enhances our understanding and treatment of diseases.

## tRNA biomarkers aid cancer diagnosis

Dr. Eva Novoa has developed Nano-tRNAseq, a new method for quantifying tRNA modifications from blood samples, offering a non-invasive diagnostic tool for cancer and potentially other diseases.

The tool, still preliminary, promises easier and more precise diagnosis of many diseases.

# New tool charts leukemia cell differentiation

Dr. Lars Velten has created CloneTracer, a new computational method to distinguish between healthy and cancerous stem cells in acute myeloid leukaemia, providing insights that could improve patient prognosis and therapy responses.

The work could enhance targeted leukaemia treatments.

## Antioxidant enzymes repair DNA damage

A study led by Dr. Sara Sdelci reveals how antioxidant enzymes repair DNA damage by mopping up harmful reactive oxygen species, offering potential new targets for cancer therapies that prevent cellular damage.

The work opens possibilities in the constant arms race between cancer, treatments and drug resistance.

# Proteins regulate cell division via 'treadmilling'

Dr. Thomas Surrey's group has identified key proteins that regulate microtubule 'treadmilling', a crucial process for proper cell division, shedding light on the mechanisms that ensure accurate chromosome segregation.

The fundamental concepts explored in this work may one day lead to advances in cancer treatment and cell biology.





# Ancient origins of neurons in tiny sea creatures

A study on placozoans, simple marine animals, suggests that their specialized cells may represent an evolutionary precursor to neurons, offering insights into how nervous systems evolved in early animals.

The work by Dr. Arnau Sebe Pedros enhances our understanding of how cells as complex as neurons arose on Earth.

# 'Double strike' slows aggressive breast cancer

The dual inhibition of LOXL2 and BRD4 proteins has been shown to effectively slow the growth of triple-negative breast cancer, suggesting a new treatment strategy for this challenging cancer type.

The work, led by Dr. Sara Sdelci, could transform treatment for aggressive breast cancer – one of the leading causes of women's mortality.

# Uncovering KRAS protein's secret vulnerabilities

Researchers have mapped the allosteric control sites of the KRAS protein, one of the most infamous oncogenes. The work reveals new drug targets that could lead to effective treatments for cancers driven by KRAS mutations.

The study by Dr. Ben Lehner could lead to new cancer treatments that can precisely control the behaviour of the notorious mutations.

# **Research and Scientific Services**



#### COMPUTATIONAL BIOLOGY AND HEALTH GENOMICS PROGRAMME Coordinator: Jorge Ferrer

Obtaining the entire genome sequence of any organism or individual human being is now a straightforward process. This technological breakthrough offers exciting challenges and opportunities to understand the functional significance of genome sequences. The Computational Biology and Health Genomics Programme deploys a broad array of strategies, ranging from statistical genetics, genome engineering, disease models, regulatory genomics and mathematical modelling in order to understand how genomes function and to gain insights into human disease and evolution.

2023 brought several exciting novelties. Manu Irimia spearheaded a new Evolutionary Medical Genomics joint programme, bringing together 14 groups from the CRG, Universitat Pompeu Fabra and the Institute of Evolutionary Biology. These groups utilise evolutionary insights to address important questions for human disease. Another significant effort was led by Arnau Sebé-Pedrós, who has a dual affiliation with the programme, and Roderic Guigó, both of whom co-organised a symposium at the CRG to launch the Biodiversity Cell Atlas, a global initiative to build whole-organism cell atlases across the diversity of life. Several outstanding studies in this programme included one by the Velten lab that used single-cell genomics to provide insights into differentiation pathways that lead to acute myeloid leukaemia (Beneyto-Calabuig, *Cell Stem Cell* 2023), another study coled by the Ferrer lab to shed light on lineage relationships in the adult pancreas (Magenheim, *Cell Stem Cell* 2023), and the EN-TEx resource of multi-tissue personal epigenomes & variant-impact models, co-led by the Guigo lab (Rozowsky, *Cell* 2023). Finally, the programme recruited a new member, Bernardo Rodríguez Martín, who will join us in 2024 as Independent Fellow. Bernardo will study the role of genetic variation in repetitive human genome sequences in human diseases.



#### QUANTITATIVE CELL BIOLOGY PROGRAMME Co-coordinators: **Vivek Malhorta and Isabelle Vernos**

The mission of the Quantitative Cell Biology programme scientists is to employ quantitative approaches to unravel the mechanisms through which a cell is compartmentalised, grows and divides, and how it is engineered and assembled into a tissue. The department co-cordinated by Vivek Malhotra (ICREA Research Professor, protein secretion mechanisms) and Isabelle Vernos (ICREA Research Professor, microtubule and spindle dynamics) includes Verena Ruprecht (ICREA Research Professor cell and tissue dynamics), Thomas Surrey (ICREA Research Professor, intracellular self-organisation), Elvan Böke (oocyte biology and cellular dormancy) and Adel Al Jord (liquid condensates in nuclear physiology). Numerous outstanding papers

have been published by department members, although the paper from the Malhotra lab, Wojnacki *et al., Nature Communications* (2023), merits particular mention. This paper reveals how cells carry out the controlled release of mucins and insulin, two crucial proteins for human health. The department also runs the <u>CATCAT</u> (Cell and Tissue Research in Catalonia) initiative to promote scientific interaction and research into cell and tissue engineering in Barcelona.

Malhotra, Surrey and Ruprecht are funded by ERC Synergy Grants and Böke by an ERC Consolidator Grant. Böke was awarded the Premi de Ciutat de Barcelona, the Sabri Ülker Foundation International Science Award, the Vallee Scholar Award, GCRLE (Global Consortium for Reproductive Longevity and Equality) Pilot Award and was a Finalist in the La Vanguardia Science Award in 2023. Al Jord received the Eppendorf European Investigator Finalist Prize and the Treilles Foundation Research Prize in 2023. Malhotra was awarded the Red Bird Visiting Scientists for the Institute of Advanced Studies at The Hong Kong University of Science and Technology in 2023.



GENOME BIOLOGY PROGRAMME Co-coordinators: Fátima Gebauer and Luciano Di Croce

The Genome Biology programme focuses on investigating the mechanisms that lead to the expression of our genome during homeostasis, cell reprogramming and disease. We use quantitative 'omics' technologies, mathematical modelling, cell biology and mouse genetics to understand chromatin organisation, transcription, splicing, mRNA translation, signalling and RNA modification. Mechanisms of gene expression control are studied in a variety of diseases including cancer (leukaemia, lymphoma, pancreatic and lung adenocarcinomas, gliomas, melanoma, breast cancer), Down syndrome and fertility disorders.

Transcriptional regulation groups study the effects of chromosome 21 dosage imbalance (Dr. Susana de la Luna),

epigenetic mechanisms in cancer and stem cells (<u>Dr</u>. <u>Luciano Di Croce</u>), single-cell epigenomics in lymphomas (<u>Dr. Renée Beekman</u>), and epigenetic regulation of cancer metabolism (<u>Dr. Sara Sdelci</u>). RNA biology groups study the identification and control of RNA modifications (<u>Dr. Eva Novoa</u>), the regulation of alternative splicing (<u>Dr. Juan</u> <u>Valcárcel</u>) and the regulation of mRNA translation (<u>Dr. Fátima Gebauer</u>). Cell reprogramming studies include differentiation and transdifferentiation in the hematopoietic system (<u>Dr. Thomas Graf</u>), and epigenetic reprogramming in embryogenesis and the germline (<u>Dr. Bernhard Payer</u>).

In 2023, Dr. Juan Valcárcel obtained an ERC Synergy Grant to learn how to harness the splicing code using small

molecules; Dr. Fátima Gebauer was appointed Vice-Chair of TRANSLACORE, a COST European Network on Translational control in cancer; and Dr. Luciano Di Croce was awarded the "AGAUR Llavor" and "Plan de Recuperación, Transformación y Resiliencia" supported by the EU to identify vulnerabilities in paediatric cancer; Dr. Eva Novoa, with the support of an ERC Starting Grant and an ERC Proof of Concept Grant, developed a new method that allows to quantify tRNA abundance and modifications, while Dr. Bernhard Payer revealed the important role of cohesin in the remodelling of the X-chromosome during reprogramming.



#### SYSTEMS AND SYNTHETIC BIOLOGY PROGRAMME Coordinator: **Pia Cosma**

In the Systems and Synthetic Biology programme we use multiple systems and scales: from microbes to entire organs and animals, from non-model animals to human genetics, evolution, neuroscience, and aging to tackle breakthrough questions with a common intent. We seek to explain, predict and build biological systems that lie at the base of any cell, tissue and organ function. The Systems and Synthetic Biology programme sets out to learn the foundation of life by transforming molecular, cellular and systems biology into quantitative and predictive engineering science.

Several important achievements were made in 2023. Manuel Irimia's group identified a pancreatic microexon programme that regulates glucose homeostasis (Jonàs Juan-Mateu et al. Nature Metabolism 2023). The group of Arnau Sebé-Pedrós mapped the evolution of neuronal development by identifying the effector gene modules and the emergence of the neuronal gene expression programme in placozoans (Najle et al. Cell 2023). All the PIs in the programme are very well-funded by local and external grants. Rosa Martinez and Nora Martin, Independent Fellows at the Barcelona Collaboratorium for Modelling and Predictive Biology, consolidated their research group by winning competitive Spanish grants, and Amelie Baud was awarded a Spanish grant to study host genetic effects on the gut microbiome. Noelia Ferruz was appointed Junior PI, she will join the programme in the coming months and will lead a working group on artificial intelligence for protein design.



CORE TECHNOLOGIES PROGRAMME Head: **Mònica Morales** 

The Core Technologies programme is comprised of seven Technology Units: Genomics, Proteomics, Bioinformatics, Protein Technologies, Advanced Light Microscopy, Flow Cytometry and Tissue Engineering, which provide researchers with state-of-the-art technologies and expertise to further research and to help the CRG to be a leading biomedical science centre in in the world.

In 2023, the CRG/UPF Flow Cytometry Unit secured very profitable agreements to develop new technologies and establish new services. Firstly, the Cytek company reached an agreement with the CRG and UPF to install 2 spectral analysers and 1 spectral cell sorter in the Flow Cytometry Unit. Cytek will also place 2 engineers in the unit to develop new methods, in collaboration with the Flow Cytometry personnel. Moreover, EMBL Barcelona purchased the Bigfoot cell sorter from the ThermoFisher company and installed it in our unit to ensure proper device maintenance and to offer all the users of the unit access to this technology when it is not being used by EMBL Barcelona. Finally, the BD FacsDiscover S8 cell sorter was purchased through competitive funding via the Plan Complementario de Biotecnología Aplicada a la Salud, co-funded by the Spanish Ministry of Science, Innovation and Universities with funds from the European Union NextGeneration EU, the Plan de Recuperación Transformación y Resiliencia (PRTR-C17.11) and the Catalan Department of Research and Universities. All this new equipment has made the CRG/UPF Flow Cytometry Unit one of the most advanced in the world, straddling all the latest technologies in this field.

The Plan Complementario de Biotecnología Aplicada a la Salud also permitted the procurement of several devices for the Genomics, Tissue Engineering and Protein Technologies unit, which will guarantee the deployment of a transversal single-cell and spatial transcriptomics platform. The platform will perform single-cell, organoid and CRISPR screening assays followed by high-content screening or transcriptomics characterisation. This platform will drive precision medicine projects for clinical research. The Core Technologies Programme is member of the Core Facilities Excellence Alliance <u>"Core For Life"</u>, which also includes EMBL (Heidelberg, Germany), VIB (Gent/Leuven, Belgium), MPI-CBG (Dresden, Germany), VBCF (Vienna, Austria), the FGCZ (Zurich, Switzerland), and the Institut Pasteur and Institut Curie (Paris, France). "Core For Life" is intended to share and consolidate procedures and uniting efforts in personnel training and technology validation while also sharing access to technologies across institutes.



#### EUROPEAN GENOME-PHENOME ARCHIVE (EGA) Director: **Arcadi Navarro** Team Leader: **Jordi Rambla**

The European Genome-phenome Archive (EGA) is a repository for the secure archiving and sharing of genetic and phenotypic human data. Jointly managed by the European Bioinformatics Institute (EMBL-EBI) and the Centre for Genomic Regulation, and in collaboration with the Barcelona Supercomputing Centre (BSC-CNS), the EGA provides an invaluable service to biomedical research worldwide by making data from biomedical genomics safe, discoverable and accessible and by fostering FAIR data management world-wide. The EGA is currently the benchmark service for the permanent archiving and distribution of personally identifiable genetic, phenotypic and clinical data.

The CRG's EGA Team co-led the foundation of the Federated EGA Network, which was officially launched in 2022. FEGA is

currently comprised of seven national nodes that can share genomic data across borders using a software technology designed and developed by our team. FEGA is expanding and is holding conversations with several potential nodes, several of them from outside Europe.

Furthermore, the team participates in numerous national and international funded activities in a wide range of fields. In 2023, we successfully completed 8 collaborative projects and four new international projects were awarded to the team, making a total of 16 running competitive grants. Also in the course of 2023, the EGA launched a new website and a renewed set of services with more seamless interfaces and new features for EGA users. We also completed the Beacon tool for the discovery of human genomic data, now approved as standard by the Global Alliance for Health and Genomics (GA4GH), and are currently heading international efforts to create a Beacon Network.

This is all made possible by a multidisciplinary team that now numbers 22 people, following the recruitment of four new members in 2023.

# **New Hirings**

# Three outstanding early-career scientists joined the CRG in 2023.



One prominent research focus is the relationship between physical forces and the remodelling of essential nuclear RNA-processing organelles known as biomolecular condensates. His groundbreaking research revealed that, in germ cells, cytoskeletal forces mechanically remodel and regulate nuclear condensates across scales for reproductive success. Whether or not somatic cells, which constitute the majority of cells in an organism, evolved this mechanical mechanism of organelle remodelling, continues to be a mystery. However, his new evidence indicates that this mechanism is deployed by mammalian somatic cells in diverse physiological and pathological contexts. His group therefore seeks to venture into these uncharted grounds of nuclear condensate mechano-regulation across somatic cell types in health and disease. The objective of this research is to decipher how cytoskeletal forces impact nuclear dynamics across scales, from organelle remodelling down to RNA-processing regulation, and how this physical link influences somatic cell division and specialisation.

Toaccomplishthisgoal, hisresearchtakesacross-disciplinary approach, bridging methods from systems, cell, molecular, and synthetic biology combined with computational and biophysical tools. This involves techniques such as protein multiplexing, advanced live and super-resolution imaging, optogenetics, spatial transcriptomics, biomimetic systems and force measurement and modulation assays. His group will work with different model systems of interest, which include but are not limited to primary mouse brain neural progenitors and multiciliated cells, mouse cell lines (e.g., muscle cells), and human cell lines (e.g., breast cancer cells, iPS cells).



#### **ADEL AL JORD**

Adel began his academic journey studying literature at the Sorbonne in Paris, eventually transitioning into Life Sciences at the École Normale Supérieure. Before that. in 2011, he was a pre-PhD Research Scholar Fellow in the Ronald O. Perelman Department of Dermatology at New York University (NYU Langone Health) in New York City. He subsequently obtained his PhD at the Biology Institute of the École Normale Supérieure in Paris and stayed on there as a Postdoctoral Fellow until 2017. In 2018, he took up a position as Postdoctoral Fellow at the Center for Interdisciplinary Research in Biology (CIRB) at the Collège de France in Paris. While at CIRB. in 2022 he was awarded a EMBO New Venture Fellowship in Systems Biology in the Department of Molecular Life Sciences at the University of Zurich in Switzerland. In November 2023, he joined the Quantitative Cell Biology Programme as Junior Group Leader.



#### **ROSA MARTÍNEZ**

Rosa obtained her PhD in Biomedicine in the laboratory of Prof. Jordi Garcia-Ojalvo at the Universitat Pompeu Fabra in Barcelona, Spain in 2018. She then moved to the laboratories of Prof. Jeremy Gunawardena and Prof. Angela DePace at Harvard Medical School as a Postdoctoral Fellow until the end of 2022. In January 2023, she joined the CRG and the Barcelona Collaboratorium for Modelling and Predictive Biology as an Independent Fellow.

What are the general principles that govern the emergence of life-enabling behaviour from a collection of (dead) molecules? How can we understand how a given behaviour emerges so that we can design interventions to modify it, for example to cure a disease? These overarching questions drive Rosa's research. To address them, she studies fundamental cellular regulatory processes, such as signal transduction and gene regulation, using theory and mathematical modelling, coupled with the analysis of experimental data from collaborating groups.

Life emerges from the dynamical interactions among many components at the molecular, cellular and supra-cellular levels. Therefore, when we study a given process, we can never account for all the elements involved in it with the same level of detail. Typically, we choose a subset of components to focus on ("system"), and abstract the rest into the so-called "context". However, the context and the system are coupled. The behaviour of a given system will typically depend on the context, although the how and the why are often not properly understood. This is precisely the problem that Rosa addresses. In addition to investigating the qualitative effects of the context through the presence of different molecular components, she is particularly interested in quantitative effects, prompted by differences in concentrations or reaction rates. Beyond providing a fundamental biological insight, she hopes that this research will ultimately facilitate practical progress in applied areas from synthetic biology to personalised medicine, where, for example, the behaviour of a gene circuit depends on cell type, and two different people provide two different contexts for the effects of mutations or drugs.



#### NORA MARTIN

After taking her PhD as a Gates Cambridge Scholar in the Sainsbury Laboratory & Department of Physics at the University of Cambridge in 2022, she became Postdoctoral Research Assistant in the Department of Physics of the University of Oxford in the United Kingdom. In July 2023, she joined the CRG and the Barcelona Collaboratorium for Modelling and Predictive Biology as an Independent Fellow.

Biological complexity at all levels, from single molecules to organisms, is a product of evolution. Therefore, quantitative and predictive models of evolution could have applications for a range of biological questions, from the evolution of disease-causing viruses to the analysis of evolved sequences in rapidly-growing macromolecular databases.

Nora's work uses modelling and theory to elucidate a key component of quantitative models of evolution: molecular and phenotypic changes introduced by variation through random mutations. This is addressed using the general framework of a genotype-phenotype (GP) map. GP maps describe how genotypic changes are translated to higherorder phenotypic characteristics. One central model in the field focuses on mutational changes in folded RNA secondary structures. The results from established models like RNA have broad relevance because they can often be applied to other examples, ranging from other macromolecules to beyond the molecular scale. By improving such GP map models, she aims to increase their biological realism and thus progress towards models that can be compared directly to the rapidly increasing amount of available biological data.

# Honours & Awards



Pilot Award, Global Consortium for Reproductive Longevity and Equality (GCRLE)

Vallee Scholar Awards 2023 Elvan Böke



Fellow of the Royal Society

Fellow of the Academy of Medical Sciences **Ben Lehner** 



Honorary Award for services to EGA, Catalan Association of Telecommunications and the Official College of Computer Engineering of Catalonia **Arcadi Navarro** 



Fundación Jesús Serra Research Awards **Manuel Irimia** 



EMBO Young Investigator **Eva Novoa** 

# **ERC grantees** at CRG



#### **STARTING GRANTS**



Elvan Böke



Arnau Sebé-Pedrós



Nicholas Stroustrup

Sara Sdelci



Luis Serrano

**ADVANCED GRANTS** 



**Ben Lehner** 



Renée Beekman



Lars Velten



Eva Novoa

## CONSOLIDATOR GRANTS



Manuel Irimia

## **SYNERGY** GRANTS



Verena Ruprecht



Juan Valcárcel



GRANTS

PROOF OF CONCEPT

Luis Serrano



Vivek Malhotra



Ivo Gut



**Thomas Surrey** 



Holger Heyn

# Facts & figures

(\*) Note: Data also includes information about CNAG-CRG budget managed by CRG during 2023. CNAG-CRG was part of the CRG from 1st July 2015 to 30th June 2023.

## **Publications**

**128** Total Publications



**73.4%** 1<sup>st</sup> Quartile Publications





## **Projects**

170

Total Ongoing Research Projects and Networks





56



are Other Ongoing H2020 and Horizon Europe Research Projects and Networks

are International Ongoing Research Projects (non-EC)



Total Ongoing Postdoctoral Fellowships

### Staff



### Gender







### **Advanced training**



**Events** 

## **Technology & business development**

**64** High-profile Seminars **23** Ongoing Valorisation

Projects

7

Spin-offs

**24** Active Patent

Families

20

Invention

Disclosures

16

Services. Scientific

Collaborations

& Licenses Agreements 226

Other Agreements

## **Communications, Public Engagement & Science Education**

MEDIA RELATIONS		<b>SOCIAL MEDIA</b> (by 31 <sup>st</sup> Dec 2023)		PUBLIC ENGAGEMENT AN SCIENCE EDUCATION	٩C
<b>1,954</b> Media Appearances		X Followers	Facebook	67	
		21,500	<b>4,657</b> Likes	Categories of Activities Organised	
210	1.680	YouTube	4,946		
Print Media	Online Media	294,588	Followers	<b>113,243</b>	
43	21	Channel views	LinkedIn Followers	Audience Neucheu	
Radio	ΤV	<b>2,153</b> Subscribers	24,600	<b>2,172 111,071</b> Students General Public	2

# **Financial report**

### SOURCES & USES MANAGED

#### Operating sources in M€

#### **Operating expenditures in M€**



<sup>(\*)</sup> Others includes: Director's Group + SaF + TBDO + Pre-Award and Communications (not included in 2022) + 383k€ of Financial expenses

Health

Generalitat de Catalunya Departament de Recerca erc GOBERNO MINISTERA DE ESTANA DE CENCI niversitats de Gestió **EMBO** d'Ajuts Universitaris excellence in life sciences i de Recerca

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### PUBLIC FUNDERS

# **TRUSTEES**

Generalitat de Catalunva

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centro de Investigación Biomedica en redi

U.S. Department of Defense

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#### Universitat $\mathbf{u} \boldsymbol{p}$ Pompeu Fabra Barcelona

Fundació "la Caixa'

Support from our trustees, public and private funders and sponsors is key to accomplishing the CRG's mission of discovering and driving knowledge for the benefit of society, public health and economic prosperity.

through different funding schemes and in a variety of activities in supporting our research and keeping our infrastructures state-ofthe-art. Further details on the projects co-financed by these funds can be found in the ERDF AND ESF FUNDS AT THE CRG

Generalitat de Catalunya Departament de Salut

B BARCELONA

Note: ERDF and ESF funds have been instrumental over the years

EUROPEAN UNION

National Institutes

of Health

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**ICREA** 





### **PRIVATE FUNDERS**







#### **SPONSORS**







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#### CENTRE FOR GENOMIC REGULATION

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TRUSTEES:

"la Caixa" Foundation

#### MEMBERS OF:



CORE FOR LIFE



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# Scientific highlights