

# CNIC NEWS AND VIEWS

# 1. VISITING SCIENTISTS AT THE CNIC



Spain's growing international profile in scientific research makes it an increasingly attractive destination for visiting scientists from all over the world. In 2022, 339 scientists and technicians came to the CNIC for research visits lasting from 2 to 12. Of these visiting researchers, 15% came from foreign institutions, from a total of 11 countries.

#### JESÚS SERRA FOUNDATION VISITING RESEARCHERS PROGRAM

The Jesús Serra Foundation and the CNIC have worked together since 2013 to bring visiting scientists to the CNIC within the framework of the Jesús Serra Foundation Visiting Researchers program.

The Program supports visits by international scientists to Spanish research centers, with the aim of building strong inter-institutional bonds and promoting new lines of research.

Jesús Serra Foundation President Federico Halpern explained that an important aim of the Program is to "ensure the continuity of research projects that might otherwise be paralyzed due to lack of resources."

After a hiatus during the Covid-19 pandemic, in 2022 the Jesús Serra Foundation and the CNIC resumed their participation and held a joint event to welcome the latest four visiting researchers joining the CNIC: Hesham Sadek, Guillermo Oliver, Benedetta Izzi, and Raffaele Strippoli. At the event, CNIC Scientific Directors Borja Ibáñez and Vicente Andrés and Managing Director Alberto Sanz were accompanied by Jesús Serra Foundation Vice President Laura Halpern, General Director Ignacio Gallardo-Bravo, and Deputy Director Susana Codina. This brings the total number of Jesús Serra fellows linked to the CNIC to 7, the preceding beneficiaries being Sandeep V. Pandit, Stuart Pocock and Gabriel Núñez.

CNIC General Director Dr. Valentín Fuster said that "This Visiting Researchers Program is an especially good match with the CNIC's core aim to attract international talented scientists in order to achieve excellence in cardiovascular research. I am sure that great things will come out of this collaboration".



### WOMEN FOR AFRICA FOUNDATION

In 2022, the CNIC participated as a host Center in the 8th call for fellowships from the Science by Women Foundation. In this call, 22 senior African women scientists were selected for research stays at 21 top Spanish research centers in the following areas: health and biomedicine, agriculture and food security, water, and energy and climatic change.

### EU CONTEST FOR YOUNG SCIENTISTS (EUCYS)

The CNIC participated in the EUCYS through special award consisting of a three-day stay to the CNIC for a scientist with an individual biomedicine project who, according to the jury, will benefit most from this stay. The award covered travel, meals, and accommodation. The winner, Lucia Cengelova, will visit the CNIC in June 2023 to learn about the Center's projects directly from our researchers. She will also learn about the infrastructure and technology available at the Center and how these are used to address and solve the challenges of cardiovascular health research.

This award was financed with CNIC Severo Ochoa Grant CEX2020-001041-S.

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Mujeres por África 8th Edition- Science by woman- Mujeres por África (mujeresporafrica.es)

Dr. Beatrice Olatundun Oluwatayo, NVRI, Vom, Nigeria was selected to visit the CNIC in the fall of 2023 to collaborate on studies related to cardiovascular health promotion. This collaboration was financed with CNIC Severo Ochoa Grant CEX2020-001041-S



# **2-AWARDS AND HONORS**

## MAHIDOL AWARD FOR MEDICINE PRESENTED TO DR. FUSTER

Her Royal Highness Princess Maha Chakri Sirindhorn of Thailand presented the 2020 Prince Mahidol Award for Medicine to CNIC Director Dr. Valentin Fuster. Due to the COVID-19 Pandemic, Dr. Fuster was unable to collect the award in person until 2022.

This prestigious award acknowledges Dr. Fuster's international leadership over the last forty years, achieved through his innovative contributions to cardiovascular medicine, both in research and clinic care, and more recently as an advocate for global cardiovascular health promotion throughout the world.



### DR. GUADALUPE SABIO BUZO AWARDED THE MEDAL OF EXTREMADURA



Guadalupe Sabio Buzo, who leads the group 'The role of the stress-activated kinases in the development of cardiovascular diseases, diabetes and cancer', received the Medal of Extremadura. The President of the Regional Government of Extremadura, Guillermo Fernández Vara, highlighted her work for "bringing science to society, to both adults and children". The winners of the Medal of Extremadura are proposed by citizens, businesses, and municipalities.

Dr. Sabio's work examines features of obesity, such as the altered fat metabolism, dysregulation of internal clocks, and cellular stress, which could be the cause of this disease. Her research also shows that men's higher chance of developing cancer than women might be due to differences in the production of hormones by fatty tissue.



Ganadores Premio CEU Ángel Herrera: ÉTICA Y VALORES

## DR. VALENTÍN FUSTER, GARLANDED WITH THE CEU ÁNGEL HERRERA AWARD

Dr. Valentín Fuster received the CEU Ángel Herrera award in the Ethics and Values category from the San Pablo CEU University Foundation. The award acknowledges Dr. Fuster's social commitment as a disseminator and a promoter of healthy habits. The jury also highlighted Dr. Fuster's important contributions to cardiovascular medicine throughout his extensive scientific career, which have made him the most cited Spanish researcher in history.

## THE FRANCISCO COBOS FOUNDATION GRANTS THE 16TH SCIENTIFIC CAREER AWARD TO DR. JOSÉ ANTONIO ENRÍQUEZ

The Francisco Cobos Foundation granted its 16th Scientific Career Award to the CNIC scientist José Antonio Enriquez Dominguez. The €50,000 prize was awarded in recognition of his contributions to the study of mitochondrial biogenesis, respiratory chain function, and mitochondrial pathophysiology and aging.



#### Valentín Fuster

Por su compromiso social como divulgador, atendiendo a la necesidad de la promoción de hábitos saludables con el objetivo de conseguir mejorar la salud integral de la población.



# THE AMERICAN COLLEGE OF CARDIOLOGY CREATES THE VALENTÍN FUSTER AWARD FOR INNOVATION IN SCIENCE

The American College of Cardiology (ACC) has instituted a new award in honor of Dr. Valentín Fuster, to be called the Valentín Fuster Award for Innovation in Science. The award has been established in recognition of Dr. Fuster's significant past and present contributions to cardiovascular medicine, which have made him a world leader in scientific research in this field. Additionally, the award underlines his innovative vision in the promotion of science through transforming mechanisms. The ACC further emphasized that this award recognizes Dr. Fuster's international leadership in promoting scientific research applied to health, with the aim of improving patient care and heart health. The annual award will be given each year to a selected doctor over the next 15 years.



## DR. ANDRÉS HIDALGO OBTAINS THE 18TH ANNUAL HEALTH SCIENCES AWARD FROM THE FUNDACIÓN CAJA RURAL GRANADA

The article "Mapping the immune behaviors of inflammation", by the CNIC research group led by Andrés Hidalgo, has received the 18th annual Health Sciences Award from Fundación Caja Rural Granada. The study, published in Nature (Jan;601(7893):415-421, 2022), presents "a new way of describing immune cells during the process of inflammation in living organisms". This is an important advance because, as Andrés Hidalgo explained, "inflammation, as a protective organismal response to injury or stress has both advantages and disadvantages." The Caja Rural Granada Foundation co-organizes this award with the Health Technology Park Foundation, with the support of the Regional Government of Andalusia, the University of Granada and the Colleges of Physicians and Pharmacists of Granada.



### DR. ANDRÉS HIDALGO, NEW MEMBER OF EMBO

CNIC researcher Andrés Hidalgo has been named a member of EMBO, the European Molecular Biology Organization. Dr. Hidalgo's incorporation brings the number of CNIC scientists in EMBO to six: José Antonio Enríquez, Miguel Ángel del Pozo, Miguel Torres, Pura Muñoz, and Francisco Sánchez Madrid.

EMBO members participate actively in the organization. The various committees participate in the EMBO Council and the advisory editorial boards of the EMBO press reviews. The committees also evaluate applications for EMBO funding and act as mentors to scientists at the start of their careers. The new member was welcomed formally at the EMBO annual members meeting, held from 26-28 October, 2022.



### DR. VALENTÍN FUSTER RECEIVES A PRESTIGIOUS AWARD FROM THE CARDIOVASCULAR RESEARCH FOUNDATION



Dr. Fuster, Director of the CNIC and Physician-in-Chief of Mount Sinai Hospital, was awarded the 2022 Transcatheter Cardiovascular Therapeutics (TCT) Career Achievement Award by the Cardiovascular Research Foundation (CRF).

The award recognizes Dr. Fuster's extraordinary contributions to the field of interventional cardiology and the transformation of patient care through his professional leadership, research projects, and mentorship of many healthcare professionals and researchers.



## THE 2022 COMMUNITY OF MADRID MARGARITA SALAS RESEARCH AWARD GOES TO DR. JOSÉ ANTONIO ENRÍQUEZ

The Community of Madrid awarded the Margarita Salas Research Career Award for 2022 to Dr. José Antonio Enríquez, head of the Functional Genetics of the Oxidative Phosphorylation System group at the CNIC, for his important contributions to the understanding of mitochondrial biogenesis and bioenergetics. The award, which includes a financial endowment of €42,000, recognizes Dr. Enríquez's achievements, mentorship, and national and international impact throughout his career.

### THE CNIC POLYPILL RECEIVES THE 2022 ABC HEALTH AWARD FOR BEST MEDICINE



Cardiovascular disease is often referred to as "the silent pandemic" and is currently the leading cause of death globally. Experts point out that the control of risk factors, together with the promotion of healthy lifestyle habits, have a clear impact on cardiovascular mortality.

Recently, the SECURE study, led by CNIC General Director Dr. Valentín Fuster, has shown that the cardiovascular polypill reduces

cardiovascular mortality after a first myocardial infarction by 33% (N Engl J Med. 2022 Sep 15;387(11):967-977).

This finding has enabled the polypill, developed by the CNIC and Laboratorio Ferrer, to win the Health Award for Medicine of the Year from the Spanish newspaper ABC. The award was presented by Cristobal Belda-Iniesta, Director of the Instituto de Salud Carlos III, to Oscar Pérez Albet of Ferrer.

Dr. Fuster had the idea of combining the three drugs prescribed after a heart attack into a single pill. This simplifies patients' medication regime and helps to counter forgetfulness. The polypill developed by the CNIC with Ferrer is not only more convenient, it is also more effective, reducing mortality after a heart attack by 33%.

Expressing his gratitude for the award, Dr. Valentín Fuster remarked that this drug is the result of a 15-year project and that it is a "very important example of public-private collaboration between the CNIC and Ferrer Laboratories".

### DR. PABLO GARCÍA PAVÍA RECEIVES THE COMCÓRDOBA-CAIXABANK RESEARCH AWARD

The Illustrious Official College of Physicians of Córdoba, through its partnership with CaixaBank, awarded the XX COMCÓRDOBA-CAIXABANK Research Prize to Dr. Pablo García Pavía. The prize, awarded on November 25, 2022, recognized Dr. García Pavía's study "Association of genetic variants with outcomes in patients with nonischemic dilated cardiomyopathy", published in the Journal of the American College of Cardiology (JACC 7 8, 1682-99, 2021).

Dr. García Pavía leads the Inherited Cardiomyopathies group at the CNIC and heads the Heart Failure and Familial Cardiopathies Section of the Cardiology Unit at Puerta de Hierro University Hospital. He is also an investigator in the Spanish research network on cardiovascular diseases (CIBERCV).



# 3 - GRANTS

# THE BRIGHTFOCUS FOUNDATION AWARDS AN ALZHEIMER'S DISEASE RESEARCH STANDARD AWARD TO A CNIC PROJECT.

The BrightFocus Foundation has awarded an Alzheimer's Disease Research Standard Award to the project "Understanding the impact of midlife cardiovascular risk factors & subclinical atherosclerosis on brain health: a role in Alzheimer's disease". The project is coordinated by CNIC researcher Dr. Marta Cortés Canteli together with CNIC General Director Dr. Valentín Fuster and Dr. Juan Domingo Gispert, a researcher at the CNIC and the Barcelonaβeta Brain Research Center.

The award provides project funding of \$100,000 a year for 3 years. Participants in the project include CNIC colleagues Dr. Borja Ibáñez and Dr. Fátima Sanchez Cabo, together with external partners Dr. Kaj Blennow and Dr. Henrik, Zetterberg at the University of Gothenburg (Sweden), who are world experts in plasma biomarker determination.

The project focuses on the longitudinal determination of specific plasma biomarkers of neuronal damage, neuroinflammation, and Alzheimer's disease in PESA-CNIC-SANTANDER study participants.

The BrightFocus Foundation is a nonprofit organization that supports



research and provides public education on brain and eye diseases, including Alzheimer's disease, macular degeneration, and glaucoma.

# DR. DAVID FILGUEIRAS RECEIVES THE YOUNG INVESTIGATOR AWARD FROM THE ASTRAZENECA FOUNDATION



The AstraZeneca Foundation Young Investigator Award in the category of Cardiovascular, Renal and Metabolic Diseases has been awarded to a CNIC project. The project, "Use of remote monitoring technology and cardiac electrical signal in patient-specific risk stratification for deterioration of heart failure and potentially lethal ventricular arrhythmias", is coordinated by Dr. David Filgueiras, who heads the Advanced Development on Arrhythmia Mechanisms and Therapies group at the CNIC and is a cardiologist at Hospital Clínico San Carlos.



# CNIC PROJECTS SELECTED IN THE "LA CAIXA" FOUNDATION HEALTH RESEARCH PROJECTS 2022 CALL FOR PROPOSALS

Funding has been awarded to four CNIC projects:

"Identifying new immune targets to treat cardiovascular diseases"- principal investigator Dr. Almudena R. Ramiro

"New approaches to regenerate cardiac tissue after infarction" – principal investigator Dr. Rui Benedito

"Identifying new biomarkers for the progression of heart failure" - principal investigator Dr. José Javier Fuster

The CNIC is also involved in a fourth project in the call. CNIC investigator Dr. Borja Ibáñez Cabeza is a participant in the project "Rapid diagnosis of coronary heart disease to prevent early mortality", a consortium project whose principal investigator is Teresa Correia of the Centro de Ciências do Mar do Algarve (CCMAR) (Portugal).

The CaixaResearch Foundation Health Research Projects 2022 call awarded funding to 33 biomedical and health projects at research centers and universities in Spain and Portugal.







# NEW EQUIPMENT FOR THE TRIMA@CNIC NODE OF THE DISTRIBUTED BIOMEDICAL IMAGING NETWORK (REDIB)



ReDIB is a distributed Unique Scientific and Technical Infrastructure (ICTS) that provides services in molecular and functional imaging and advanced and high-performance imaging. ReDIB is integrated in the current ICTS Map, approved by the Council for Scientific, Technological and Innovation on November 6, 2018, and currently consists of the Advanced Infrastructure for Translational Imaging (TRIMA) node at the CNIC, the CIC-biomaGUNE Molecular and Functional Imaging Platform, the Imaging Platform of La Fe University Hospital Research Foundation, and the Bio-imaging Unit at Madrid Complutense University. ReDIB is coordinated by Dr. Gonzalo Pizarro, Head of the Cardiology Department at Hospital Ruber Juan Bravo Quironsalud and a clinical researcher at the CNIC.

Each ICTS provides unparalleled facilities in its specialist area. ICTS carry out cutting-edge research of the highest quality and act as centers for the transmission, exchange, and preservation of knowledge, technology transfer, and the promotion of innovation.

ICTS are publicly owned infrastructure facilities that provide unique

services through competitive access.

In the 2022 national ICTS call, the following new equipment and facilities were approved for incorporation in the in TRIMA@CNIC node:

-A SPECT, PET, CT imaging laboratory that includes both the imaging tools (SPECT-CT equipment) and the setting up of a radiochemical laboratory necessary for the synthesis and characterization of new SPECT radiotracers.

The acquired system has three imaging modalities (PET, SPECT, and CT) that can be used to study 3-4 animals at the same time, increasing the capacity of the unit. It also allows studies of cardiac and/or respiratory synchronism for improved image quality.

In 2022, 17 projects accessed TRIMA@CNIC infrastructure through the Competitive Open Access mechanism, and 12 projects accessed through the Access on Demand mechanism. Detailed information at: https://www.redib.net/en-redib

# **4 - SCIENTIFIC EVENTS**

### CNIC CONFERENCE ON CARDIAC REGENERATION: FROM MECHANISMS TO THERAPY



Regeneration of the heart is one of the greatest challenges in scientific research. Unlike other animals, such as the salamander or zebrafish, humans are unable to regenerate their tissues and organs, but the reason for this remains a mystery.

This was the topic of the 2022 CNIC Conference, held November 10-12. The meeting addressed the latest advances in understanding the mechanisms of cardiac repair in naturally regenerating organisms and how these mechanisms can be stimulated in mammals, which lack this regenerative capacity. The CNIC Conference was organized by Miguel Torres, Nadia Mercader, Ely Tanaka, Hesham Sadek, and Mauro Giacca.

The meeting brought together more than a hundred international experts for three days to discuss the scientific challenge of achieving regeneration of the human heart to prevent heart failure.

Topics addressed at the meeting encompassed metabolism and the cardiomyocyte microenvironment during cardiac regeneration, cell-cell crosstalk, and the translational path to cardiac regeneration using genetic and tissue engineering approaches.



The participants at the meeting discussed current controversies in the field of cardiac stem cells, as well as the failure, to date, to translate experimental therapies into clinical benefit.



#### CNIC INVITED SEMINARS

In 2022, the CNIC Invited Seminar program brought 20 speakers, most of them from international institutions, to present their findings at the CNIC in seminars open to the scientific community. Highlights included presentations by Rafael Yuste, The Neuro Technology Center at Columbia University, New York, USA and Manuel Mayr, The James Black Centre, King's College, University of London, UK.





### CNIC PHDAY

The CNIC PhDay is an annual meeting organized by PhD students and postdoctoral researchers at the CNIC. The event provides an open forum for the exchange new ideas and networking.

The theme of the 8th PhDay was "from Lab to life" and focused on the translation of scientific discoveries into more refined treatments and technologies. More than 240 early-stage scientists applied to participate in the event, but sadly space limitations meant that only 200 could attend.

The event began with a welcome address from Cristóbal Belda, General Director of Instituto Carlos III. The first part of the program was introduced with an opening debate between Dr. Fuster and Pau Gasol about common diseases, people who inspired them, and motivations in life. This was followed by a round-table discussion about rare diseases chaired by the physician David Araújo, co-founder of the Alexandra Perault Progeria Association, Esther Martínez, and Vicente Andrés.

There then came three sets of parallel workshops about career options in science, (covering industry, startups, and academia), science diplomacy, stress management, and soft skills.



In the second session of the program, Fernando García López, Chariman of the Ethics Committee of Salud Carlos III, gave a talk on bioethics. The closing lecture was given by Fide Mirón, an expert in rare diseases, as well as a patient diagnosed with Gunther's porphyria, who gave wonderful, touching, and encouraging messages to young researchers.

# **5 - OUTREACH ACTIVITIES**

## WORKING WOMEN'S DAY: "WE DO RESEARCH AT THE CNIC"

To mark International Women's Day, the CNIC organized a round-table discussed called 'We do research at the CNIC'. The event was led by Dr. Pilar Martín, head of the Regulatory Molecules of Inflammatory Processes group. The round table aimed to give a comprehensive overview of research at the CNIC from a range of female perspectives. The other participants were Dr. Lorena Esteban, a Juan de la Cierva postdoctoral fellow in the Genetic Control of the Development and Regeneration of Organs group; Irene Fernández, laboratory technician in the Cardiovascular Imaging and Population Studies group; Mercedes Grima, FPU predoctoral researcher in the Tissue Regeneration group; Laura Lalaguna, FPI SO predoctoral researcher in the Molecular Reg-



ulation of Heart Failure group; and Beatriz López, FPI predoctoral researcher in the Hematovascular Pathophysiology group.

Each of the panelists explained their motivation for devoting themselves to science, what attracts them to scientific work, the projects they are involved in, and how they think their work contributes to society.

### THE CNIC PARTICIPATES IN THE 2022 OPEN ADMINISTRATION WEEK



Three CNIC researchers, Gonzalo Pizarro, Manuel Desco, and Valeria Caiolfa, gave informative talks within the framework of the Distributed Biomedical Imaging Network (ReDIB), a distributed Unique Scientific and Technical Infrastructure (ICTS) of the Ministry of Science and Innova-

tion. The CNIC participates in ReDIB through the Advanced Infrastructure for Translational Imaging (TRIMA).

The Open Administration Week is an initiative of the Open Government Partnership (Open Gov Week). Its goal is to bring government closer to citizens, according to the open government principles of transparency, accountability, citizen participation, and public integrity and collaboration. During the seminars, participants learned about the equipment and infrastructure available within ReDIB and its capabilities and applications for medical imaging.

The event was held in the CNIC auditorium and could also be accessed online.

### CNIC AT THE XXII SCIENCE AND INNOVATION WEEK IN MADRID



The CNIC participated in the XXII Science and Innovation Week in Madrid. This year, the CNIC ran three activities open to the public: a lecture on "Avoiding toxicity in cancer treatments", a visit to a CNIC laboratory, and a workshop titled "Dismantling the muscle".



### THE CNIC AT THE XIII EUROPEAN RESEARCHERS' NIGHT

The CNIC participated in the XIII European Researchers' Night in Madrid through two activities open to the public, which were attended by more than 100 participants.



# 6. SOCIAL & CNIC

## VISIT BY THE MINISTER OF SCIENCE AND INNOVATION, DIANA MORANT



The Minister of Science and Innovation, Diana Morant, visited the CNIC, where she met with CNIC General Director Dr. Valentín Fuster, Director of the Instituto de Salud Carlos III Cristóbal Belda, CNIC Managing Director Alberto Sanz, Pro-CNIC Foundation President Luis de Carlos and Director Iciar Areilza, CNIC Scientific Director Dr. Borja Ibáñez, and CNIC Basic Research Director Dr. Vicente Andrés.

During her visit, Diana Morant toured the center's laboratories and met with researchers Dr. Almudena Ramiro and Dr. Inés García Lunar. The Minister described the CNIC as a center of international prestige and emphasized that its work allows advances in the early diagnosis, prevention, and treatment of cardiovascular disease, which remains the main cause of death in Spain.

## THE ALEXANDRA PERAUT PROGERIA ASSOCIATION MAKES A DONATION TO THE CNIC TO FUND RESEARCH INTO THIS DISEASE

The Alexandra Peraut Progeria Association made a donation of €6,500 to the Molecular and Genetic Cardiovascular Physiopathology Laboratory at the CNIC, directed by Dr. Vicente Andrés. The money will support the group's research into Hutchinson-Gilford progeria syndrome.

The donation comes from the income of the book "A girl in twenty million", which tells the story of Alexandra Peraut. The book is aimed at raising the profile of progeria and normalizing minority diseases.

Dr. Andrés' group at the CNIC, which also forms part of the Spanish cardiovascular disease research network (CIBERCV), has been working on this disease for years and recently created the HGPSrev mouse, the first animal model that can suppress the appearance of progerin in a temporally and spatially controlled manner.

This new preclinical model has demonstrated that it is never too late to treat the disease and that therapies directed exclusively at the cardiovascular system can produce very significant therapeutic benefits.

