

o ruta de **ANNUAL REPORT 2024**



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Aerial image taken on November 10, 2024, by an ICMAN-CSIC M300RTK drone equipped with a LiDAR sensor over the Barranco del Poyo, near Massanassa, to analyse the damage caused by the DANA that occurred on October 29, 2024. Credits: SeaDron (ICMAN-CSIC).

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Helena Kruyer



ANNUAL REPORT 2024

LETTER FROM THE PRESIDENT



ELOÍSA DEL PINO MATUTE
PRESIDENT OF THE CSIC

The 2024 Report reflects some of the milestones that, from a scientific and management point of view, we have collectively achieved at the Spanish National Research Council (CSIC). Our institution has secured its position among the leading public bodies of European and global science and, more importantly, has managed to demonstrate its solid commitment to research of excellence that aims both to expand the frontiers of human knowledge, and to contribute to administrations and society being able to address the main challenges they face linked to the green transition, the guarantee of health, responsible digitalisation, the strategic autonomy of our economy, and democratic quality.

The more than 16,000 people who work in the 124 institutes and centres of the CSIC have developed more than 6,900 scientific projects, both national and international, with a global funding of more than 1,700 million euros. Our scientific production has reached 15,538 publications, which are a reflection of diverse, rigorous, and impactful research activity. Furthermore, 169 new priority patents have been applied for, 1,847 contracts and agreements have been signed, and 10 new technology-based companies have been created.

The 525 international scientific agreements in force in 73 countries, the newly launched 215 European projects, and the 566 active international collaborations reflect a global vocation and our capacity for scientific leadership. In

addition, we have supported more than 1,800 researchers in training, directed nearly 2,000 academic papers, and offered high-level specialisation programs. Science for society has also been a priority, with more than 19,000 outreach activities, the consolidation of initiatives that, such as Science City or Science in the Neighbourhood, reach all citizens.

It is impossible to list all the scientific findings that have occurred in 2024 because they are so numerous. However, I have asked artificial intelligence to select some of them to represent the diversity of scientific activities carried out at the CSIC. In the field of astrophysics, it is worth highlighting the discovery of a new giant planet with an extremely low density, comparable to candy floss, which defies current models of planet formation; the publication of the first data from the J-PAS cosmic survey; or the detection of complex organic molecules in space. The LISA mission was given the green light as the first space-based gravitational-wave observatory, and instruments were developed for future missions to Uranus.

In **biology and biomedicine**, new models have been used to study premature ageing, and the genetic mechanisms involved in cardiac development have been studied. Key molecular factors in metabolic diseases were also identified, and progress was made in understanding neuronal plasticity and neuroinflammation. The CSIC has developed an innovative graphene-based neuroimaging

technique that opens up new possibilities for the treatment of neurological diseases. New genetic clues in breast cancer have been identified, and vaccines have been designed against canine leishmaniasis and African swine fever.

In **agricultural and food sciences**, research on the gut microbiome, native ferments for cheeses with designation of origin, and sustainable strategies to improve crops and reduce the use of fertilisers were highlighted. Bioactive compounds were identified in olive oil by-products, and technologies were developed for enzyme production and mycotoxin detection. In addition, the role of pollinating insects in plant phenotyping was studied, and solutions were proposed for the recovery of the Mar Menor through sustainable agricultural practices and bioremediation with oysters.

In the area of **environment and climate change**, extreme phenomena such as marine heat waves were analysed, and critical thresholds were identified for the Amazon rainforest. Desertification, plastic and heavy metal pollution were studied, and models were developed to predict volcanic eruptions. In the marine field, underwater observatories were installed, and technologies for autonomous monitoring of the ocean were deployed.

The **physical, chemical, and materials sciences** brought innovations such as the most porous zeolite known, catalysts for green hydrogen, CO₂ capture technologies, and

vanadium flow batteries. Flexible thermoelectric devices, mussel-inspired surgical adhesives, and portable MRI systems were developed. In quantum optics, it was possible to guide light at the nanometre scale and, in emerging computing, oscillating neural networks with superior energy efficiency were designed.

The **social sciences and humanities** addressed issues such as gender biases in education and research, urban accessibility using LiDAR technology, and the restoration of historical heritage. Neolithic houses were documented in Jordan, 30 years of the Tusculum project were celebrated in Rome, and the CLARIAH-ES office was inaugurated to strengthen digital research in the humanities.

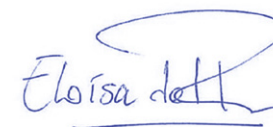
Among all the activities of the year, I would like to mention several milestones. In 2024, the CSIC turned 85 years old and celebrated it in the best possible way: recognising the value of scientific contribution, specifically, that of Eva Nogales de la Morena, who was awarded the Extraordinary Medal of Scientific Merit.

Our institution has shown its responsibility by approving the First Sustainability Plan of the CSIC, which makes us an institution at the forefront of the country's scientific bodies and public administrations. Also this year, the President of the Government, Pedro Sánchez, announced at the CSIC the creation of the National Office for Science Advice for the development of better public policies.

Finally, in 2024, the Disaster and Emergency Advisory Protocol was approved, which was activated, at the request of the Minister of Science, Innovation, and Universities, Diana Morant, to provide scientific advice in the context of the DANA that occurred in October of the same year. The DANA affected several autonomous communities, especially the Comunitat Valenciana. More than 200 volunteers from 27 CSIC centres participated in these advisory tasks and, to this day, continue to contribute their knowledge to the management of the crisis, demonstrating the value of science in the most critical moments and an unrivalled vocation for public service. This year, we want to dedicate the CSIC Report to them and the victims.

Once again, this report is testimony to the collective effort of a public institution that works every day to generate knowledge, train talent, transfer innovation, and contribute to a fairer, more sustainable and resilient future. Thank you to all the people who make it possible.

Eloísa del Pino



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PRESENTATION

CSIC

1ST PUBLIC RESEARCH
INSTITUTION
IN SPAIN

3RD
EUROPEAN

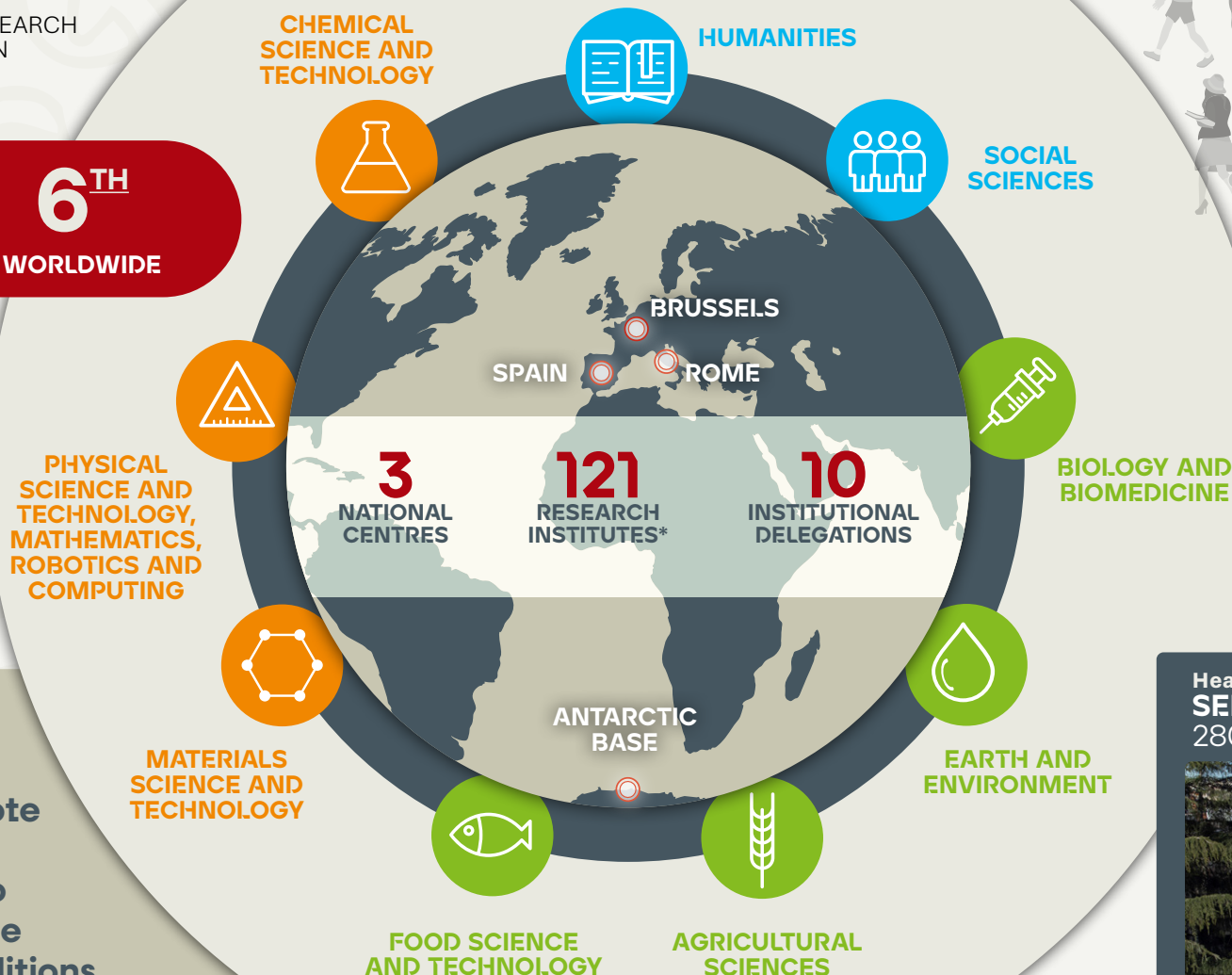
6TH
WORLDWIDE

MEMBER
OF THE
EUROPEAN
SCIENTIFIC



Its
objective
is to promote
scientific
progress to
improve the
living conditions
of the population
and the planet.

It covers all
scientific disciplines



MORE THAN
16,000
PEOPLE
PROMOTING
RESEARCH

85
ANNIVERSARY

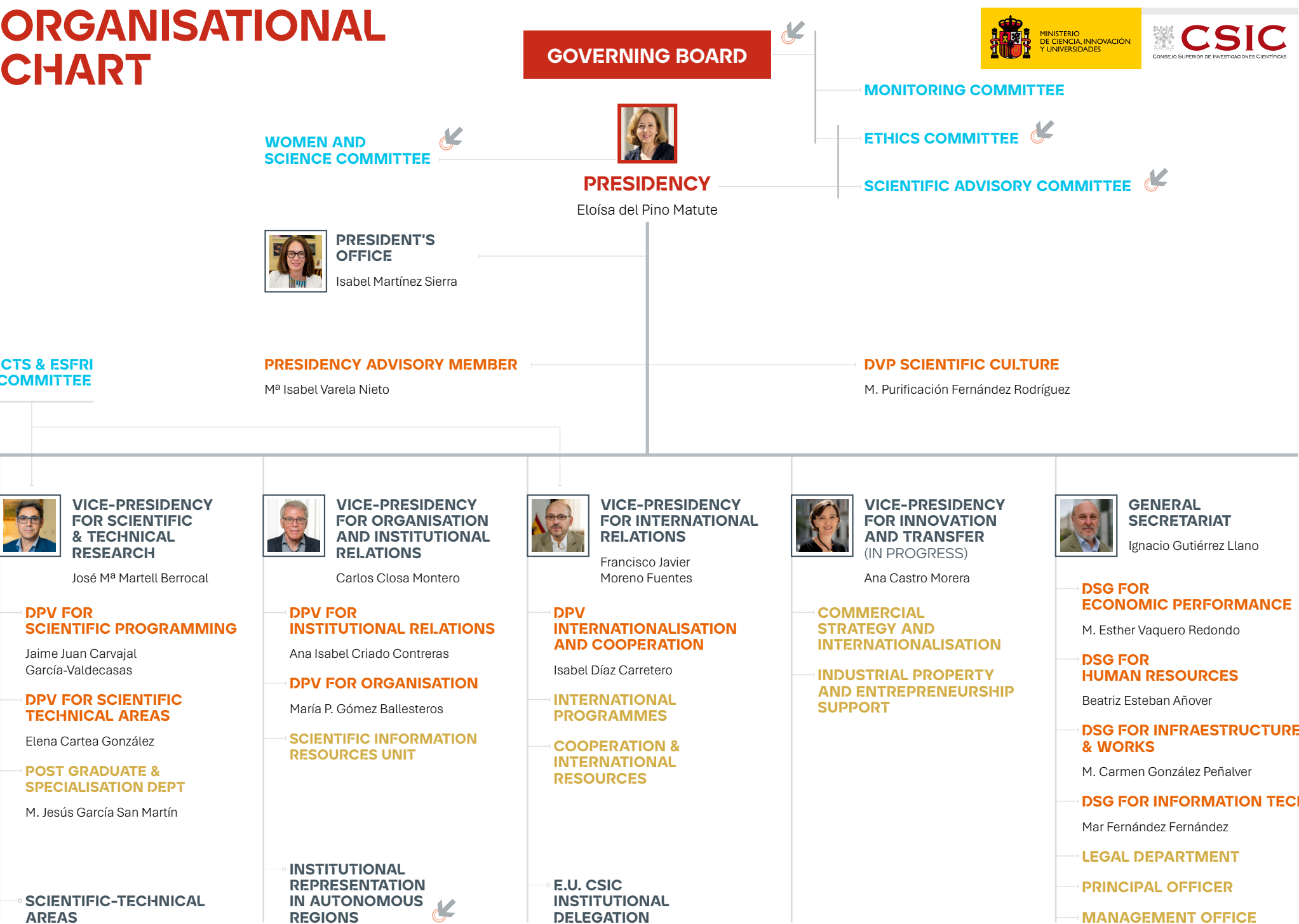
Headquarters
SERRANO, 117
28006 MADRID



WWW.CSIC.ES

* CSIC institutes and centres are identified in the Report by their acronyms. The annexe (page 96) contains the complete glossary of all of them.

ORGANISATIONAL CHART



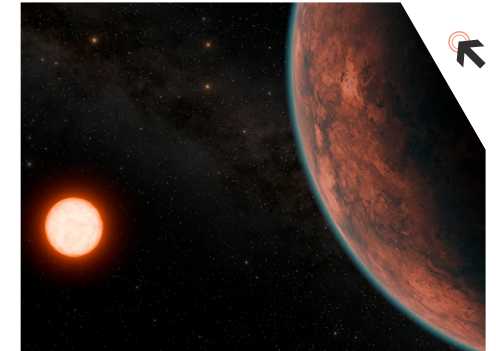
CSIC IN THE MEDIA



A high-resolution methodology allows quantifying micro and nanoplastics in water.



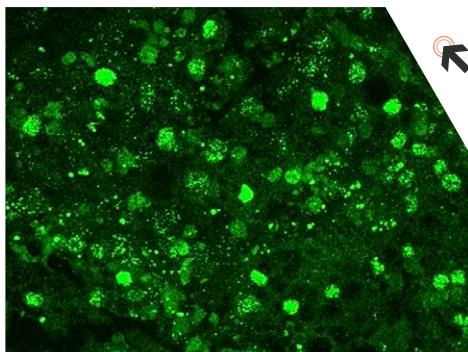
A team led by the CSIC dates the first Neolithic vessels in the Mediterranean.



Intriguing Earth-sized planet found.

4,199

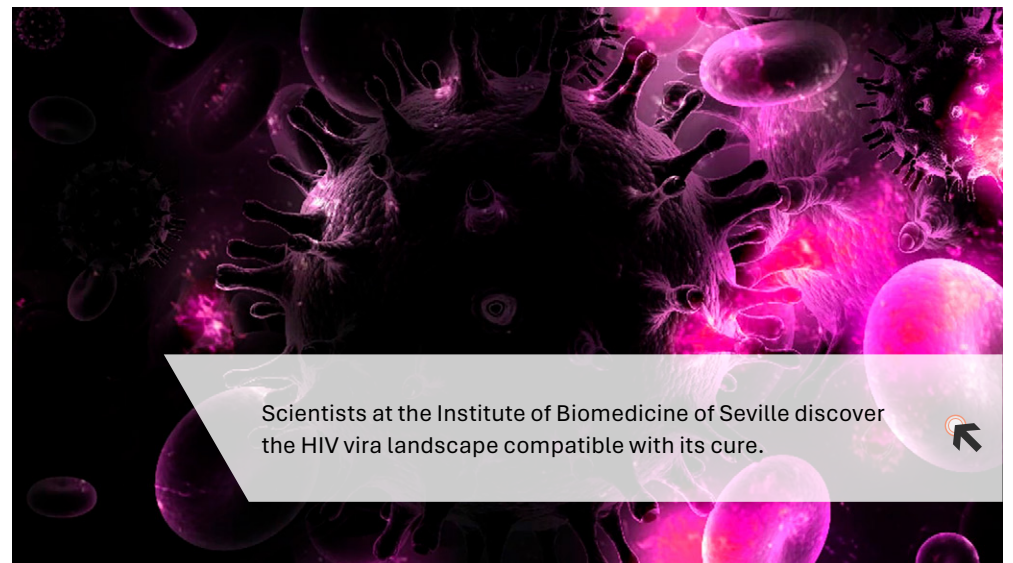
PRESS
APPEARANCES



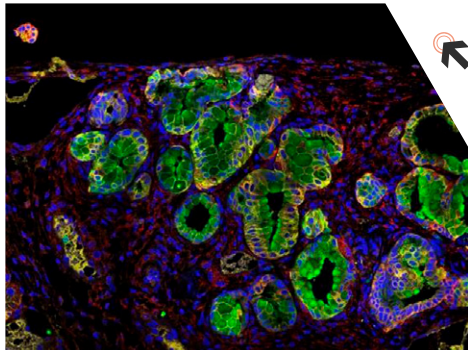
A study led by the CSIC identifies an essential protein in the regulation of obesity.



Scientists from the CSIC's Severo Ochoa Molecular Biology Centre confirm the presence of the Highly Pathogenic Avian Influenza virus in Antarctica for the first time.



Scientists at the Institute of Biomedicine of Seville discover the HIV virus landscape compatible with its cure.



An antibacterial protein, a new therapeutic target against pancreatic cancer.



CSIC staff document, for the first time, the transoceanic flight of a group of butterflies.



CSIC researchers obtain the first genetically modified lamb in Spain.



Scientists create a large database with the genetic information of the microbes in our food.

4,253

TELEVISION / RADIO APPEARANCES

Researchers from the CSIC find scenes of warriors from the 6th-5th centuries BC engraved on a slate plaque at the Tartessian site of Casas del Turuñuelo.



The President of the Government, Pedro Sánchez, presents the National Office for Science Advice at the headquarters of the CSIC. The CSIC reinforces its public policy strategy with a Unit that will support the National Office for Science Advice.

Jenny Nelson of Imperial College and Eva Nogales of the University of California-Berkley awarded first JAE Chairs grants.

The CSIC discovers three new species of wild roses in the Islas Canarias.

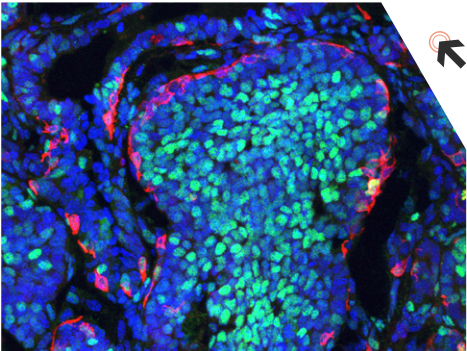




A 'salt giant' caused the extinction of much of the Mediterranean biodiversity more than 5 million years ago.



Scientists discover a new biological entity that inhabits the human body.



A new study reveals that cancer cells compete for and against tumour development.



The CSIC is building a unique pilot plant in Europe for the recycling of critical materials.



The CSIC commemorates 85 years of research at the service of society.



Scientists discover how dopamine separately activates motivation and reinforcement.



Scientists develop a genomic sequencing method that accelerates the diagnosis of tuberculosis from the patient's sputum.



The CSIC will collaborate with the emergency management and advisory bodies of the National Civil Protection System.

PROJECTS AND ACTIONS

5,687

CURRENT*
PROJECTS AND ACTIONS

*Including those approved and completed in 2024.

TOTAL FUNDING

€1,206,074,680.45

ANNUITY 2024

€291,622,629.53

1,980
PROJECTS AND ACTIONS
APPROVED

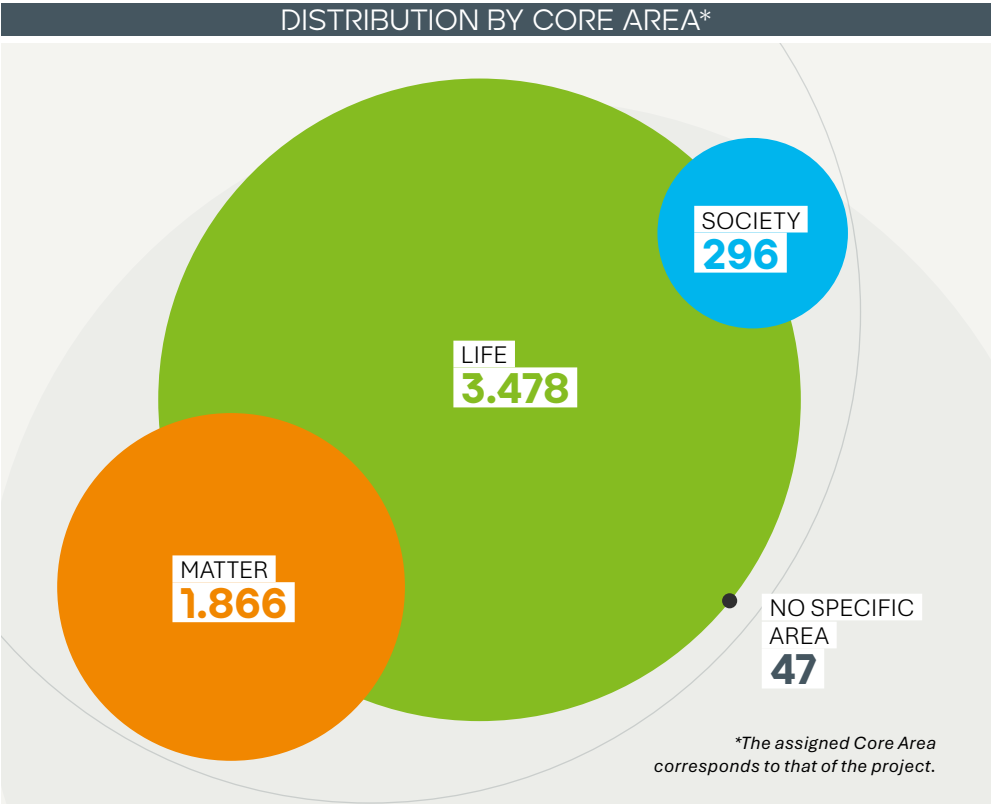
TOTAL FUNDING
€347,994,852.49

ANNUITY 2024
€198,656,774.34

1,226
PROJECTS AND ACTIONS
COMPLETED

TOTAL FUNDING
€163,184,982.48

ANNUITY 2024
€16,415,998.71



DISTRIBUTION BY AUTONOMOUS REGION		
ANDALUCÍA	→	854
ARAGÓN	→	251
CANARIAS	→	60
CANTABRIA	→	84
CASTILLA-LA MANCHA	→	21
CASTILLA Y LEÓN	→	103
CATALUÑA	→	843
COM. FORAL DE NAVARRA	→	23
COMUNIDAD DE MADRID	→	2,188
COMUNITAT VALENCIANA	→	532
EXTREMADURA	→	11
GALICIA	→	251
ILLES BALEARS	→	109
LA RIOJA	→	33
PAÍS VASCO	→	24
PRINCIPADO DE ASTURIAS	→	152
REGIÓN DE MURCIA	→	148

Source: BDC.

PROJECTS

1,216

CURRENT*
PROJECTS

*Including those
initiated and
completed in
2024.

TOTAL FUNDING

€502,983.960.70

386

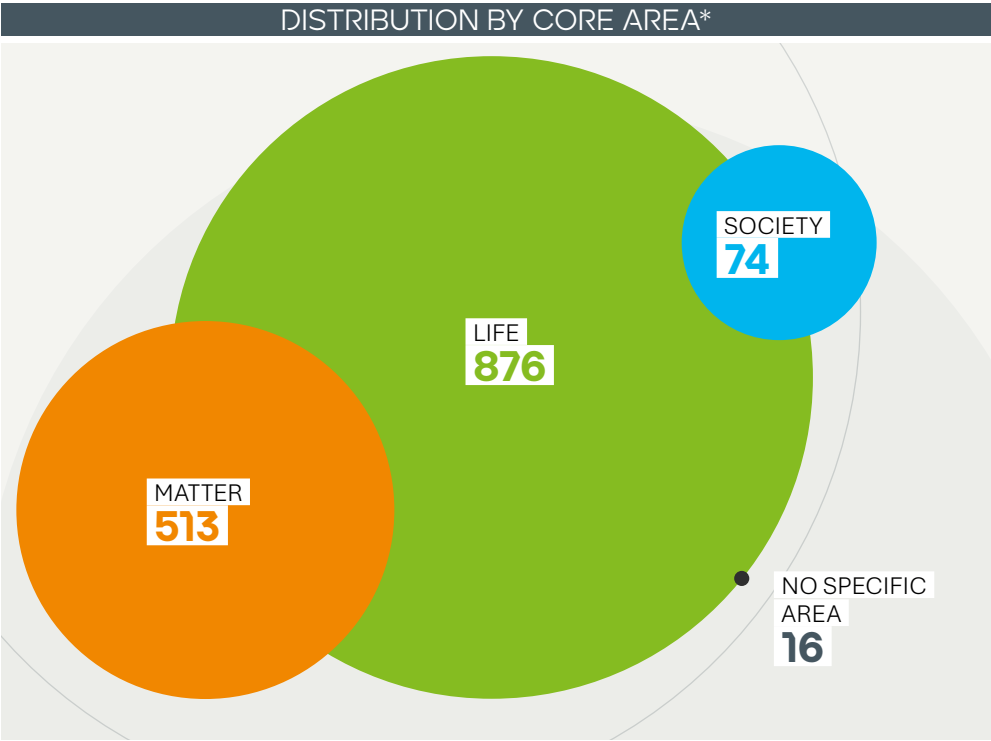
PROJECTS
INITIATED

TOTAL FUNDING
€138,683,961

232

PROJECTS
COMPLETED

TOTAL FUNDING
€68,351,771.50



*The data shown here reflects a thematic overlap in terms of area and autonomous community.
Therefore, the sum of these will always be greater than the sum of the number of projects.

DISTRIBUTION BY AUTONOMOUS REGION

ANDALUCÍA	170	COMUNITAT VALENCIANA	120
ARAGÓN	74	EXTREMADURA	1
CANARIAS	13	GALICIA	53
CANTABRIA	23	ILLES BALEARS	53
CASTILLA Y LEÓN	12	LA RIOJA	8
CATALUÑA	333	PAÍS VASCO	12
COM. FORAL DE NAVARRA	2	PRINCIPADO DE ASTURIAS	25
COMUNIDAD DE MADRID	545	REGIÓN DE MURCIA	35

Source: BDC.

SCIENTIFIC PRODUCTION

15,538 PUBLICATIONS	13,167 ARTICLES	151 BOOKS	17 BOOKS IN WOS/SCOPUS	768 BOOK CHAPTERS	346 BOOK CHAPTERS IN WOS/SCOPUS	1,452 OTHER TYPOLOGIES
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DISTRIBUTION BY CORE AREA							
	PUBLICATIONS	ARTICLES	BOOKS	BOOKS IN WOS/SCOPUS	BOOK CHAPTERS	BOOK CHAPTERS IN WOS/SCOPUS	OTHER TYPOLOGIES
SOCIETY	867	528	54	2	163	28	122
HUMANITIES	588	305	50	2	140	15	93
SOCIAL SCIENCES	280	223	5	-	23	13	29
LIFE	8,379	6,902	63	10	458	211	956
BIOLOGY AND BIOMEDICINE	2,449	1,937	4	1	95	69	413
EARTH AND ENVIRONMENT	3,525	2,997	43	5	177	53	308
AGRICULTURAL SCIENCES	1,857	1,516	10	2	142	65	189
FOOD SCIENCE AND TECHNOLOGY	768	643	6	2	51	27	68
MATTER	6,275	5,777	21	2	123	100	354
PHYSICAL SCIENCE AND TECHNOLOGY, MATHEMATICS, ROBOTICS AND COMPUTING	3,160	2,993	12	1	51	43	104
MATERIALS SCIENCE AND TECHNOLOGY	1,807	1,651	5	1	37	31	114
CHEMICAL SCIENCE AND TECHNOLOGY	1,445	1,265	5	-	36	27	139

In the data reflected here there is a thematic overlap at two levels, at the area level and at the category level. Accordingly, the sum of them will always be greater than the sum of the number of documents. To avoid artificially inflating the data, the totals are always made taking into account the total number of documents (avoiding overlaps between aggregates).

Source: GesBIB / April 2025.

DISTRIBUTION BY AUTONOMOUS REGION							
	PUBLICATION	ARTICLES	BOOKS	BOOKS IN WOS/SCOPUS	BOOK CHAPTERS	BOOK CHAPTERS IN WOS/SCOPUS	OTHER TYPOLOGIES
ANDALUCÍA	3,145	2,647	14	1	129	60	355
ARAGÓN	723	645	3	2	23	11	52
CANARIAS	131	113	-	-	4	2	14
CANTABRIA	287	274	-	-	1	1	12
CASTILLA - LA MANCHA	175	151	-	-	6	1	18
CASTILLA Y LEÓN	413	329	1	-	10	5	73
CATALUÑA	2,983	2,604	23	3	107	48	249
COMUNIDAD DE MADRID	5,355	4,494	72	3	340	145	449
COMUNIDAD FORAL DE NAVARRA	31	28	-	-	-	-	3
COMUNITAT VALENCIANA	1,591	1,388	10	4	56	32	137
EXTREMADURA	44	23	7	-	11	1	3
GALICIA	447	356	11	1	44	17	36
ILLES BALEARS	328	291	-	-	4	3	33
LA RIOJA	78	71	-	-	5	3	2
PAÍS VASCO	314	285	-	-	5	5	24
PRINCIPADO DE ASTURIAS	351	314	3	-	6	4	28
REGIÓN DE MURCIA	281	239	1	-	14	9	27
ROMA (ITALIA)	9	1	2	1	3	1	3

In the data presented here, there is thematic overlap at the level of the autonomous community. Therefore, the sum of these will always be greater than the sum of the number of documents.

Source: GesBIB / April 2025.

CoARA

Approval of the **CSIC CoARA Action Plan 2023-2027** and publication in Zenodo (open general-purpose repository developed under the European OpenAIRE program and operated by CERN).

OPEN ACCESS

- **33,555** records were created in the multidisciplinary open-access scientific repository, DIGITAL-CSIC. The deposit rate of CSIC output in the multidisciplinary open access scientific repository, DIGITAL-CSIC reached **96.28%**.
- **2,908** Articles financed in the Open Access Publishing Support Program (PROA).

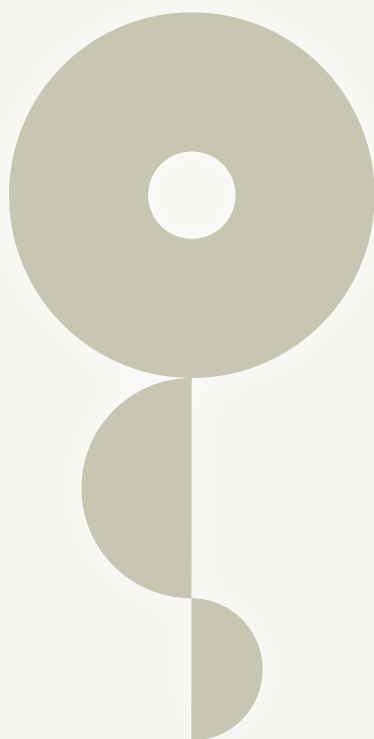
EVALUATION AND IMPACT OF CSIC SCIENTIFIC PUBLICATION

- **720,000** publications indexed in GesBIB.
- **36,116** authors with an ORCID identifier that enables the identification of the CSIC as an institution and the impact of its publications.

EXCELLENCE

EXCELENCIA
SEVERO
OCHOA

17
CENTRES



EXCELENCIA
MARÍA
DE MAEZTU

5
CENTRES



INSTITUTE FOR ENVIRONMENTAL
DIAGNOSTICS AND WATER STUDIES



INSTITUTE OF
MATHEMATICAL SCIENCES



MATERIALS SCIENCE
INSTITUTE OF BARCELONA



INSTITUTE OF MARINE SCIENCES



INSTITUTE OF THEORETICAL PHYSICS



AGRIGENOMICS RESEARCH CENTRE



INSTITUTE OF
CHEMICAL TECHNOLOGY



CATALAN INSTITUTE OF NANOSCIENCE
AND NANOTECHNOLOGY



INSTITUTE OF
ASTROPHYSICS OF ANDALUSIA



SEVERO OCHOA MOLECULAR
BIOLOGY CENTRE



INSTITUTE OF NEUROSCIENCES



PLANT BIOTECHNOLOGY
AND GENOMICS CENTRE



INSTITUTE OF AGROCHEMISTRY
AND FOOD TECHNOLOGY



CENTRE FOR ECOLOGICAL RESEARCH
AND FORESTRY APPLICATIONS



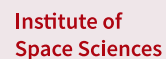
INSTITUTE OF NANOSCIENCE
AND MATERIALS OF ARAGON*



INSTITUTE
OF CORPUSCULAR PHYSICS*



NATIONAL BIOTECHNOLOGY CENTRE*



INSTITUTE OF SPACE SCIENCES



INSTITUTE OF INTERDISCIPLINARY
PHYSICS AND COMPLEX SYSTEMS



MEDITERRANEAN INSTITUTE
FOR ADVANCED STUDIES



ANDALUSIAN CENTRE FOR
DEVELOPMENTAL BIOLOGY



BARCELONA INSTITUTE
OF MICROELECTRONICS*

*New accreditations.

ADVANCED GRANT

REPRO-SCAPES**ANA MARÍA BRAVO MORENO**

INSTITUTE OF PUBLIC GOODS AND POLICIES

PEBBLES**ANAELLE JULIE MAURY**

INSTITUTE OF SPACE SCIENCES

SPOTLESS**GUILLEM ANGLADA ESCUDE**

INSTITUTE OF SPACE SCIENCES

SYNERGY GRANT

UNFOLD**VÍCTOR BORRELL FRANCO**

INSTITUTE OF NEUROSCIENCES

DARKQUANTUM**MARÍA TERESA PUIG MOLINA**

MATERIALS SCIENCE INSTITUTE OF BARCELONA

TALKINGPHAGES**ALBERTO MARINA MOREN**

INSTITUTE OF BIOMEDICINE OF VALENCIA

CONSOLIDATOR GRANT

PLAS-FIGHTER**ÁLVARO SAN MILLÁN CRUZ**

NATIONAL BIOTECHNOLOGY CENTRE

MIMIR**ÁNGEL LUIS CASADO PERAMATO**INSTITUTE FOR NATURAL RESOURCES
AND AGROBIOLOGY OF SALAMANCA**OPENS****IZASKUN MAITE JIMENEZ SERRA**

ASTROBIOLOGY CENTRE

THERMO2DEAL**MIGUEL MUÑOZ ROJO**

MATERIALS SCIENCE INSTITUTE OF MADRID

SPAINONSTAGE**IDOIA MURGA CASTRO**

INSTITUTE OF HISTORY

CHEM2SENSE**RUTH PÉREZ FERNÁNDEZ**

MARGARITA SALAS BIOLOGICAL RESEARCH CENTRE

ECCO**ÁNGEL GOÑI MORENO**

NATIONAL BIOTECHNOLOGY CENTRE

STARTING GRANT

SOCLIM**GABRIEL CHIDO**

INSTITUTE OF GEOSCIENCES

WHEP**EDUARDO MANUEL
AGUILERA FERNÁNDEZ**INSTITUTE OF ECONOMICS,
GEOGRAPHY AND DEMOGRAPHY**UPLIFT****TOMÁS DE CAMPOS AQUINO**INSTITUTE FOR ENVIRONMENTAL
DIAGNOSTICS AND WATER STUDIES**PASSAGE****BLANCA AUSÍN GONZÁLEZ**INSTITUTE FOR NATURAL RESOURCES
AND AGROBIOLOGY OF SALAMANCA**PHOENIX****ANDREA GONZÁLEZ MONTORO**INSTITUTE OF INSTRUMENTATION
FOR MOLECULAR IMAGING**DISTANTDUST****IRENE SEYEDE SHIVAEI**

ASTROBIOLOGY CENTRE

Premios Nacionales de Investigación



NATIONAL RESEARCH AWARDS

ICM
MIGUEL CANALS ARTIGAS
NATURAL RESOURCES SCIENCES

IFIC
M. CARMEN GARCÍA GARCÍA
PHISICAL, MATERIALS AND EARTH SCIENCES

NATIONAL RESEARCH AWARDS FOR YOUNG PEOPLE

IMEDEA
VÍCTOR VILARRASA RIAÑO
ENGINEERING AND ARCHITECTURE

IBE
ROSA MARÍA FERNÁNDEZ GARCÍA
NATURAL RESOURCES SCIENCES

IO
AITOR VILLAFRANCA VELASCO
KNOWLEDGE TRANSFER

CABIMER
PATRICIA ALTEA MANZANO
MEDICINE AND HEALTH SCIENCES

ICN2
MARÍA ESCUDERO ESCRIBANO
CHEMICAL SCIENCE AND TECHNOLOGY

IAE
MAR REGUANT RIDÓ
LAW AND ECONOMIC AND SOCIAL SCIENCES



40

INSTITUTES BEGAN THE PATH TO EXCELLENCE

BY OBTAINING THE **ASPIRA-MaX** "JOSEFA BARBA",
ACCREDITATION, WITH AN INDIVIDUAL ENDOWMENT OF €20,000

IH	ICIPIT	INGENIO	CEAB
CEBAS	CIB	EEZ	I2SYSBIO
IBBTEC	IBE	IBF	IBFG
IBGM	IBIS	IBMCC	IBVF
ICIFOR	ICVV	IDAEA	IIBM
INIA	IRNASA	GEO3BCN	CAR
CENIM	CFM	ICB	ICMM
ICMS	ICTP	IETCC	IIQ
IMN-CNM	IMSE,CNM	INCAR	IO
IQFR	IQM	IQOG	IRII



IPE
SERGIO M. VICENTE SERRANO
ENVIRONMENTAL PROTECTION

6

INSTITUTES ARE IMPLEMENTING THE EXCELLENCE PLAN

BY OBTAINING THE **ASPIRA-MaX** "SAGRARIO MARTÍNEZ-CARRERA" ACCREDITATION WITH AN ENDOWMENT OF UP TO €300,000

IPP	IMF
EBD	IGME
IQAC	ITEFI

TRANSFER AND INNOVATION

INDICATORS 2024

PROTECTION

169

PRIORITY PATENT APPLICATIONS

77

OTHER FORMS OF PROTECTION

246

TOTAL
ASSETS PROTECTED

973

PORTFOLIO OF PATENT FAMILIES IN FORCE*

76%

PERCENTAGE OF PRIORITY RIGHTS THAT ARE EXTENDED WITH PCT APPLICATIONS TO THE FOLLOWING YEAR*

*Only patents and utility models. SOURCE: SICTI. SOURCE: BDCE-PII+ORI, ETC2024.

PROMOTION OF TECHNOLOGIES

85

LICENSED ASSETS

3,316.82

ROYALTIES FROM OPERATING CONTRACTS (IN THOUSANDS OF €)

Source: BDCE-PII+ORI y CTRID.

COLLABORATION

1,847

NEW CONTRACTS AND AGREEMENTS SIGNED

41,011.90

CONTRACTED FUNDING (IN THOUSANDS OF €)

Source: CTRID-Cap.5.

ENTREPRENEURSHIP

10

KBCS (KNOWLEDGE-BASED COMPANIES) CREATED IN THE YEAR

Source: BDCE-PII+ORI, ETC2024.

CSIC open lab

STRENGTHENING PUBLIC-PRIVATE COLLABORATION

CSIC PROGRAMME
COCREA

*Promoting solutions
to global challenges*

CHALLENGES



COMPANIES



CSIC RESEARCHERS



Challenges in the sustainable and healthy agrifood chain



and circular economy



CSIC living lab

BOOSTING TRANSFER TO THE PUBLIC SECTOR

*Promoting Public Procurement of Innovation
by responding to the needs of public administrations*



29
FOREST
FIRES



21
WATER



17
ENERGY

*Nº of solutions offered in the three areas

CSIC emprende

PROMOTING ENTREPRENEURSHIP

ACTIVA-T

*Transformation of research
results into business*

36
PROJECTS
MENTORED

IMPULSA-T

*Active promotion
of high-potential
science-based projects*

27
INTERESTED
PROJECTS

CSIC alianzas

STRENGTHENING RELATIONSHIPS WITH THE SURROUNDING COMMUNITY

*Promotion of new collaboration formats and meeting spaces
in the Spanish innovation ecosystem*

CÁTEDRAS PROGRAMME CSIC

6

Archaeology and patrimony,
biomedicine, ecology and biodiversity,
sustainability, and the environment

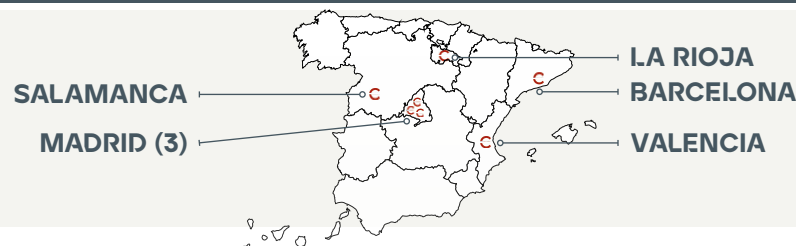
STRATEGIC AGREEMENTS

7

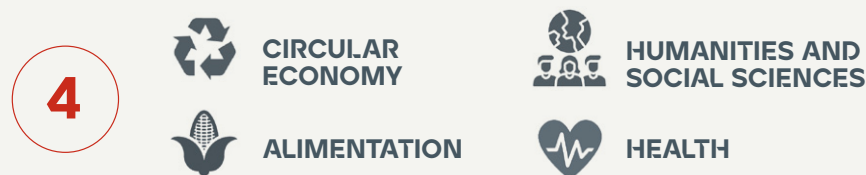
Health, agrifood, energy

Initiative to publicise the potential of the CSIC to investigate issues of great social and economic interest, bringing relevant personalities from companies, foundations, public administrations, and the media closer to the CSIC facilities.

ITINERARIES HELD



SUBJECT AREAS



171 PARTICIPANTS

COMPANIES

50



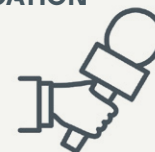
PUBLIC ADMINISTRATIONS

41



COMMUNICATION MEDIA

35



CSIC RESEARCH STAFF

45



ITINERARIES

"MICROBIOTA AND HEALTH IN CHILDHOOD" Itinerary held in Madrid. It was attended by CSIC staff (Management team and research staff from six institutes: IATA, CIAL, IPLA, IEGD, IPP, and CAR); Alimerka Foundation, Botin Foundation, Save the Children, "La Caixa" Foundation, Danone Institute, and UNICEF, and by the public administrations, the Pan American Health Organization, the Department of Public Policy of the Cabinet of the Presidency of the Government, and the General Directorate of Childhood, Family, and Birth Promotion of the Comunidad de Madrid.



"PLASTICS IN THE CIRCULAR ECONOMY" itinerary held in Barcelona. It was attended by CSIC staff (Management team and research staff from two institutes: IDAEA and IATA); ANARPLA (National Association of Plastic Recyclers), SEAT, LEITAT, the Torres Family, BIOINICIA, Cebimat, Unio Nuts, and by the public administrations, Office C, ACCIO, and ARC (Waste Agency of Cataluña).

MILESTONES

Innovation and knowledge transfer, essential pillars for transforming scientific progress into a driver of economic and social development.



Group photo of the attendees at the CSIC headquarters in Madrid.

TTO CIRCLE MEETING IN MADRID TO PROMOTE EUROPEAN INDUSTRIAL TRANSFORMATION

Organised by the CSIC and the European Commission, through the Joint Research Centre (JRC), it brought together the technology transfer offices of the leading European research institutions. The importance of new financing instruments for knowledge transfer, reducing intellectual property barriers, and supporting entrepreneurship in creating science-based companies was highlighted. Formulas were analysed to make European industry more competitive, sustainable, and less dependent on third countries in critical technologies.



Signing of the agreement.

FRAMEWORK AGREEMENT BETWEEN THE CSIC AND THE SPANISH BIOINDUSTRY ASSOCIATION (ASEBIO) TO PROMOTE BIOTECHNOLOGY

The agreement will promote the transfer of knowledge and scientific results from the CSIC to the productive sector. It will strengthen initiatives such as the Network of Services for Biomedical Translation (**RST BIOMED**), a "one-stop shop" for collaboration in the discovery and development of drugs, with the contribution of AseBio to identify the needs of biotechnology companies.



"CSIC Technologies 2024" Catalogue.

THE CSIC PRESENTS A CATALOGUE OF ITS 100 TECHNOLOGIES WITH THE GREATEST COMMERCIAL POTENTIAL

It compiles disruptive technologies in various areas of knowledge, such as agriculture, biotechnology, energy, and humanities, which are at an advanced level of development, proposes innovative approaches, and offers advantages over those already commercialised.

PRESENTATION OF THE 1ST EDITION OF THE CSIC TRANSFER AND ENTREPRENEURSHIP AWARDS

These awards recognise and draw attention to the transfer and entrepreneurship activities of CSIC research staff, promoting an entrepreneurial culture. Categories:

1. Technology Transfer:

IATA: development of nanofibre-based filtration materials against COVID-19.

IO (novel category): personalised lens geometry to improve cataract and presbyopia operations.

2. Knowledge Transfer:

IATA: development of protocols for the detection of SARS-CoV-2 in wastewater.

IFCA: Interactive Atlas on the Effects of Climate Change.

3. Entrepreneurship:

MBG: recovery of the Narcea Rose.

IO (Novel Category): SureVision Ophthalmic Instrument.

The **ITQ** was awarded for its transfer track record.



Award ceremony of the 1st Edition of the CSIC Transfer and Entrepreneurship Awards at the CSIC headquarters in Madrid.

INTERNATIONAL PROJECTION OF THE CSIC



3RD

EUROPEAN
PUBLIC RESEARCH
INSTITUTION



6TH

WORLD
PUBLIC RESEARCH
INSTITUTION

525 AGREEMENTS IN FORCE

73 COUNTRIES

27
NORTH
AMERICA

273
EUROPE

58
ASIA AND
OCEANIA

137
CENTRAL / SOUTH
AMERICA

30
AFRICA

OWN AND CO-MANAGED
INTERNATIONALISATION
PROGRAMMES

332
ACTIONS IN FORCE

€2.73M
DEVELOPMENT
COOPERATION FUNDS
INVESTED

€4.81M
TOTAL INVESTMENT
IN ACRI GRANTS

OTHER EUROPEAN AND
INTERNATIONAL INITIATIVES

171 PROJECTS STARTED IN 2024 **€38.5M**

H2020/HE

215 PROJECTS
STARTED IN 2024 **€100.18M**

964
PROPOSALS
SUBMITTED

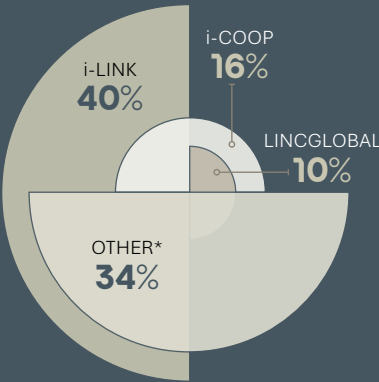
76
ACTIVE
POSTDOCTORAL
FELLOWSHIPS

566
ACTIVE
COLLABORATIVE
PROJECTS

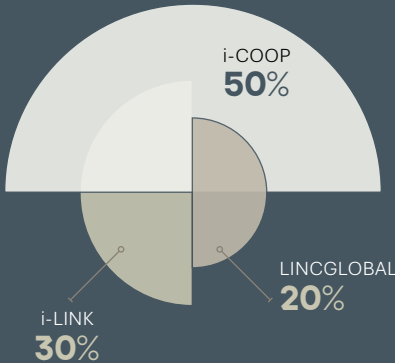
73
ACTIVE INDIVIDUAL
ERC GRANTS

MOBILITY OWN CALLS

283
CSIC STAFF STAYS ABROAD



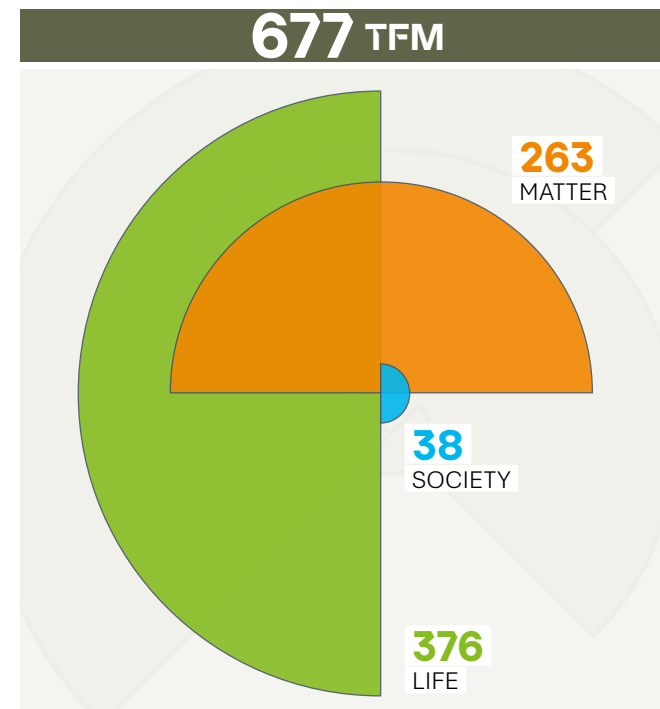
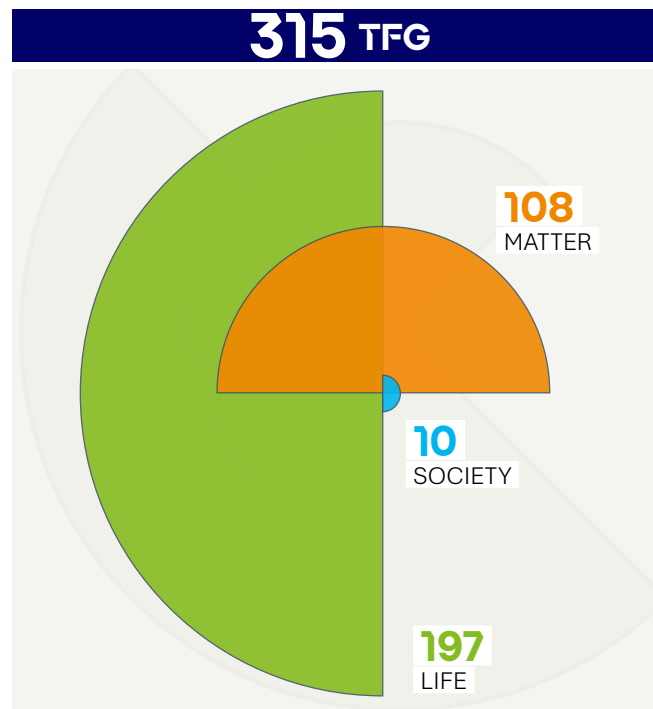
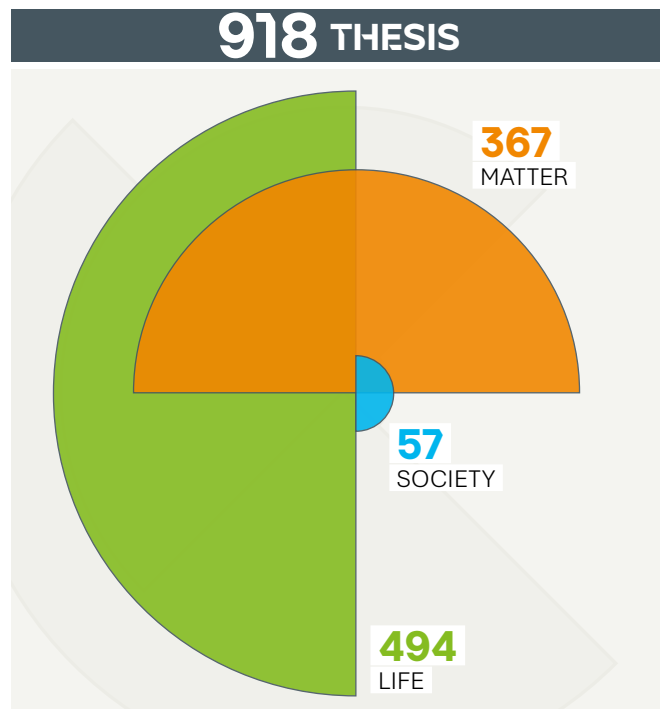
219
FOREIGN STAYS AT THE CSIC



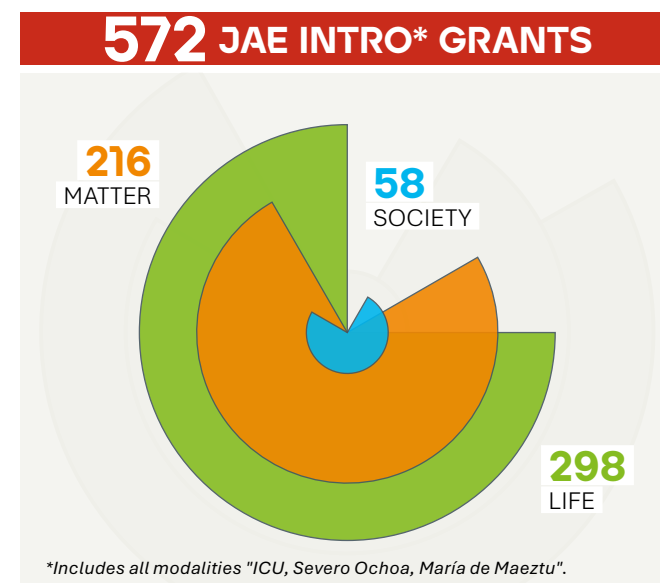
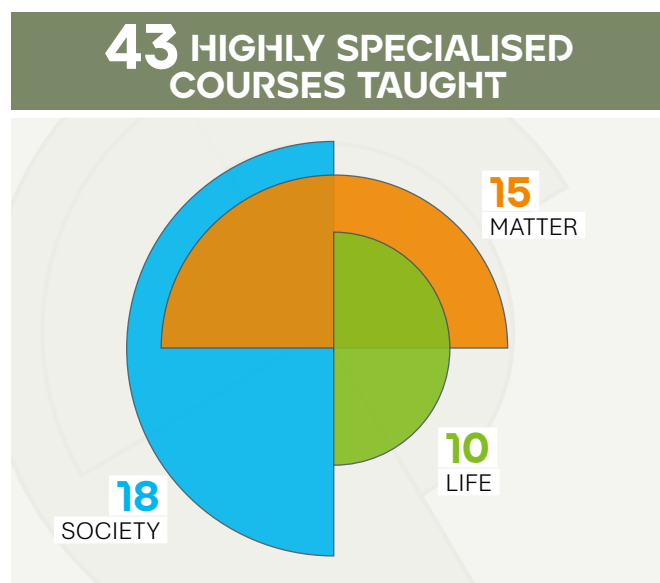
* Including INFRAS, LIA, IRP, BILATERAL, and INTERCONECTA stays.

41%
PERCENTAGE OF
PUBLICATIONS
WITH INTERNATIONAL
COLLABORATION

TRAINING OF RESEARCH STAFF



Thesis, Final Degree and Master's Projects initiated in 2024.



SCIENTIFIC-TECHNICAL ACTIVITY AND TRANSFER OF RESULTS

26 Core Area Society

33 Core Area Life

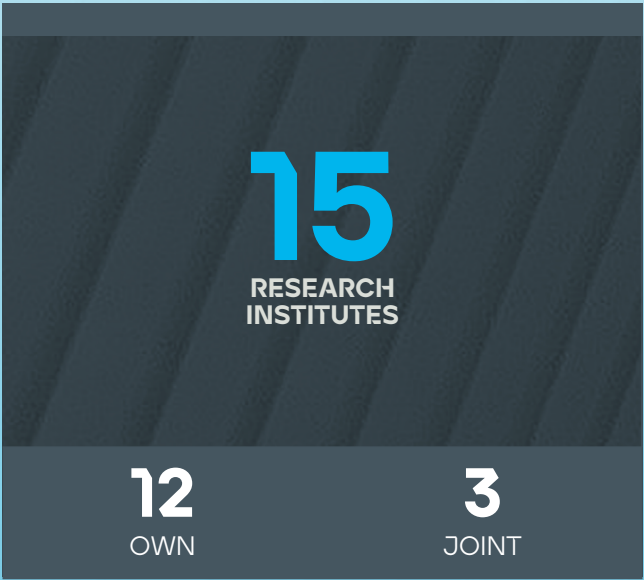
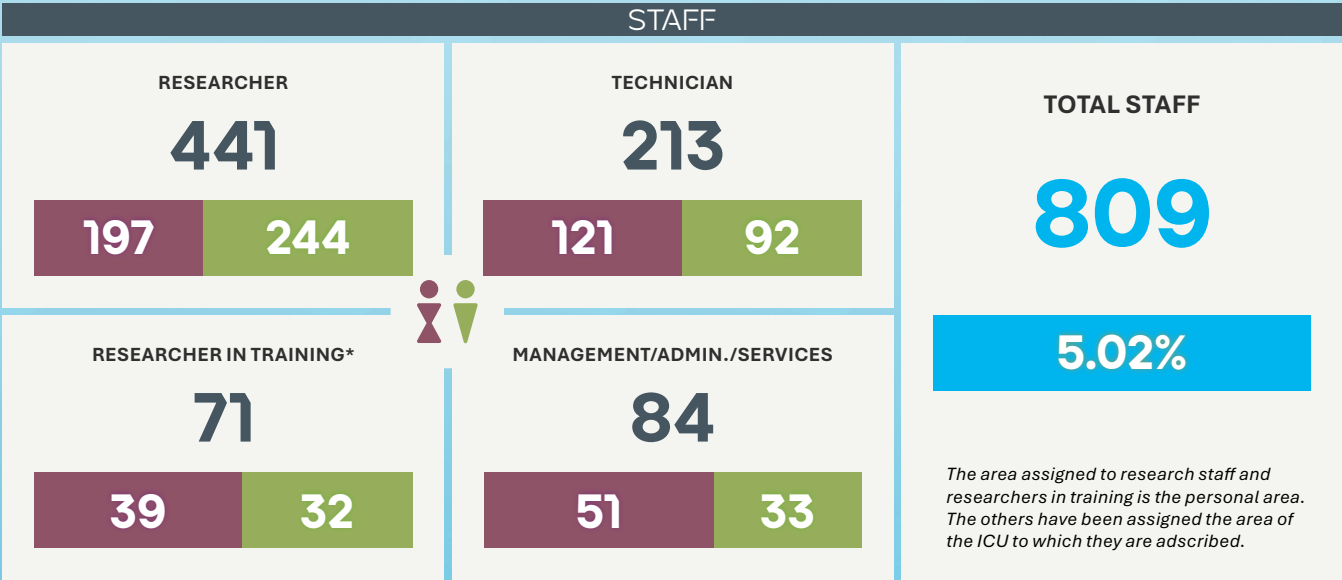
48 Core Area Matter

2

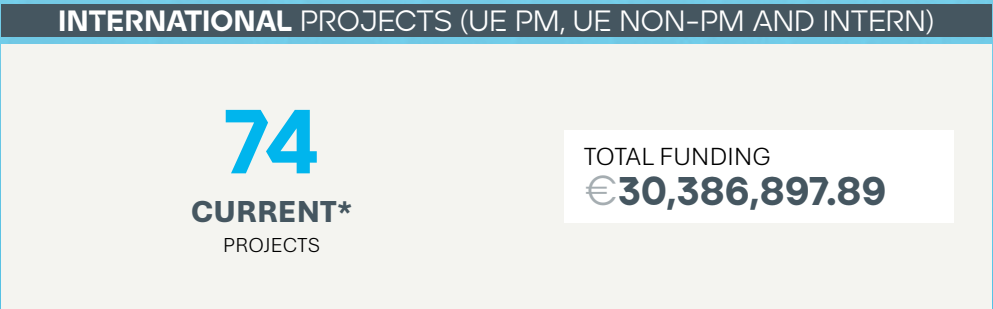
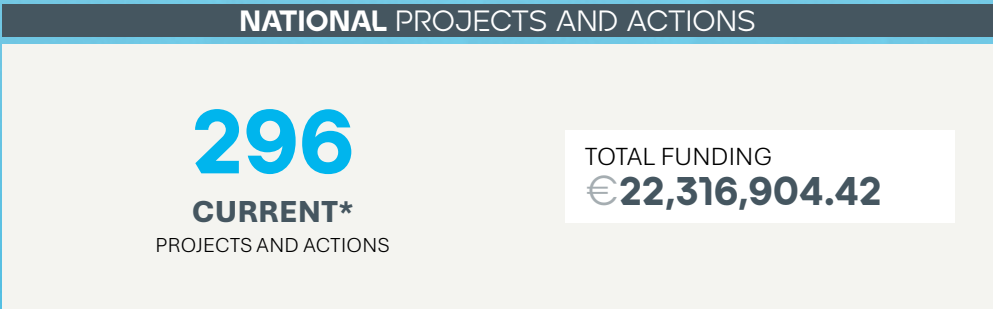
CORE AREA SOCIETY

HUMANITIES

SOCIAL SCIENCES



*Predoctorals.



*Data that includes the number of approved and finalised projects.





KNOWLEDGE TRANSFER

4

TRADEMARKS

1

MUSICAL OR
AUDIO-VISUAL WORKS

STRUCTURE OF THE SCIENTIFIC-TECHNICAL AREAS

COORDINATOR

ADA FERRER CARBONEL

ASSISSTANT COORDINATOR

ANA MARÍA CRESPO SOLANA

AREA
COMMISSION

5

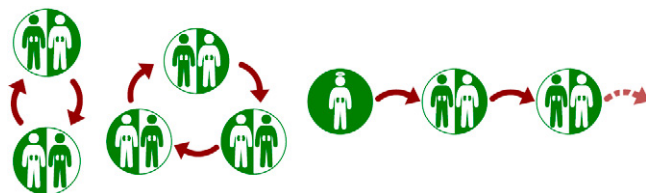
MEMBERS

Data up to 31/12/2024.

SOCIAL SCIENCES

DEVELOPMENT OF AN ALGORITHM TO OPTIMISE CROSSOVER KIDNEY TRANSPLANT PROGRAMMES THAT HELP PATIENTS WITHOUT COMPATIBLE DONORS

The study of the **IAE**, based on game theory, encourages the incorporation of more donors, improving individual and collective possibilities. This strategy can enhance the effectiveness of these programmes at the international level. SEIO–BBVA Foundation Award 2024 for the best applied contribution in operations research for this article.



Crossover kidney transplant.

WHAT IS THE MAGNITUDE OF THE MEDIA MULTIPLIER? PRESENTATION OF EVIDENCE BASED ON DYADIC NEWS DATA

A study by **IAE** and co-authors estimates the media multiplier: how much news coverage amplifies the economic impact of violent events. Using credit card and news data from 114 countries, they demonstrate that the media can triple the economic impact of violent events. The impact varies depending on how a country is represented in foreign news.

TIPC TRANSITION LAB/DEEP TRANSITIONS LAB

Organised by the Generalitat de Catalunya in Barcelona with the participation of **INGENIO**. For the first time, an 'Engagement Week' was organised under the slogan 'Scaling Experimentation: a catalyst for transformative system change'. It featured 150 participants from the broadest TIPC communities and the DT Lab, who highlighted the benefits of sharing ideas and experiences from various regions of the world, such as Africa, Latin America, Asia, Australia, and Europe.



Participants TIPC Transition Lab/Deep Transition Lab.

PUBLIC POLICY PROPOSALS FOR SOCIAL INNOVATION

INGENIO organised the presentation of the report *Public Policy Proposals for Social Innovation* at the 'Las Naves' Social and Urban Innovation Centre in Valencia. The participants Raúl Contreras (Nittúa), Alfredo Artigas (El Rogle), Lourdes Mirón (Jovesalides), and Luis Felipe Suárez Jorcano (Deputy Director General of Strategy, Planning, and Coordination in the Directorate General of Innovation) discussed an innovation that includes both new technologies and economic, legal, procedural, and cultural innovations. The report represents the culmination of a project that includes diagnoses and proposals for public policy aimed at facilitating social innovation.



Organiser and speakers of the presentation of the report.

PATHWAYS EUROPE 2024: HUMAN DIMENSIONS OF WILDLIFE MEETING

The leading international conference on human-wildlife coexistence. Organised by the **IESA**, in collaboration with the Universities of Córdoba and Colorado, it brought together more than **290 experts** from **40 countries in Cordoba**.



Pathways Europe 2024 opening group photo.

THE NEEDS OF OLDER ADULTS FOR AUTONOMOUS LIVING IN FRIENDLY ENVIRONMENTS

IEGD research staff conduct a study based on qualitative research to understand the needs of older adults and improve the quality of life in their municipalities. Demands for accessibility, safety, and affordability in spaces are identified. The importance of promoting participation in intergenerational activities and creating inclusive environments with adapted services is highlighted. Priority is given to preventing health deterioration through active ageing activities, strengthening support networks, and improving services and administrative coordination. It highlights the valuable contribution of older adults to society and indicates that factors such as gender can increase their social vulnerability, loneliness, and affect their health and functional capacity.

WHAT IS LABOUR PAIN LIKE?

The study of **IESA** research staff: *What is labour pain like? Tell me how it hurts, and I'll tell you what kind of mother you are.* I received a 'Quality Mention (AAS)' from the Andalusian Association of Sociology, which belongs to the Spanish Federation of Sociology (FES).



Moment of the award ceremony.

CITIZENS WITH ALS BECOME SCIENTISTS TO RECONSTRUCT SPACES IN 3D FROM THEIR WHEELCHAIRS

In the innovative MIZURA project, led by the **IEGD**, people with Amyotrophic Lateral Sclerosis (ALS) are using electric wheelchairs equipped with LiDAR sensors to map and reconstruct 3D models of the streets and buildings in their cities, with the aim of assessing their accessibility. It aims to enhance the accessibility of urban environments and alter the social perception of people with disabilities, demonstrating that all individuals have something valuable to contribute.

SILICE: INFORMATION SYSTEM ON SPANISH SCIENTIFIC LITERATURE

The **IESA** launched the first free scientific information system that compiles Spanish production using only open sources. It includes standardised indicators, user registration, and production and impact statistics. The result of a Proof-of-Concept project, SILICE is an example of technological development in the Social Sciences.

GENDER BIASES STUDIED THROUGH NOVEL EXPERIMENTAL DESIGNS

The **IPP** participates in an experimental design study with a large sample of future teachers in Spain, where they find a bias in teacher evaluations due to the status assigned to students. Specifically, the study finds that, in the correction of essays written by students, teachers show a preference for girls and students with high cultural capital. In addition, negative statistical discrimination was observed towards boys, students from migrant backgrounds, and those from the working class in teachers' long-term expectations.

IPP researchers analyse whether female and male principal investigators are assessed differently and whether there are differences in evaluators' ratings based on their own gender. "Contrary to some previous research, the main result [...] is that the gender of the applicant could not be seen as the direct cause of a higher or lower rating of the funding application in the results of the peer review." On the other hand, it was found that "female and male reviewers differ in their evaluations: male reviewers rate male and female IPs with almost the same average scores, while female reviewers rate female IPs slightly worse than male PIs, who are favoured".

HUMANITIES

RESTORATION OF THE BASTION OF THE GATE OF ARRABAL IN THE ALHAMBRA OF GRANADA

The **EEA** has carried out important restoration work on an artillery bastion, known as the *Gate of Arrabal*, built shortly after the arrival of the Catholic Monarchs at the Alhambra in 1492 on an ancient Nasrid bridge. The works, completed in 2024, were directed by a team of architects and archaeologists from the CSIC. The two restoration projects of this example of transitional military architecture were announced at the technical conference 'The restoration of the artillery bastions of the Catholic Monarchs in the Alhambra', held on 18 November 2024.



Bastion of the Gate of Arrabal in the Alhambra.

THE IEGPS RECEIVES THE DONATION OF THE ARCHIVE OF THE PAZO DE FROYÁN, IN SARRIA (LUGO)

This valuable documentary collection brings together nearly a thousand manuscripts (16th-20th centuries) on the management of a manor house estate in the interior of Galicia. Its subsequent cataloguing and digitisation will facilitate public consultation, reinforcing the conservation and dissemination of Galician documentary heritage.



The owners of the collection, at the time of donation.

THE 'CIENTÍFIC@S EN PRÁCTICAS' (TRAINEE SCIENTISTS) PROGRAMME WINS THE AWARD FOR THE BEST CSIC DISSEMINATION PROJECT, IN THE SECOND EDITION OF THE CSIC AWARDS FOR SCIENTIFIC DISSEMINATION AND CITIZEN SCIENCE

The jury highlighted the ability of 'Científic@s en prácticas' to involve multiple groups from different scientific areas and offer students from disadvantaged backgrounds the opportunity to engage with research, as well as the quality of the evaluation of the initiative. The Programme, promoted by the **IFS**, the Spanish Association for the Advancement of Science and the **CCHS**, offers one-week stays in research laboratories to young people in the 3rd year of ESO and the 2nd year of PMAR (Programme for the Improvement of Learning and Performance) in disadvantaged conditions who show interest and effort.



Presentation of the award for the best scientific dissemination project of the CSIC 2024.

THE FIRST HOUSES OF HUMANITY ARE DOCUMENTED AT THE KHARAYSIN SITE (JORDAN)

A research team from the **IMF** is participating in archaeological excavations that are providing new information about the origins of the Neolithic, when human communities began to practice agriculture, raise livestock, and live in stable villages, building the first houses. The team has documented everything from the evolution of small, buried oval huts to the first large rectangular houses built on the surface with stone walls, between 11,000 and 9,500 years ago (*Archaeological Research in Asia* 41, 100584).



A group of Neolithic houses from 10,500 years ago at the Kharaysin site (Jordan).

THE CSIC RESEARCHER, MS. EULALIA PÉREZ SEDEÑO, WAS NAMED AN HONORARY DOCTOR BY THE UNIVERSITY OF LA LAGUNA AND THE UNIVERSITY OF SALAMANCA

Both universities awarded her the highest academic recognition for her outstanding career and pioneering work in introducing the gender perspective into science, technology, and social studies.



Speech by Eulalia Pérez Sedeño at the investiture ceremony of Doctor Honoris Causa at the University of La Laguna.

IFS RESEARCHER MS. CONCHA ROLDÁN PANADERO WAS AWARDED THE ELISABETH DE BOHEMIA PRIZE AT THE WORLD CONGRESS OF PHILOSOPHY IN ROME

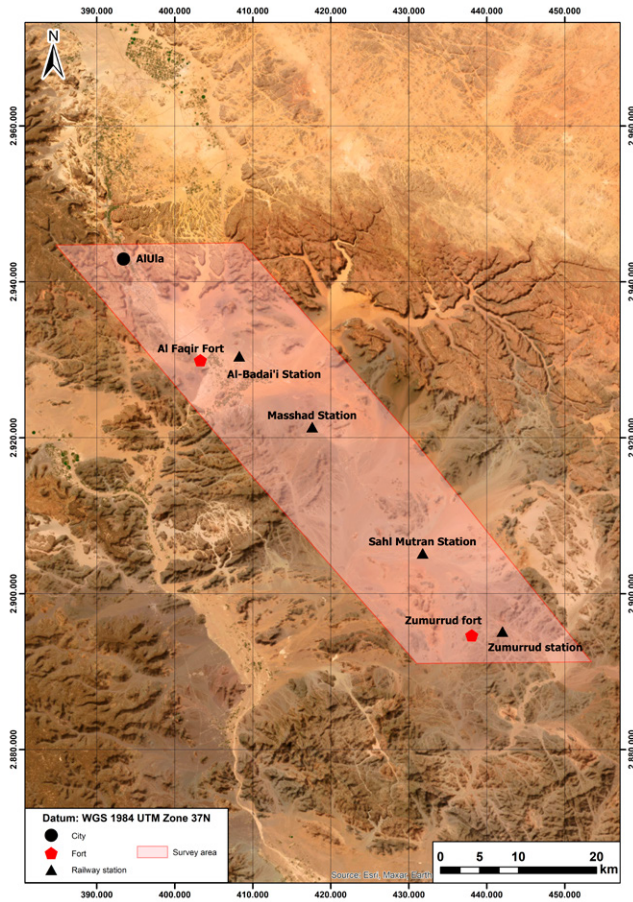
The award recognises her academic career and her contribution to the visibility of women philosophers. It is sponsored by the Center for the History of Women Philosophers and Scientists, based in Germany.



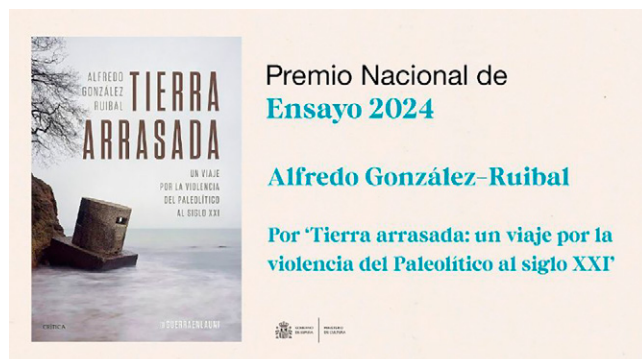
Ruth Hagengruber presents the Elisabeth Prize of Bohemia to Concha Roldán.

THE PILGRIMAGE ROUTES PROJECT PHASE I (PRP1), INCIPIT'S PROJECT IN ALULA, SAUDI ARABIA, BEGINS

PRP1 is a project funded with 5.5 million euros by the Royal Commission of AlUla. It includes collaborations with the **EEA** and with Spanish and Saudi companies. It will conduct a comprehensive analysis of the heritage of the pilgrimage routes to Mecca through the AlUla region.



Map of the Pilgrimage Routes Project Phase I work area.



"Scorched Earth", national essay prize.

THE WORK "TIERRA ARRASADA" (SCORCHED EARTH): NATIONAL ESSAY PRIZE FOR ARCHAEOLOGY OF VIOLENCE

First book on archaeology (INCIPIIT) to receive this award, in which the jury praised the "exciting and innovative way of presenting conflicts" from an archaeological perspective and the way in which it gives voice to the silenced voices of wars.

THE TUSCULUM PROJECT OF THE EEHAR-CSIC CELEBRATED 30 YEARS OF ACTIVITY



Directed by the **EEHAR-CSIC**, it is a project of recognised scientific excellence that has allowed a notable advance in the knowledge of the city, becoming a benchmark in the European academic world. It aims to reconstruct the diachronic evolution of the site, from the first protohistoric settlement to the final destruction of the city by Rome on April 17, 1191. Tusculum celebrates its anniversary with an important socialisation and dissemination of results through three-dimensional graphic reconstructions of the site and representations using visual materials, aimed at a non-specialised audience and society in general (<https://tusculum.eehar.csic.es/>).

THE ILLA PARTICIPATES IN THE ORGANISATION OF THE EXHIBITION 'ESPERPENTO (GROTESQUE). POPULAR ART AND AESTHETIC REVOLUTION' AT THE REINA SOFÍA

The exhibition analyses the grotesque as a critical aesthetic created by Valle-Inclán to question the Spanish reality of the twentieth century. Through documents and artistic works, it explores the deformation strategies and their lasting impact, differentiating them from other forms of the grotesque in Europe. (<https://www.museoreinasofia.es/exposiciones/esperpento>).



José Clemente Orozco, *The tyrant*, 1947. Museum of Modern Art Collection. INBAL/ Ministry of Culture. © Heirs of José Clemente Orozco, 2024.



Seeds of 1. Pearl millet (*Pennisetum glaucum*), 2. Rye (*Secale cereale*), 3. Rice (*Oryza sativa*), 4. Hemp (*Cannabis sativa*), 5. Quince (*Cydonia oblonga*), 6. Loquat or nespola (*Mespilus germanica*).

ARCHAEOBOTANICAL DISCOVERIES REVEAL SIGNIFICANT CHANGES IN THE DIET AND CROPS OF THE IBERIAN PENINSULA IN ROMAN AND MEDIEVAL TIMES

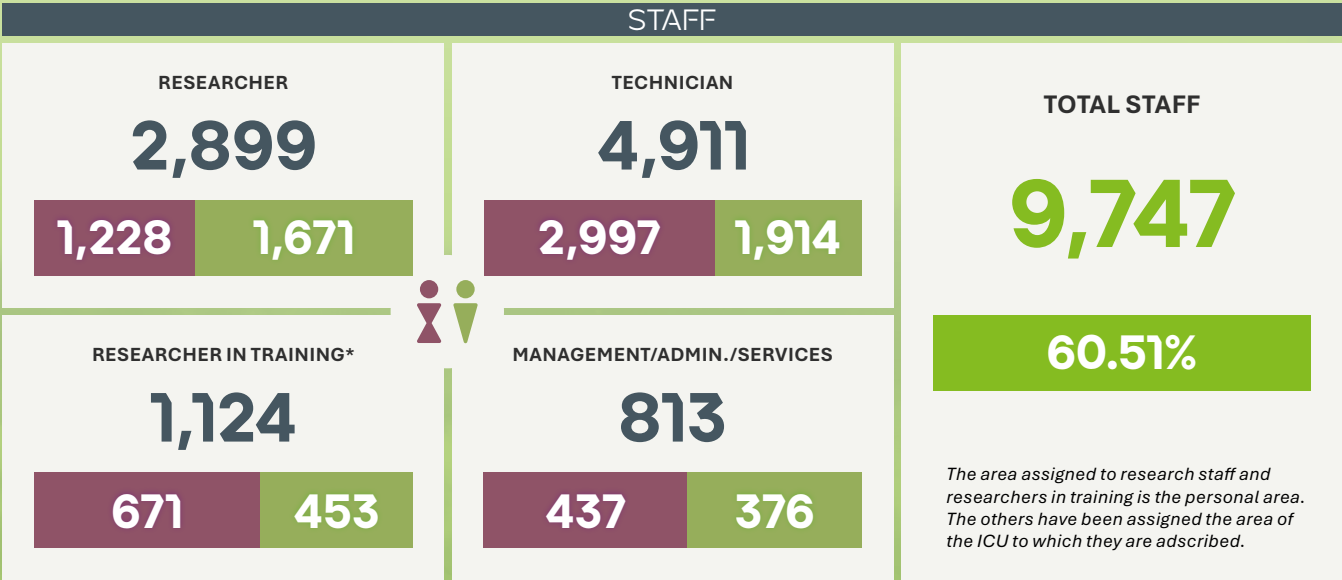
The **IH** study, in collaboration with the UV, shows that a new cereal, rye, was established in the Iberian Peninsula during Roman times, while in Islamic times, two new species arrived: *Pennisetum glaucum* (pearl millet) and *Oryza sativa* (rice) (Veget Hist Archaeobot).

THE CLARIAH-ES CSIC OFFICE IS INAUGURATED TO STRENGTHEN PARTICIPATION IN EUROPEAN RESEARCH INFRASTRUCTURES IN THE HUMANITIES, SOCIAL SCIENCES, AND ART

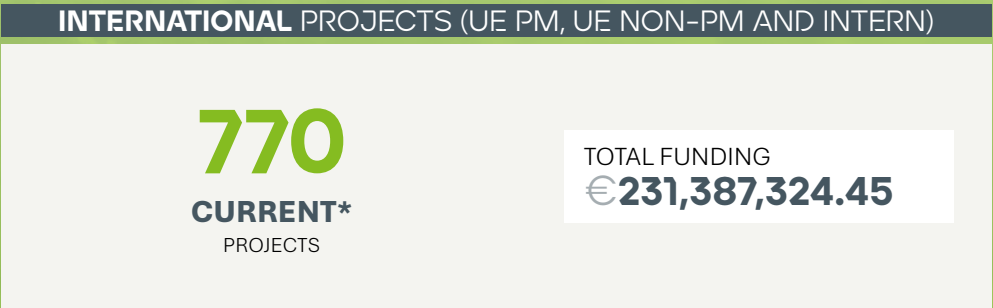
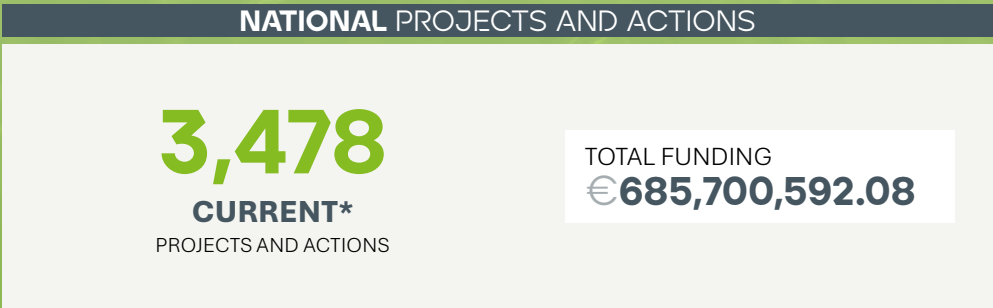
The office, based at the **ILC** and directed and coordinated by staff from this institute, consolidates the participation of the CSIC as one of the twelve national nodes in the European digital research platforms CLARIN and DARIAH; structures of the European Strategic Forum for Research Infrastructures (ESFRI), designed to ensure the accessibility of digital resources and tools in the context of the Social Sciences, Humanities, and Art (<https://www.clariah.es/>).

CORE AREA LIFE

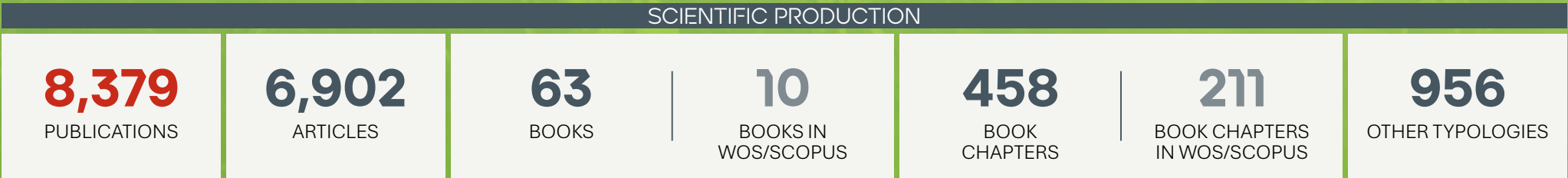
BIOLOGY AND BIOMEDICINE EARTH AND ENVIRONMENT AGRICULTURAL SCIENCES FOOD SCIENCE AND TECHNOLOGY



*Predoctorals.



*Data that includes the number of approved and finalised projects.



STRUCTURE OF THE SCIENTIFIC-TECHNICAL AREAS

COORDINATOR

JORDI PÉREZ TUR

ASSISSTANT COORDINATOR

TERESA MORENO PÉREZ
ERNESTO IGARTUA ARREGUI
ABELARDO MARGOLLES BARROS

AREA
COMMISSION

21
MEMBERS

Data up to 31/12/2024. -

KNOWLEDGE TRANSFER

17

TRADEMARKS

3

UTILITY MODELS

14

BIOLOGICAL MATERIAL

5

PLANT MATERIAL

3

SOFTWARE

2

DATABASES

4

PLANT VARIETIES

6

COMMERCIAL VARIETY

14

BUSINESS SECRET

45

PATENTS APPLIED FOR
(PRIORITY)

32

PCT INTERNATIONAL PATENTS
(NON-PRIORITY)

51

OPERATING LICENSING
CONTRACTS

64

NUMBER OF
LICENSED OBJECTS

3

KBCs

4

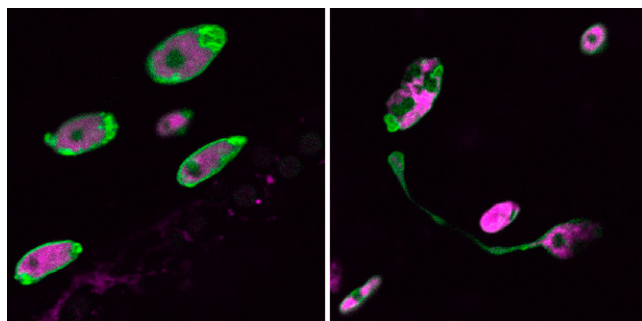
MUSICAL OR AUDIO-VISUAL WORKS

BIOLOGY AND BIOMEDICINE

BIOLOGY

ADVANCES IN KNOWLEDGE ABOUT GENE REGULATION IN CELL DEVELOPMENT

The **CABD** has developed a new model to understand premature ageing. The study focuses on Néstor-Guillermo progeria syndrome, an extremely rare genetic disorder that causes accelerated ageing from the age of two. The model shows alterations in genome structure, gene expression, and resistance to environmental stress (*EMBO Journal* 43(22), 5718-5746, 2024).

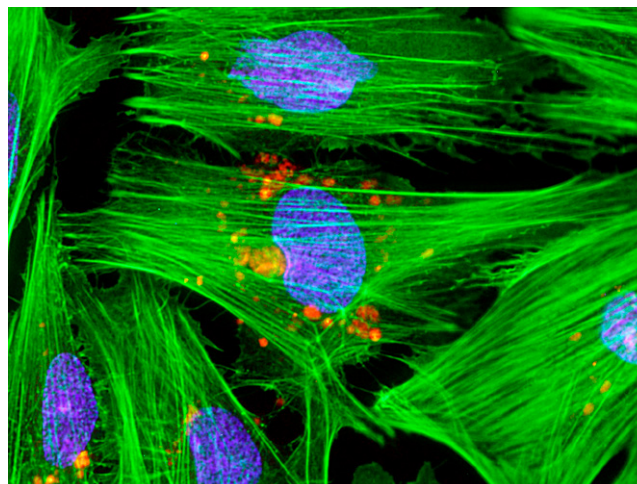


Compared with normal cells (left image), progeria accelerates the deterioration of nuclear morphology (right image).

The **CABD** has revealed a mechanism that guarantees precision during organ development. The study identifies how the number of cells that differentiate to form an organ is regulated, thus ensuring that it reaches the correct size. The study utilises the eye of *Drosophila melanogaster* (the vinegar fly) as a reference biological model (*PLoS Biology* 22(1), e3002450, 2024).

The **CABD** has developed innovative mathematical models to understand the process of embryo formation. The results enable us to advance in the study of how changes in signalling pathways generate different key self-organised behaviours in biological processes (*Development* 151(10), dev202606, 2024).

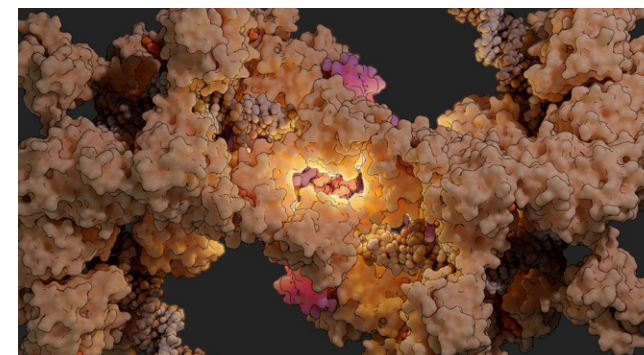
The **CBMSO** has revealed a key mechanism in the development and functioning of the cardiac conduction system. The study shows that the Dhx36 protein regulates cardiomyocyte differentiation and plays a crucial role in heart health, offering new possibilities for treating diseases related to defects in the heart's electrical transmission (*Nature Communications*, 15, 8602, 2024).



Micrograph of mouse cardiomyocytes grown in the laboratory.

NEW ADVANCES IN GENOME DYNAMICS, EVOLUTION, AND REPAIR

The **CIB** has revealed the activation mechanism of a key 'molecular scissors' in DNA remodelling and the spread of antibiotic resistance. The work describes how a family of transposases, key enzymes in DNA mobility, are activated. Using cryo-electron microscopy, the researchers identified the role of an essential protein in this process, advancing the understanding of gene regulation and opening up new possibilities in biotechnology and biomedicine (*Nature* 630, 1003-1011, 2024).



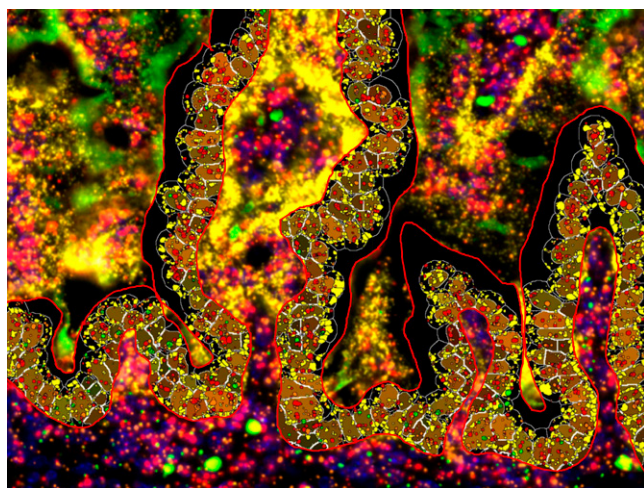
The ATPase of the AAA+ IstB superfamily (in yellow) recognises the target DNA and activates the IstA transposase (in purple) to promote transposition.

CABIMER has identified new clues in the control of cellular identity. The study demonstrates how DNA replication is a source of transcriptional variability, and reveals fundamental mechanisms in the regulation of cell identity (*Molecular Cell* 84(2), 221-233.e6, 2024).

The **IBFG** has revealed how nucleosome asymmetry regulates the direction of gene transcription. DNA associated with nucleosomes has different properties in its proximal and distal halves. This asymmetry is crucial for maintaining the position of nucleosomes along the genes and can either facilitate or hinder transcription, depending on the orientation of the DNA sequence (*Cell Rep* 43 (1), 113605, 2024).

A MECHANISM THAT PREDISPOSES THE BODY TO METABOLIC DISEASES HAS BEEN IDENTIFIED

The **IBV** is leading an international study that has shown, in mice, that the absence of the *Tet3* gene alters the metabolism of the organism's differentiated cells. This alteration prevents cells from generating energy through the usual mechanisms, which initiates an alternative and anomalous pathway that has also been observed in metabolic diseases, such as cancer and diabetes (*Nature Communications* 15, 9749, 2024).



Longitudinal section of the intestine with an intestinal epithelium villus outlined in red, tissue in which the expression pattern of the *Tet3* gene has been studied using fluorescent probes.

GLOBAL EPISTASIS: KEY TO THE EMERGENCE OF FUNCTIONS IN MICROBIAL COMMUNITIES

The **IBFG** has shown that the functions of microbial communities can be predicted by simple statistical models, analogous to global epistasis in genetics. These models explain how the addition of a species influences community function, facilitating the optimisation of microbial consortia for biotechnological applications (*Cell* 187, 3108–3119.e30, 2024).

MOLECULAR MECHANISM OF HYPOXIC VASODILATION

IBIS. The decrease in oxygen tension (hypoxia) produces compensatory dilation of the vessels, especially in the coronary, cerebral, and muscular circulations. In the study, they describe a mitochondrial sensor in vascular myocytes that is capable of detecting hypoxia, generating biochemical signals that inhibit calcium channels, and producing vasodilation (*Nature Communications* 15, 6649, 2024).

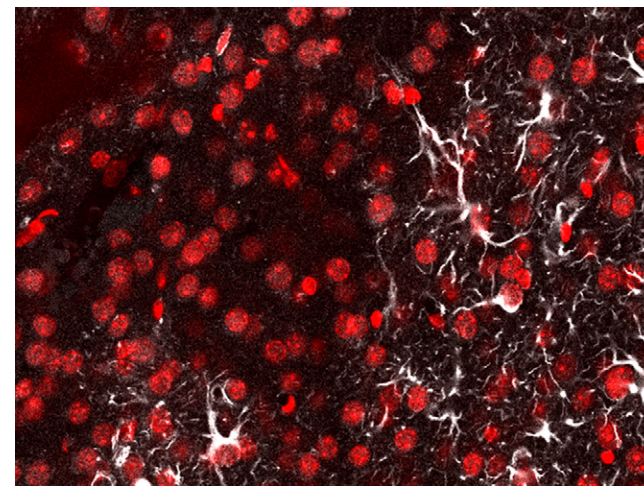
NEW PROBES TO STUDY DYNAMIC CONTACTS BETWEEN BIOLOGICAL MEMBRANES

The **IBGM** has described a new family of calcium probes for studying calcium signals associated with dynamic contacts between biological membranes (*Nature Communications*, 15, 9775, 2024).

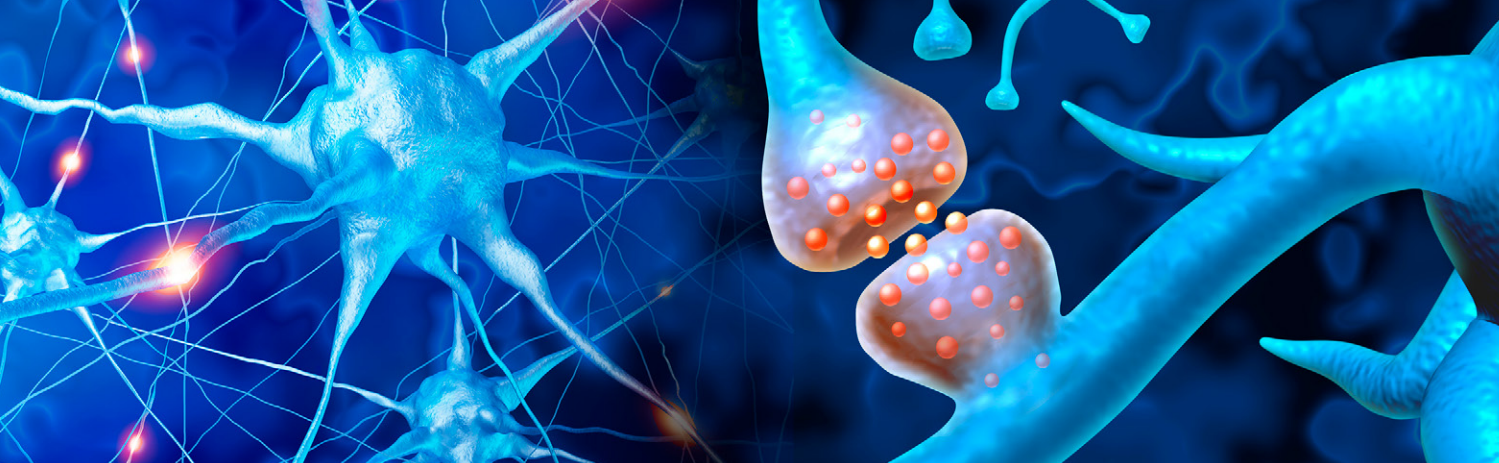
NEUROSCIENCE

'MOLECULAR TORCH': AN INNOVATIVE, MINIMALLY INVASIVE TECHNOLOGY TO ANALYSE THE BRAIN

The **CI**, in collaboration with the CNIO, has developed an innovative experimental technique that can monitor, at the molecular level, changes in the brain caused by neurological pathologies, such as cancer or traumatic brain injury, using an ultra-thin probe capable of introducing light into the brains of mice (*Nature Methods* 22, 371–379, 2024).



Neurons (red) and astrocytes (white) activated in the cerebral cortex near a traumatic brain injury (Elena Cid, Instituto Cajal CSIC).



NEW NEUROIMMUNE FACTORS

The **CBM** has discovered the molecular basis of mitochondrial failure in the brain. The study reveals that increasing brain levels of malic enzyme 1 reduces neuroinflammation and improves motor coordination in models of mitochondrial disease. Additionally, astrocytes are shown to be more resistant to mitochondrial damage than neurons, which could pave the way for future therapeutic strategies (*Nature Communications*, 15, 8682, 2024).

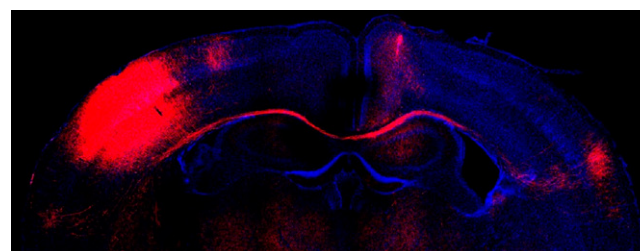
The **IPBLN**, in collaboration with IMIBIC, has discovered that cortistatin constitutes a neuroimmune regulatory factor of the brain endothelium. The blood-brain barrier regulates brain activity, but its alteration is related to both the cause and the consequence of neurodegenerative disorders. The work reveals that cortistatin acts as a neuroimmune factor that endogenously regulates key molecular pathways in the integrity, permeability, and immunological activity of the brain endothelium, restoring its functionality under conditions of damage (*Journal of Neuroinflammation* 20(1), 226, 2023).

The **IPBLN** has evaluated the therapeutic potential of cortistatin in the treatment of cerebral stroke. In a preclinical model, researchers evaluated the effect of cortistatin as a treatment and observed a multifactorial therapeutic impact: reduction of neurological damage, modulation of the inflammatory response, and significant improvement in functional recovery (*Pharmacological Research* 210, 107501, 2024).

NEW MOLECULAR AND CELLULAR MECHANISMS OF NEURONAL PLASTICITY

The **IBV** has revealed the molecular mechanism by which fluoxetine, a well-known antidepressant, activates an important receptor that regulates both the survival of neurons and the plasticity of brain connections (*Nature Communications* 15, 9316, 2024).

The **IC** has demonstrated that interneurons play an essential role in the development of excitatory connections in the cerebral cortex, involved in sensory experience (*Science Advances* 10(19), eadj9911, 2024).



Projections of excitatory neurons (in red) establishing connections in the contralateral hemisphere through the corpus callosum.

CANCER

NEW GENETIC AND MOLECULAR CAUSES OF BREAST CANCER

CABIMER has revealed the enzymatic role of the *BRCA1* gene—the primary cause of hereditary breast cancer—in DNA replication. It was identified more than 30 years ago as the gene whose deficiency is the main cause of most cases of hereditary breast cancer; however, the relevance of its enzymatic activity was unknown until now. The study reveals that *BRCA1* plays a crucial role in the accurate replication of DNA (*Nature Communications*, 15(1), 4292, 2024).

The **CBM** has identified one of the molecular causes of pregnancy-associated triple-negative breast cancer. Overexpression of the *RRAS2* gene is a determining factor in this aggressive type of cancer, especially in young women who have been mothers. This genetic alteration significantly increases the risk of developing the disease after pregnancy, opening new avenues for early diagnosis and the development of targeted therapies (*Molecular Cancer* 23, 142, 2024).

NEW PHARMACOLOGICAL APPROACHES IN REFRACTORY LUNG CANCER

The **IBMCC** has identified mechanisms of resistance in lung adenocarcinomas with *KRAS* G12C mutations. The study demonstrates the efficacy of a new drug directed against *KRAS* G12C and validated (RMC-4998) as a therapeutic strategy. These findings may prompt new strategies to overcome tumour resistance in this type of cancer (*Nature Communications* 15, 7554, 2024).

IMMUNE, INFLAMMATORY, AND INFECTIOUS DISEASES

THE ROLE OF MITOPHAGY INDUCTION AS A STRATEGY TO REDUCE AGE-RELATED INFLAMMATION REVEALED

The **CIB** has shown that mitophagy – the specific recycling of mitochondria through autophagy – decreases with age. This mechanism prevents the release of mitochondrial DNA into the cytosol, thus preventing the activation of inflammatory responses. The finding opens up new avenues for reducing age-associated neuroinflammation (*Nature Communications* 15, 830, 2024).

A MECHANISM THAT ACCELERATES THE EVOLUTION OF ANTIBIOTIC-RESISTANT BACTERIA IS DISCOVERED

The **CNB** has highlighted the importance of understanding the evolution of bacterial resistance and developing new strategies to combat it. Thanks to plasmid-mediated gene transfer, antibiotic resistance evolves rapidly in both laboratory and patient samples (*Nature Ecology & Evolution* 8, 2097–2112, 2024).



Recreation of a phage infecting a bacterium. Credits: V. Cases Arrué (CSIC Comunitat Valenciana).

BACTERIOPHAGES ADAPT THEIR INFECTION STRATEGY THROUGH INTERACTIONS WITH THEIR HOST CELL

The **IBV** has discovered that certain phages—viruses that infect bacteria—determine their infection strategy and life cycle through a much more sophisticated and complex communication system than previously believed (*Nature Microbiology* 9, 161–172, 2024).

I2SYSBIO and the University of Valencia. The therapeutic potential of phages in treating respiratory infections was evaluated, yielding promising results (*Nature Microbiology*, 9, 161–172, 2024).

DETECTING LIVER TOXICITY EARLY: A SCIENTIFIC CHALLENGE

The **IIBB** has identified 10 compounds for the early prediction of drug-induced liver damage, a complex and unpredictable event that is not only caused by medications, but also by the use of dietary or herbal supplements, which constitutes a challenge for the early detection of hepatotoxicity (*Journal of Hepatology* 81, 630–640, 2024).

TRANSFER AND INNOVATION

THE VACCINE DEVELOPED BY THE CIB AGAINST CANINE LEISHMANIASIS HAS BEEN LAUNCHED ON THE MARKET

The company Petia, part of the Zendal pharmaceutical group, has launched the Neoleish vaccine, developed at the **CIB**. The vaccine drastically reduces the risk of infection with canine leishmaniasis after exposure to the parasite and decreases its presence in 90% of cases.



FOOD SCIENCE AND TECHNOLOGY

ADVANCES IN MICROBIOME, FOOD, AND HEALTH RESEARCH

The **CIAL** has developed an innovative roadmap that defines priorities, research strategies, and policy actions to incorporate gastrointestinal microbiome analysis into risk assessments. Thanks to this implementation, it is intended to strengthen the emerging scientific evidence on the effects that dietary components can exert on the gastrointestinal microbiome, as well as to identify gaps and provide recommendations to experimentally address these needs. Thanks to this initiative, EFSA will fund several projects, paving the way for evidence-based regulatory methodologies for human and animal health (*EFSA Supporting publication 21(2), EN-8597, 2024*).

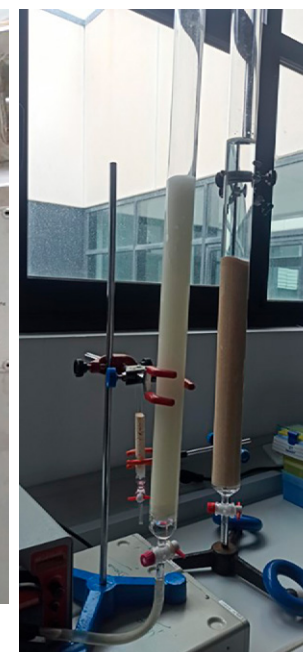
The **ICTAN** has revealed that the inhibition of the development of the pathogen *Candida albicans* is not due to the production of 1-acetyl- β -carboline (ABC) by *Lactobacillus species*. It is confirmed that the presence of 1-ABC does not come from *Lactobacillus* metabolism, but is produced by a chemical reaction between L-tryptophan and methylglyoxal (MGO), both present in the MRS culture medium (*Nature Communications 15, 6442, 2024*).

CEBAS has demonstrated that pomegranate polyphenols can exert beneficial effects through a microbial metabolite that modulates the gut microbiome and reduces bile acids involved in intestinal lipid absorption. Thus, the gut microbiota acts as a mediator in the cardiovascular and intestinal protection afforded by plant foods (*Food & Function, 15, 2422-2432, 2024*).

INIA, with the participation of ICTAN, has proposed an innovative and efficient strategy for the production of recombinant enzymes, specifically fucosidases, a type of enzyme that acts on sugars. This system has enabled the hyperproduction of functional fucosidases through 'heterologous surface display', which stabilises them in the host cell wall and allows for effective transfucosylation of sugars, thereby eliminating the need for purification and immobilisation stages. The strategy opens up new possibilities for the production of functional enzymes with potential interest for the food and pharmaceutical sectors (*Enzyme and Microbial Technology 178, 110445, 2024*).

IMPROVING THE PLANET'S FOOD SUSTAINABILITY

The **IG** has isolated and structurally characterised the comselogoside from pomace from the production of olive oil. This study, together with the optimisation of the purification process by avoiding the use of organic solvents, may be key to its future industrialisation, following in the footsteps of other phenols that allow the use of a biorefinery for this by-product, such as hydroxytyrosol or 3,4-dihydroxyphenylglycol (*Food Chemistry 432, 137233, 2024*).



Phytochemical pilot plant heat treatment reactor and laboratory chromatographic columns, developed for the extraction and purification of comselogoside from olive oil by-products.

IPLA, in collaboration with artisan cheesemakers, has developed a specific ferment for the Asturian Gamonéu cheese, recognised as one of the varieties with a Protected Designation of Origin (PDO). The ferment developed, made up of native lactic acid bacteria isolated from the production environment and whose technological aptitude has been widely characterised, makes it possible to maintain the microbiological quality of the cheese, preserve the unique organoleptic characteristics that define it, and respect the distinctive features that make [Gamonéu a unique product in Europe](#).



Cuts of Gamonéu cheeses made with two mixtures of potential native ferments designed at the IPLA and matured in two natural caves in the Picos de Europa National Park.

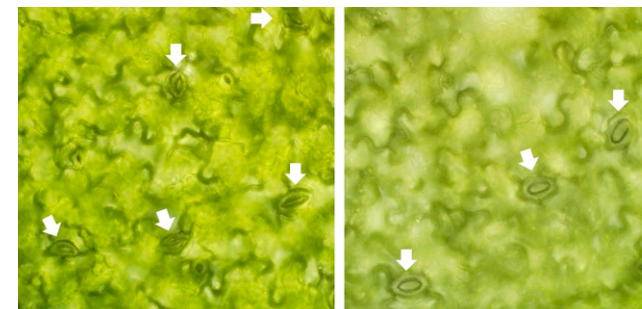
AGRICULTURAL SCIENCES

ADVANCES IN PLANT BIOLOGY FOR CROP INNOVATION

The **CBGP** has deepened our understanding of the intimate mechanisms of plant development, such as the seasonal growth control of poplar by the set of genes known as the 'circadian clock' (*Nature Communications*, 15, 1784, 2024).

CRAG has discovered the molecular mechanisms that trigger seed germination that 'reactivate' the genome to initiate gene transcription during the transition from seed to seedling (*Nature Communications* 15, 1724, 2024).

CRAG has discovered how the opening and closing of stomata are regulated during the day and night, which is essential for the oxygen and carbon dioxide exchange that allows photosynthesis, which is key to understanding how plants are regulated in stressful situations (*Nature Communications* 15, 4540, 2024).



Images of leaves of the model plant *Arabidopsis thaliana* with the stomata mostly closed (left) and open (right), indicated by the arrows (Credit: CRAG).

Plant responses to nutrient availability and toxicity to heavy metals are areas of intense research at the CSIC.

The **IBVF** has found that a pH signal activates the cellular response of plants when potassium is lacking, an essential nutrient that is often in short supply in intensive agriculture (*Science Advances* 10, 46, 2024).

TRANSFER AND INNOVATION

THE IMPORTANCE OF INNOVATION AND TECHNOLOGICAL DEVELOPMENT IN THE FOOD SECTOR

IATA has developed the first kit that allows the immunodetection of the mycotoxin patulin, the only regulated mycotoxin for which there were no immunoanalytical methods. This mycotoxin is

characterised by its incidence and toxicity, so its control in food is essential both from the point of view of food safety and for reasons of quality control of raw materials. The kit is a simple, fast, and economical immunoassay that allows for the analysis of a large number of samples. The patent has been licensed to the company Gold Standard Diagnostics (Ref. 202030133/ US20230150969A1).



Commercial kit from Gold Standard Diagnostics (formerly Eurofins-Abraxis) that incorporates the immunoreagents generated by the Food Analytical Immunotechnology research group of the IATA-CSIC.

SUSTAINABLE AGRICULTURE AND CLIMATE RESILIENCE

The **FEAD** has studied the effect of intensification-diversification of irrigated maize monoculture through winter legume cover crops or double cropping, observing that the use of legumes reduced the necessary fertiliser nitrogen without increasing emissions (*Science of the Total Environment* 912, 169030, 2024).

The **ICA** has warned of the risk of accelerating organic carbon loss and increasing GHG emissions of dryland topsoil in the world's arid areas, fuelled by global warming (*Nature Climate Change* 14, 976–982, 2024).

The **ICA** has developed an automatic system based on drone images and machine learning models to generate maps of opportunistic flora in crops and propose efficient and sustainable control strategies through precision agriculture (*Crop Protection* 182, 106721, 2024).

The **IDAB** has predicted the quality of alfalfa (sugars, pigments, minerals) in the field using portable hyperspectral spectroscopy (*Computers and Electronics in Agriculture* 216, 108463, 2024).

CEBAS has found a peculiar ally for plant phenotyping: bumblebees and their capacity for natural selection on the plants they visit, within the European DARKWIN project. Controlled by radiofrequency, the preferences of these insects for the flowers of certain plants could be a good predictor of their physiological state under stress.



Measurement of greenhouse gas fluxes in crop plots. Environmental monitoring of agricultural systems is essential to assess their effect on the environment.



Arid zone in North America (C. Plaza).



Bumblebee with an RFID tag attached, which allows its geolocation, pollinating flowers of tomato plants subjected to stress conditions related to climate change.

The **ICIFOR** has found that mixed forests, composed of several species, respond better to climate change than single-species forests (*Nature Communications* 15, 8538, 2024).



'El Carrascal' test site (Valladolid). Mixed forest of *Pinus pinea*, *Juniperus thurifera*, and *Quercus ilex*, where a better behaviour of the mixture was observed compared with the single-species forests.

CONTRIBUTION TO THE RECOVERY OF THE MAR MENOR

CEBAS is researching the development of sustainable agricultural practices aimed at restoring their ecosystems, thanks to the funding of four projects of the Biodiversity Foundation.

The **COMU-IEO** has proposed the recovery of the native oyster of the Mar Menor for bioremediation purposes. To do this, wild specimens are being reproduced on a large scale. After its release, its great filtration capacity will help to clean the water of the lagoon.



Photograph of oysters born at the Remedios hatchery and reproduced in 2024.

MICROBIOLOGY APPLIED TO AGRICULTURAL SCIENCES

CBGP. The numerous discoveries, driven by metagenomics, reveal a central role of the microbiota in other living beings and an inexhaustible potential as biofactories for numerous applications. Metagenomic databases contain millions of sequences of unknown DNA that encode new microbial genes. The characterisation of this vast number of new genes will enable us to discover new molecular functions and gain a deeper understanding of the interactions between microorganisms and their environment (*Nature* 626, 377-384, 2024).

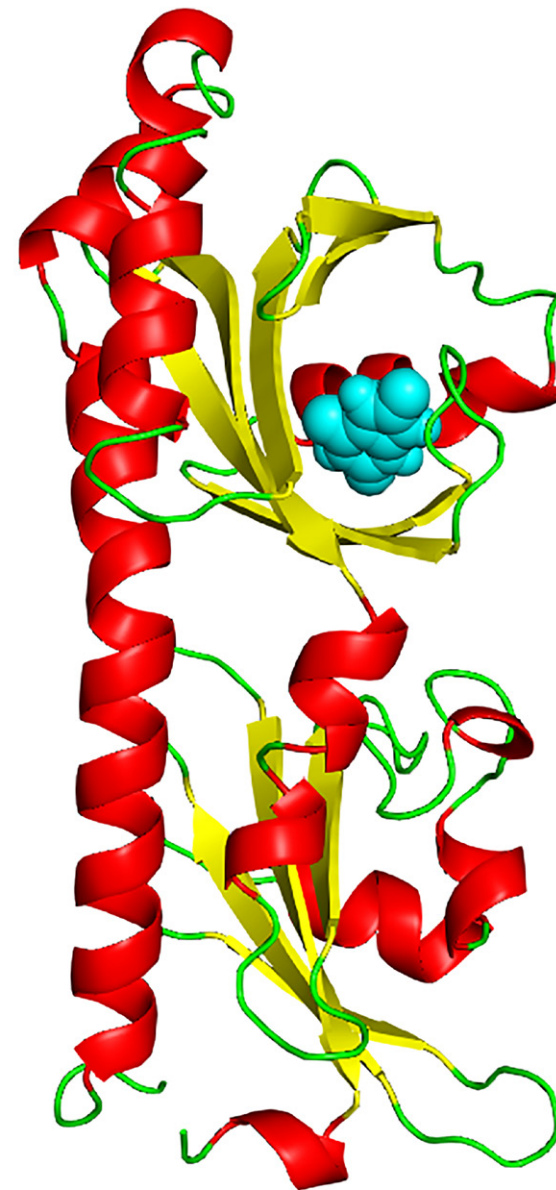
The **CBGP** has identified a new nitrogenase system in thermophilic bacteria. This ancestral mechanism of nitrogen fixation is simpler than those described so far. It could facilitate the development of crops modified to fix atmospheric nitrogen and reduce the use of synthetic fertilisers (*Proceedings of the National Academy of Sciences of the United States of America* 121, e2406198121, 2024).

EEZ. The study of the genomes of pathogenic bacteria opens the door to the search for new resistance mechanisms for crops. A study led by the EEZ has identified a superfamily of proteins that encompasses more than 6,300 receptors, which are widespread among bacteria. The breakthrough could lead to new strategies for combating pathogenic bacteria (*Nature Communications*, 15, 5867, 2024).

IIM. The skin microbiome of the common octopus has been revealed as a new key to its domestication and well-being in aquaculture. They compared wild and captive-bred specimens and found that aquaculture reduces the presence of potentially pathogenic bacteria. These findings could help improve sustainable practices and ensure the health of aquaculture octopuses.



New keys to understanding the functional and evolutionary importance of a large amount of unknown microbial DNA.



High-resolution structure of a purine sensor. The bound purine compound (uric acid) is shown in cyan.

'ONE HEALTH', ANIMAL HEALTH AND PRODUCTION

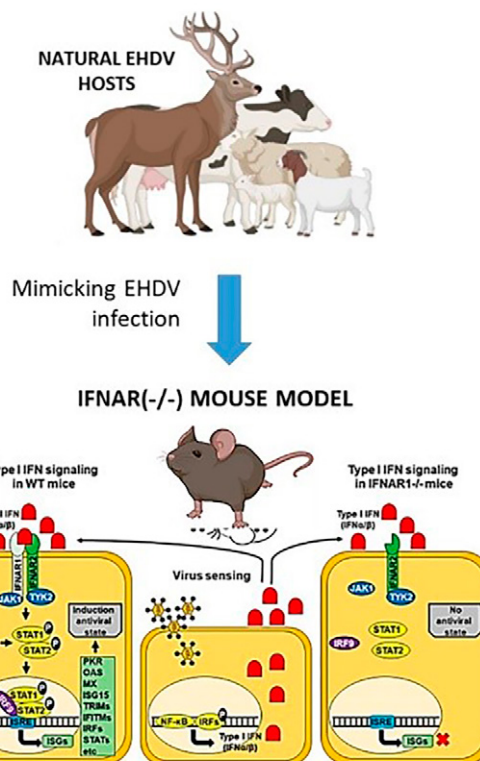
The One Health concept, which emphasises the interconnection of the health status of people, animals, and the environment, is fully integrated into the research carried out at the CSIC.

CISA has progressed (*Vaccines* 12, 1406, 2024) in obtaining the first African swine fever (ASF) vaccine in Europe. Deleting specific genes from the attenuated ASF virus improves vaccine safety, confers complete protection against the most virulent strains, and serves as the basis for a DIVA (differentiation between infected and vaccinated animals) vaccine prototype.

CISA. Epizootic haemorrhagic disease (EHD), one of the most common in Spanish and European livestock farming, has so far lacked a mouse model. They characterised a mouse model that mimics infection with the EHD virus. This model enables the preclinical study of new vaccines being developed against this emerging pathogen (*International Journal of Biological Sciences*, 27, 3076-3093, 2024).

CISA has obtained recombinant variants of the Rift Valley virus—which affects humans and hoofed animals—capable of spreading normally and which, in turn, can be easily detected by emitting a light and/or fluorescent signal (*Journal of Virology* 99, e01782-24, 2024). This new experimental strategy makes it easier to track the infection.

The **IIM** has confirmed that the common octopus does not produce corticosteroids, molecules related to stress in vertebrates. This finding challenges previous assumptions about its physiology and suggests a distinct stress response in octopuses, with implications for aquaculture and animal welfare in its culture (*Frontiers in Marine Science* 23, 1435217, 2024).



Zebrafish (*Danio rerio*), experimental model species used.

The **IATS** has delved deeper into the lifestyle of the primary parasite of aquaculture-reared sea bream and its impact on fish growth, paving the way for the development of control mechanisms (*Proceedings of the Royal Society of London B* 291, 20241611, 2024).

IATS. Aquaculture requires strict environmental control for the satisfactory development of the farmed species. They discovered that adjusting fish behaviour to the cyclical alternation of light/dark periods is key to survival: a new regulatory mechanism of pineal function and melatonin synthesis that can be used to match activity and feeding rhythms in fish (*Journal of Pineal Research* 76, E12939, 2024).

BIOTECHNOLOGY AND PEST CONTROL

The activity of insects that feed on plant sap is recorded indirectly by an ingenious system based on measuring current in an alternating current circuit where the insect and the plant are part of an electrical circuit.

The **ICA** is leading the development of software that enables the automatic calculation of feeding behaviour variables in these insects (Electrical Penetration Graph Technique, EPG) and has organised the first European workshop focused on the technique (*Journal of Insect Science*, 24, 28, 2024). This method is essential to assess the damage caused by these insects and the resistance of different varieties of plants to their attack.

CRAG has revealed the response mechanisms of Marchantia—one of the oldest plants on Earth—against viruses still present in today's crops, thereby helping to better understand the evolution of plant immunity and offering new strategies to combat crop pathogens (*Nature Communications*, 15, 8326, 2024).



Female spotted-winged drosophila (*Drosophila suzukii*) on a cherry.

INIA. *Drosophila suzukii* is an invasive pest that causes extensive damage to many fruit crops. They evaluated new compounds that inhibit the growth of insects, which prevent the production of viable offspring when ingested by adult individuals. This mechanism can be used for controlling this pest (*Journal of Pest Science* 97, 885-895, 2024).

EARTH AND ENVIRONMENT

BIODIVERSITY AND ECOSYSTEM EVOLUTION

The **RJB** has published a paper describing a tree of life for 60% of angiosperm genera based on an analysis of genomic data. This study, based on 200 fossils, has identified two explosive diversifications in flowering plants, providing a stable framework for eco-evolutionary studies of flowering plants (*Nature* 629, 843-850, 2024).

IBB. A study on the origin and evolution of giant genomes in terrestrial plants has revealed that a fern endemic to New Caledonia (paradoxically small in size), *Tmesipteris oblancheolata*, has the largest known eukaryotic genome on the planet, with 160 Gb of DNA (*Cell* 27, 109889, 2024).

The **COMA-IEO** has revealed that anoxygenic aerobic photosynthetic bacteria, capable of using light, exhibit a vertical distribution similar to algae in the Atlantic Ocean, suggesting a correlation with picophytoplankton (*Limnology and Oceanography* 69(11), 2503-2515, 2024).

TRANSFER AND INNOVATION

MORE SUSTAINABLE AGRICULTURE

Research on biostimulants at the **IBMCP** led to the patent and licensing of STIMAX FLOWER HB, a compound marketed by Meristem SL, which will help promote more sustainable and efficient agriculture.

MORE PRODUCTIVE CEREALS

A CSIC project receives 4.5 million euros from the Bill & Melinda Gates Foundation to develop more productive cereals that are nourished by nitrogen from the air. **CBGP/INIA-CSIC.**



INIA-CSIC researcher, at the Centre for Plant Biotechnology and Genomics (CBGP, UPM-INIA).



Tmesipteris oblancheolata, a Guinness World Records fern.



Seawater sampling with an oceanographic rosette (COMA_2024).

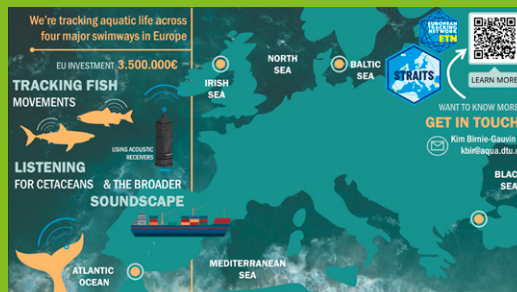
The **MNCN** has proposed a conceptual framework in which water availability is crucial for biodiversity and ecological functions. It highlights the role of biological covers in the transition between aquatic and terrestrial states, identifying that drought and moisture cycles shape global biodiversity (*Ecology Letters* 27: e14488, 2024).

CEAB, in collaboration with the University of Tottori, has identified proteins in sea sponges that produce glass, offering new insights into the transition from single-celled to multicellular organisms 600 million years ago (*Nature* 15, 181, 2024).

The **COCAD-IEO** and IFAPA have deployed a HERAKLES acoustic curtain to study the migrations of aquatic species between the Atlantic and the Mediterranean in the Strait of Gibraltar. In 2024, the system recorded 85,620 detections of 138 individuals, including species such as *Thunnus thynnus* and *Argyrosomus regius* ([STRAITS Project](#)).

IIM has led the OLDSALMO project, which uses ancient and environmental DNA to assess the impact of climate change and overfishing on Atlantic salmon populations. The study will help develop non-invasive tools to preserve the genetic diversity of threatened species.

The **IGME**, **IACT**, the universities of Salamanca and Granada, and Imperial College London. The PENANT2024 campaign examines the primary tectonic and climatic events, as well as the dynamics of ocean currents and changes in the Antarctic Peninsula's ecosystems, dating back to the Miocene. The expedition is part of the coordinated AntOcean project.



Location of HERAKLES acoustic curtain devices in the Strait of Gibraltar (yellow dotted line).



Panoramic view from the interior of Livingston Island with chinstrap penguins on metamorphic rocks colonised by lichens, and with the BIO Hesperides and the Johnson Glacier in the background. Author José Abel Flores from the University of Salamanca, member of the PENANT2024 research team.

The **MNCN** and **IMIB** have successfully controlled a disease that threatens amphibian populations worldwide. For the first time, it is possible to combat chytridiomycosis without the need to remove the animals before applying the treatment, eliminating the fungus in the natural environment with fungicides (*Scientific Reports* 14, 5151, 2024).

The **IFE** and **EBD** foresee an average increase of 77% in areas susceptible to being affected by invasive species throughout Europe, highlighting a greater vulnerability in services such as nitrogen retention and the provision of crops, often located in areas that suffer the impact of human activities where the introduction of invasive species is more likely (*Nature Communications* 15, 2631, 2024).



The zebra mussel (*Dreissena polymorpha*) is one of the most well-known invasive species. Originating from the Caspian Sea, its microscopic larvae are almost impossible to detect and remove. It is embedded in materials in contact with water, clogging pipes and hindering the operation of industries that are supplied by the river, from water treatment plants to nuclear power plants. (Photo by Joaquín Guerrero, 2019).

STUDYING THE ENVIRONMENTAL IMPACT OF HUMAN BEINGS

The **EBD** and **IGME** have reviewed more than 70 studies related to groundwater and the state of conservation of Doñana. The investigation has revealed substantial scientific evidence of the severe impacts caused by groundwater overexploitation and its effects on biodiversity (*Wetlands*, 2024).

EEZA has reviewed different approaches to the problem of how to determine desertification thresholds, both from a conceptual and technical point of view, proposing to use the potential natural conditions of the territory as a reference. From the difference between these conditions and the current state, the degree of degradation can be estimated (*Earth-Science Reviews* 257, 104892, 2024).



Terrible greenery. Super-intensive plantations can lead to desertification by degrading the water resources that sustain them. However, when the landscape greens up, it can give the false impression that it is a solution. Determining the boundary between development and desertification is a complex challenge.

The **GEO3BCN** has analysed the critical thresholds that could take the Amazon rainforest to a point of no return. Up to 47% of its forests could undergo irreversible changes and disappear by 2050 due to rising temperatures, altered rainfall patterns, and deforestation (*Nature*, vol. 626, pp. 555–564, 2024).

The **MNCN** and **IGEO** have confirmed that the heatwaves recorded in 2022 and 2023 in the western Mediterranean exceeded the natural climatic variations of the last 1,000 years, revealing that climate change is intensifying these extreme phenomena (*Nature npj Climate and Atmospheric Sciences* 7, 218, 2024).



The Amazon is home to 47 million people. / Bernardo Flores.

The **CIDE** has provided information on the distribution and dynamics of heavy metals and emerging organic pollutants in the Albufera Natural Park (Valencia), characterising the levels of pollutants of human origin (*Journal of Hazardous Materials* 470, 134168, 2024).



Albufera Natural Park Sampling.

The **EBD** and **ICM** have shown that an average of 400 kg of plastic transported by seagulls is deposited every winter in the Fuente de Piedra lagoon (Malaga), composed of about 16 million plastic particles, mainly polyethylene (54%), polypropylene (11.5%), and polystyrene (11.5%) (*Waste Management* 177, 13–23, 2024).

The **IACT** has shown that Neanderthals in the south of the Iberian Peninsula produced pitch—which they commonly used as an adhesive to sleeve tools—using heating chambers under anoxic conditions. This reveals a remarkable level of technological and organisational development (*Quaternary Science Reviews* 346, 109025, 2024).

The **IGEO** is participating in an interdisciplinary study conducted at the Neanderthal site of El Salt (Alicante), which has enabled the accurate estimation of the time elapsed between different settlements using archaeomagnetic and archeostratigraphic techniques. Experts in geomagnetism have established the chronology using geomagnetic field models. (*Nature* 630, 666–670, 2024).

RISK ASSESSMENT AND MITIGATION

The **IPNA** has opened up new avenues for forecasting the duration of future volcanic eruptions, which remains a challenge in modern volcanology. During the 2021 eruption of La Palma, scientists managed to predict its end using satellite GNSS data modelling. This breakthrough opens the door to more accurate forecasts of geological hazards (*Geophysical Research Letters* 51, 10, 2024).

The **ICM** and **IQF** have revealed that the ocean emits sulphur and cools the climate more than previously estimated. Until now, it was thought that the oceans emitted sulphur into the atmosphere only in the form of dimethyl sulphide; however, today we know that they also emit methanethiol, which increases known marine sulphur emissions by 25% and decreases incident solar radiation in summer (*Science Advances*, 2024).

The **OE** has evaluated the SASER hydrological model in terms of flow accuracy, observing underestimates in peak flows due to the poor interpolation of hourly precipitation in SAFRAN. A correction was applied using CNRM-ALADIN data, which improved the time distribution without altering the total rainfall. The seven-day correction optimised surface runoff in the short term, with limited long-term impact (*Journal of Hydrology* 635, 131136, 2024).

QUALITATIVE LEAP IN AUTONOMOUS OCEAN OBSERVATION IN THE CANTABRIAN SEA

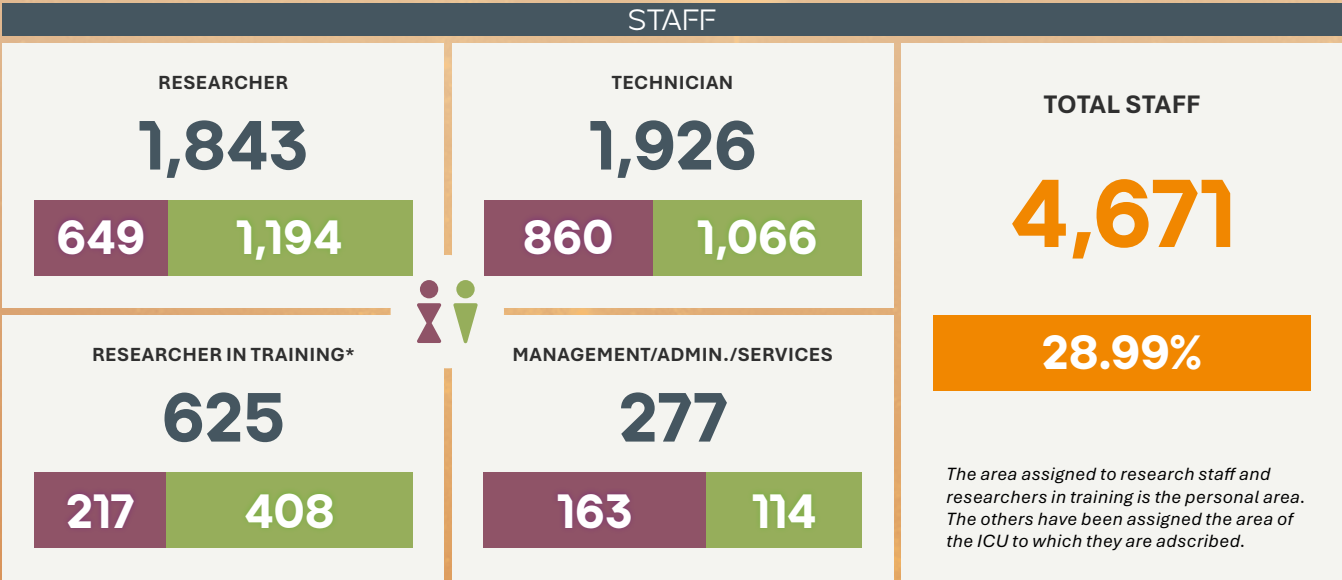
COST-IEO. Acquisition and commissioning of state-of-the-art technology, specifically, two gliders and the development of an ocean-meteorological buoy, financed by the [Marine Sciences Program of the Complementary Plans of the Autonomous Community of Cantabria](#).



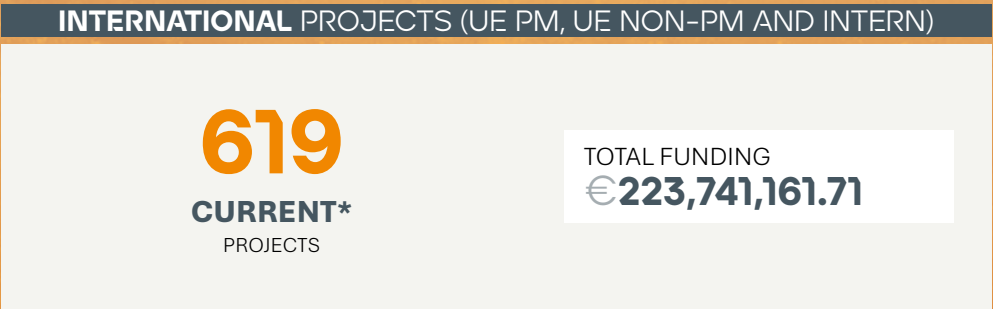
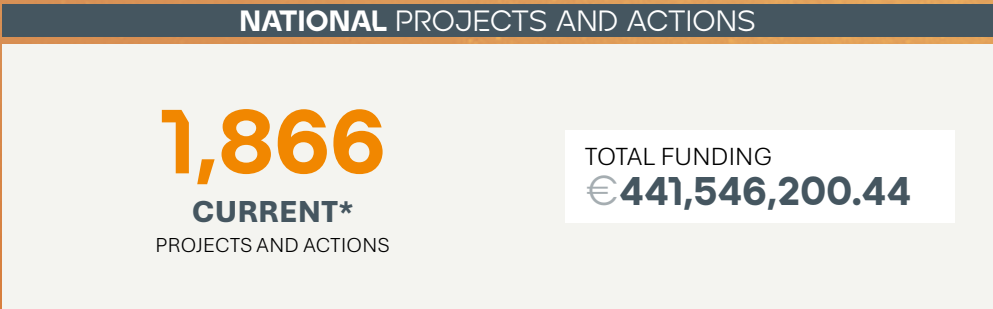
La Palma volcano in eruption / César Hernández Regal (CSIC).

CORE AREA MATTER

MATERIALS SCIENCE AND TECHNOLOGY PHYSICS, MATHEMATICS, ROBOTICS, AND COMPUTING SCIENCE AND TECHNOLOGY CHEMICAL SCIENCE AND TECHNOLOGY



*Predoctorals.



*Data that includes the number of approved and finalised projects.



STRUCTURE OF THE SCIENTIFIC-TECHNICAL AREAS

COORDINATOR

ANTONIO CHICA LARA

ASSISSTANT COORDINATOR

MARIA JOSÉ CALDERÓN PRIETO
JOSÉ JAVIER RAMASCO SUKIA

AREA
COMMISSION

10
MEMBERS

Data up to 31/12/2024.

KNOWLEDGE TRANSFER

23

TRADEMARKS

1

UTILITY MODELS

1

BIOLOGICAL MATERIAL

11

SOFTWARE

20

BUSINESS SECRET

76

PATENTS APPLIED FOR
(PRIORITY)

57

PCT INTERNATIONAL PATENTS
(NON-PRIORITY)

21

OPERATING LICENSING
CONTRACTS

26

NUMBER OF
LICENSED OBJECTS

8

KBCs

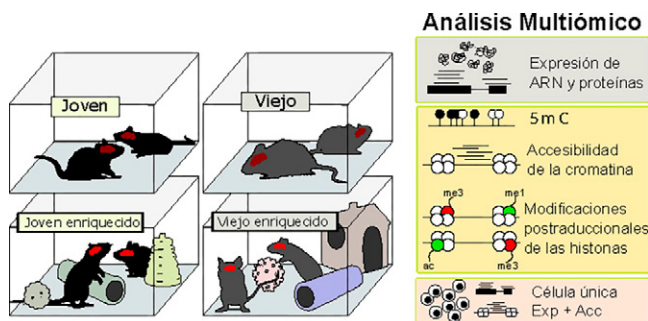
1

MUSICAL OR AUDIO-VISUAL WORKS

HEALTH, BIOMEDICINE, AND ADVANCED MEDICAL TECH-NOLOGIES

PHYSICAL AND COGNITIVE ENVIRONMENTAL STIMULI ACHIEVE MOLECULAR REJUVENATION OF THE BRAIN

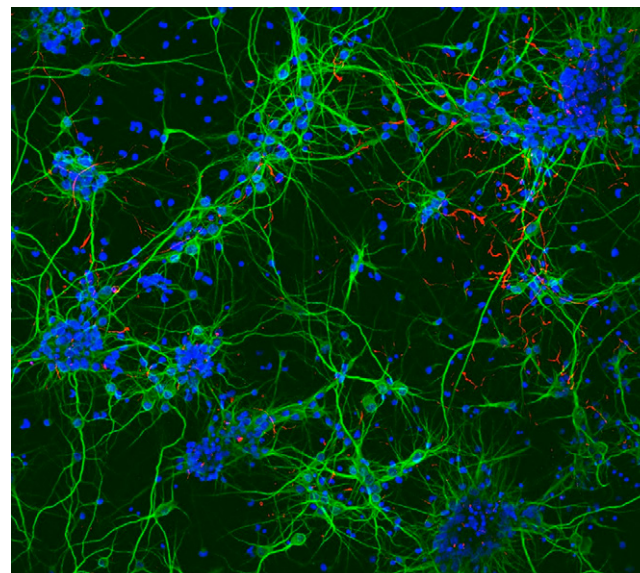
The **CINN**, **IC**, **IN**, and the University of Oviedo have described, in mice, the first molecular atlas of the hippocampus during ageing. The results could provide a molecular basis to explain the benefits of staying active during old age and help design healthy ageing policies (*Nature Communications* 15, 5829, 2024).



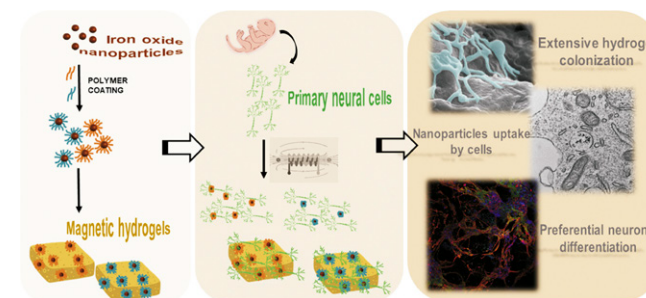
Multiomic study of hippocampal ageing and its rejuvenation induced by environmental enrichment.

MAGNETIC HYDROGELS TO REGENERATE SPINAL CORD INJURIES BY CELL CULTURE

The **ICMM** has developed Hydrogels capable of culturing neural cells under the influence of high-frequency alternating magnetic fields, opening up new possibilities in therapies for spinal cord injuries. These hydrogels can incorporate drug nanocarriers, enabling therapies to be targeted directly at the damaged area. Tests in animal models have shown that neurons grow and form functional networks on these matrices (*Acta Biomaterialia* 176, 156-172, 2024).



Neural structures and networks growing under alternating high-frequency magnetic fields. CSIC Press Photo.



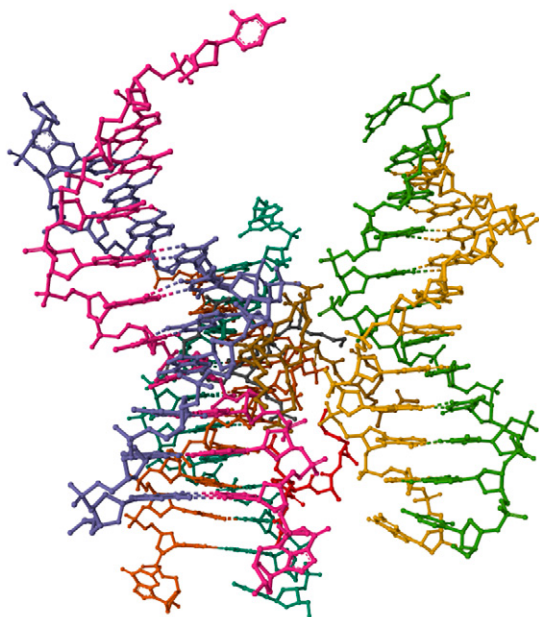
Graphic abstract of the [article](#).

A WATER-SOLUBLE SURGICAL ADHESIVE INSPIRED BY MUSSELS HAS BEEN DEVELOPED

The **INMA** has created a water-soluble biomimetic adhesive inspired by the proteins that mussels use to adhere to rocks in wet environments. This new, environmentally friendly material is a promising alternative to traditional sutures, improving healing and reducing the risk of infection (*Advanced Functional Materials* 35, 2413398, 2025).

THE FIRST CRYSTAL STRUCTURE OF THE DNA-BOUND HMGA AT-HOOK 1 DOMAIN IS RESOLVED

The **IQM** and Universitat Politècnica de Barcelona have described, for the first time, the crystal structure of the AT-hook 1 domain of the HMGA protein bound to the minor groove of DNA rich in adenine-thymine base pairs with a resolution of 1.40 Å. HMGA proteins, involved in gene regulation in eukaryotic cells, have medical relevance due to their role in cancer and parasitic diseases (*Scientific Reports* 14, 26173, 2024).



Three-dimensional structure of the AT-hook complex 1 – d(TTAA)₂ (PDB ID: 8CPG).

HYDROGELS ACTIVATED BY IMMUNE SYSTEM ENZYMES: NEW THERAPY AGAINST PERIODONTAL INFECTIONS

The **IQOG** has developed a chitosan hydrogel that is activated against periodontal infections, releasing the treatment only when necessary. Its selective action, based on lysozyme, reduces bacterial biomass by up to 92%, making it effective and safe against gingivitis and periodontitis (*Chemistry of Materials* 36 (19), 9860–9873, 2024).

A NEW ANTI-INFLAMMATORY DRUG HAS BEEN DEVELOPED

The **ITQ, I3M** (integrated into PTI Global Health) and Universitat Politècnica de Valencia have found an anti-inflammatory therapeutic option with fewer adverse effects and toxicity than the corticosteroids used to date, developed from the active ingredient of a plant native to India (*Andrographis paniculata*).



CSIC researchers (José María Benlloch and Pablo Botella).

A CSIC TEAM INSTALLS THE FIRST PORTABLE AND LOW-COST MAGNETIC RESONANCE IMAGING SYSTEM IN AFRICA

The **I3M** and universities in Uganda and the Netherlands. Africa's first low-cost, portable MRI scanner has been installed in Uganda. Designed to diagnose childhood hydrocephalus, it is lightweight, affordable, and usable in operating theatres or areas without infrastructure, thanks to its open-source technology.



Photo of the I3M team in Uganda, image obtained from the [news in CSIC press](#).

WARNING OF THE IMPACT OF DRINKING WATER BYPRODUCTS ON HUMAN PLACENTAL CELLS

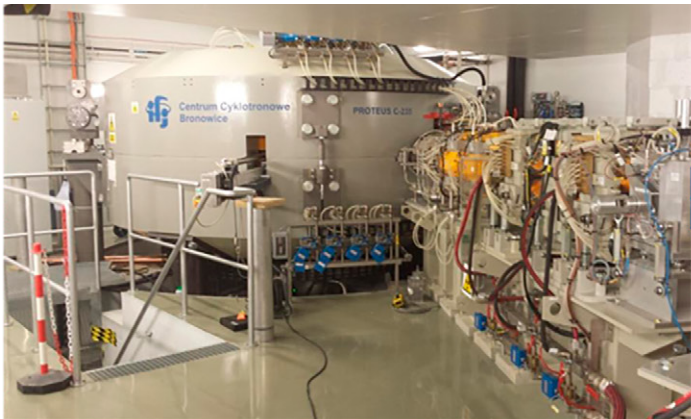
The **IDAEA** has shown that certain halobenzoquinones, unregulated byproducts of drinking water, induce oxidative stress and alter key genes in human placental cells. These compounds affect oestrogen synthesis and reduce lipids in cell membranes. The effects were detected at concentrations higher than ambient concentrations; however, the study warns of the risks of chronic and combined exposures to pollutants (*Environmental Pollution* 342, 123092, 2024).

NEW MICROBIAL SPECIES IN AN ANCIENT LAKE IN THE CHILEAN ALTIPLANO

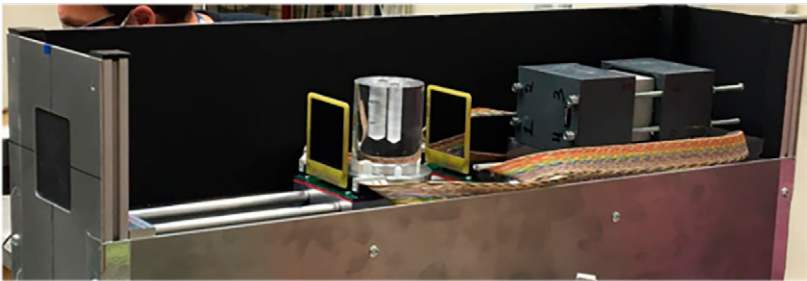
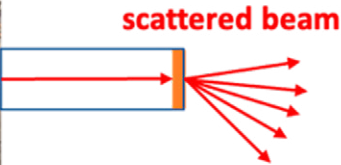
The **CAB** leads an international team that has identified nearly 600 microbial genomes in sediments from an 11,000-year-old lake terrace in the Chilean Altiplano. Microorganisms, adapted to extreme conditions of salinity, sulphur, and arsenic, and a low presence of organic matter, offer new insights into biotechnology and astrobiology (*Microbiome* 12, 176, 2024).

FIRST SPANISH SCANNER FOR PROTON TOMOGRAPHY (SCIENTIFIC PART)

The **IEM** and **IFIC** contribute to the development of the first proton tomography scanner entirely designed and manufactured in Spain. The device represents a milestone in medical imaging associated with proton therapy, an advanced technique for cancer treatment. The new system will allow for better treatment planning by providing more accurate images of the dose distribution in the patient's body (*The European Physical Journal Plus* 139, 404, 2024).



Proteus C-235 at CCB



proton CT scanner

Schematic and photo of the device on the [IFIC website](#).

TRANSFER AND INNOVATION

INDUSTRIAL DEVELOPMENT THROUGH A PRE-COMMERCIAL PUBLIC PROCUREMENT INITIATIVE FOR THE DEVELOPMENT OF A COMPACT LINEAR ACCELERATOR FOR HADRONTHERAPY

The **IFIC** will house a pioneering infrastructure for research into hadrontherapy against cancer, thereby placing Spain at the forefront of these treatments. Backed by an investment of around €22 million from CDTI Innovation, it aims to develop a linear accelerator-injector for carbon ions (C6+) with an energy of at least 10 megaelectronvolts per nucleon. The initiative aims to advance more precise and less invasive cancer therapies, particularly for paediatric cases and radioresistant tumours.



Photograph with institutional representatives, including the Minister of Science, during an event on ion hadrontherapy at the IFIC. Retrieved from the [Institute's website](#).



Cortical interface developed by INBRAIN.

TRANSFER AND INNOVATION



Image with a demonstration of the SureVision instrumentation at a CSIC Converge event. Retrieved from the [Institute's website](#).

NEUROTECHNOLOGY FOR GRAPHENE BRAIN THERAPIES

INBRAIN Neuroelectronics, a spin-off of the **ICN2** and **CSIC**, develops graphene-based brain-computer interfaces to treat neurological diseases such as Parkinson's or epilepsy. In 2024, it raised €50 million in a Series B funding round, led by Imec.xpand. In addition, it has re-ceived support from Merck KGaA to advance in the clinical development of its technologies applied to other chronic pathologies. The company consolidates its position as a European benchmark in precision neurotechnology.

THE CSIC LICENSES MEDIZCEN GLOBAL, A NEW THERAPEUTIC PEPTIDE AGAINST GENETIC DAMAGE AND TELOMERE SHORTENING

These peptides, patented by the **IQM**, more effectively reduce genetic damage and oxidative stress while increasing the expression of genes in the telomerase complex. They have shown activity in key cellular processes in diseases related to genomic instability or cellular ageing, positioning them as promising candidates for new therapies.

SUREVISION IS BORN TO REVOLUTIONISE VISION GRADUATION WITH FASTER AND MORE ACCURATE TECHNOLOGY

SureVision Tech SL will commercialise a technology developed in the **IO** that allows subjective refraction to be measured five times faster and twice as accurately as conventional methods. Based on Direct Subjective Refraction, the technique utilises the chromatic aberration of the eye by inducing a rapid and periodic change of focus through a lens.

ENERGY

RAINBOW: A NEW ARCHITECTURE FOR MORE EFFICIENT ORGANIC SOLAR CELLS

The **ICMAB** has developed an innovative architecture for organic solar cells, RAINBOW, which proposes an alternative design of photovoltaic devices. Instead of overlapping multiple semiconductor layers, it places several individual semiconductor junctions with different cascading bandgaps side by side, allowing for more efficient absorption of the solar spectrum. The study opens up new possibilities for the development of more efficient and adaptable organic solar technologies (*Advanced Materials* 36, (20), 2212226, 2024).

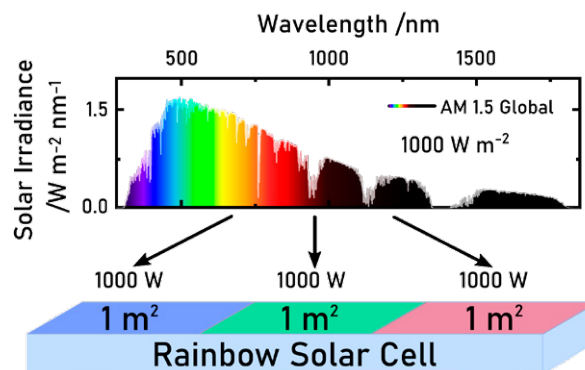


Figure on the ICMAB website showing absorption in the electromagnetic spectrum. [News](#).

FIRST STEPS TOWARDS FLEXIBLE THERMOELECTRIC DEVICES INTEGRATED INTO CLOTHING

The **IMN-CNM** has developed a flexible, low-cost thermoelectric generator that converts body heat into energy for use in portable devices. Based on bismuth telluride integrated into polyester, it offers high performance using only 10% of the active material and is ideal for smart clothing or medical applications (*Applied Materials Today* 41, 102458, 2024).

THE METAL WARS

CENIM. In a context of growing demand for strategic minerals, such as neodymium, dysprosium, or praseodymium, essential for clean technologies and concentrated in a few countries, the construction has begun of a unique pilot plant in Europe, part of the RC-Metals project, which seeks to recover precious metals from electronic waste through advanced melting technologies in a molten bath. The aim is to reduce dependence on imports, move towards a circular economy, and strengthen European strategic autonomy in the energy transition.



Submerged arc pilot plant for the recovery of critical and strategic metals.

CERAMIC MATERIALS TO PRODUCE HYDROGEN WITH MICROWAVES MORE EFFICIENTLY

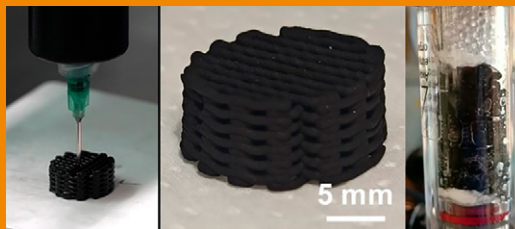
The **ITQ** has developed ceramic materials that optimise the sustainable production of hydrogen using microwaves. Based on doped ceria, these materials improve redox cycles and provide insights to designing clean and efficient technologies in the decarbonisation of industrial processes (*Advanced Energy Materials* 14 (38), 2401443, 2024).

NEW COBALT-BASED CATALYST FOR GREEN HYDROGEN PRODUCTION

The **CIN2** has participated in the development of a cobalt-tungsten oxide catalyst that enables the production of green hydrogen without relying on iridium. The breakthrough improves stability and efficiency in acidic media, opening new avenues for sustainable hydrogen production (*Science* 384, 1373, 2024).

HYDROFORMIC: A SUSTAINABLE SOLUTION FOR HYDROGEN TRANSPORT AND STORAGE

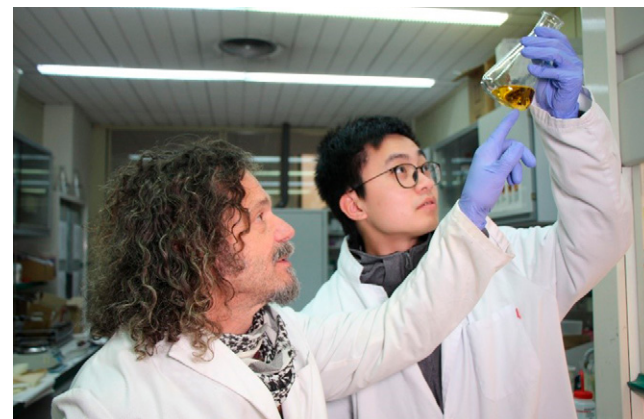
The **ICV** and Universidad Autónoma de Madrid have developed Hydroformic, an innovative technology that enables the generation of clean hydrogen from formic acid under ambient conditions. This process utilises a structured catalyst manufactured using 3D printing, adaptable to various geometries and scales. The solution offers a safe, sustainable, and economical alternative for hydrogen transport and storage (<https://hydroformic.com/>).



Direct printing of 3D supports based on activated carbon (AC), 3D Pd/CA catalyst, and reactor for the production of hydrogen from formic acid.

THE MOST POROUS ZEOLITE KNOWN HAS BEEN CREATED

The **ICMM** has led international research that has synthesised the most porous zeolite known to date. This material has a structure with extra-large pores capable of processing large molecules. The study demonstrates that it is possible to create more porous and stable materials, opening up new possibilities in applications such as water and gas decontamination, catalysis, and the adsorption of volatile organic compounds (*Nature* 628, 99–103, 2024).



Researcher Miguel Camblor working in the laboratory where he has managed to synthesise the most porous zeolite to date.

PASSIVE TECHNOLOGY FOR COOLER BUILDINGS

IETCC. Within the framework of the European PARAMETRIC project, investigators are developing a full-scale prototype of a passive system for cooling buildings. The technology combines radiative and capacitive capabilities, using materials with high solar reflectance and thermal emissivity that allow for daytime radiative cooling. This innovation offers a sustainable, energy-efficient alternative to mitigate overheating in urban environments.

THE 1ST PLANT WITH CASOH TECHNOLOGY COMES INTO OPERATION TO DECARBONISE BLAST FURNACE GASES AND PRODUCE HYDROGEN

First pilot plant based on CASOH technology for blast furnace gas decarbonization and hydrogen production, reaching a TRL7 level of technological maturity. The technology, generated at **INCAR** and patented by the CSIC, is being developed in collaboration with ArcelorMittal within the framework of the European C4U project, which aims to drastically reduce CO₂ emissions in the steel industry. CASOH enables the efficient capture of CO₂ and the generation of hydrogen usable in industrial processes (<https://c4u-project.eu/>).



CASOH plant at Gaslab-Arcelor Mittal with CSIC technology.

TRANSFER AND INNOVATION

LICENSING OF CO₂ CAPTURE TECHNOLOGIES IN INDUSTRIAL PROCESSES TO RELEVANT COMPANIES IN THE ENERGY AND STEEL SECTORS

The CO₂ capture technologies developed by **INCAR**, protected by **two patents**, have been licensed to a Spanish multinational company specialising in engineering and construction of infrastructures for the oil and gas sectors, **Técnicas Reunidas S.A.**, for application in fixed-bed reactors for the capture of CO₂ in flue gases, and a global steel company, **ArcelorMittal**, which has acquired the license to use them in the capture of CO₂ in blast furnace steelmaking gases, integrating hydrogen production using Calcium Looping technology in fixed-bed reactors with alternating pressures.

TRANSFORMING MOVEMENT INTO ENERGY: 'FIRST STEPS'

The **IMN-CNM** has filed a European patent for a device that optimises the measurement of triboelectric materials, which is key to improving the performance of nanogenerators that convert friction into electricity. This innovation powers applications in wearable devices and environmental monitoring.

DEVELOPMENT OF TECHNOLOGIES TO HELP THE VICTIMS OF THE DANA IN VALENCIA

The mobilisation of the CSIC, with all its scientific and technological potential, to mitigate the effects of the DANA and accelerate the recovery of the affected areas has led to the development of several innovative solutions: **CENIM**: a method to thicken mud and facilitate its removal from homes and garages, and a product for the treatment of damp that prevents the reappearance of mould in flooded homes. **IETCC**: procedure to reuse the mud itself in the manufacture of cement-based materials, thus contributing to the reconstruction of the area.



Device for measuring triboelectric materials from the **FINDER** group and interpretation of the applicability of transforming motion into energy (image generated by AI).

CONTINUED ON NEXT PAGE...

TRANSFER AND INNOVATION

VANAFLOW, A CSIC STARTUP TO PROMOTE RENEWABLE ENERGIES WITH VANADIUM BATTERIES, WAS BORN

ICB, INCAR and **ITQ** have promoted the creation of Vanaflow Energy System S.L., a startup dedicated to the manufacture and marketing of vanadium redox flow batteries for large-scale energy storage. These batteries, designed to offer high durability (more than 20,000 cycles without degradation), scalability, and recyclability, will allow renewable sources to be stably and safely integrated into the electricity grid (<https://korebrandingco.wixstudio.com/my-site/tecnolog%C3%ADa>).



Test bench for redox flow batteries of up to 1 kW of power.

ENVIRONMENT AND SUSTAINABILITY

A SAFER AND MORE EFFICIENT CATALYST FOR INDUSTRIAL ETHYLENE PURIFICATION

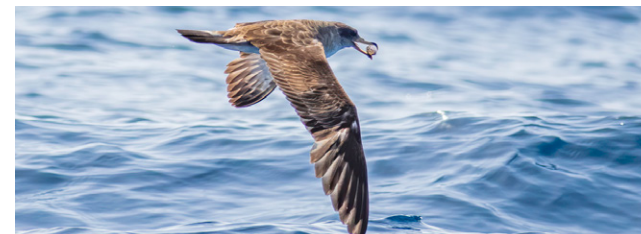
The **ITQ** has developed a catalyst based on a palladium-gold dimer anchored in a porous material, such as MOF, that removes acetylene from ethylene streams with 99.99% conversion and high selectivity. This advancement improves safety and efficiency in plastics production (*Nature Catalysis* 7, 452–463, 2024).



ITQ researchers work on the new industrial ethylene purification process.

NEW 3D-PRINTED CERAMIC STRUCTURES ALLOW THERMAL CONDUCTION TO BE CONTROLLED IN MULTIPLE DIRECTIONS

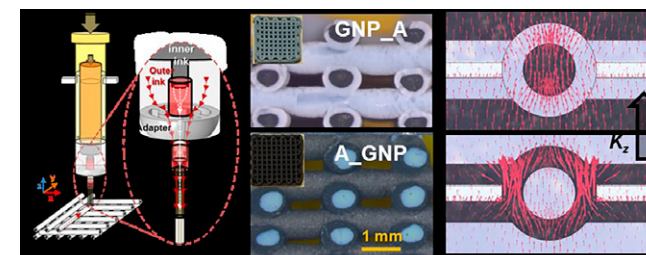
The **ICV** has developed a 3D printing technique that manufactures ceramic filaments with a core-shell structure using materials with different thermal conductivities to control heat flow. The breakthrough opens up new possibilities for thermally directed components in aerospace and catalytic applications (*Additive Manufacturing* 81, 2024).



The Scopli's shearwater (*Calonectris diomedea*) reveals that international chemical regulations are effective in reducing pollutants such as PFAS. / ISTOCK.

REDUCTION OF PERSISTENT FLUORINATED POLLUTANTS DETECTED IN MEDITERRANEAN SEABIRDS

The **IQOG** has demonstrated a significant decrease in fluorinated pollutants in Sopoli's shearwaters of the western Mediterranean over the past two decades, reflecting the positive impact of the Stockholm Convention. Despite the decline, the persistence of these substances underscores the importance of strengthening international cooperation and regulation to protect marine biodiversity and public health (*Environmental Pollution* 362, 125025, 2024).



Left image: Schematic of the co-extrusion system designed for robocasting printing of multi-material filament structures with a crown-core. Centre Images: Optical micrographs of cross-sectioned samples, including an overview of scaffolding (see boxes in the upper left corner). Right images: x-z planes at the crossing points of the supports, showing the heat fluxes represented as vectors (arrows).

TECHNOLOGY TO REMEDIATE SO₂ LEAKS

The **ICP** is developing an adsorbent material to retain SO₂ in industrial emissions, which is already licensed by Atlantic Copper. Efficient and easy to manufacture dry at low temperature, it combines calcium hydroxide, bicarbonates, and sepiolite and is designed for emergencies in copper factories (Ref [WO/2024/251460](#)).

TYRE RECYCLING PROMOTED

The **ICB** has developed an auger-type pyrolysis technology to recycle end-of-life tyres, reaching the TRL-7 level in the European BlackCycle project. The technology generates high-quality oils, gases, and carbon black, already validated for manufacturing new tyres and promoting the circular economy. [\[+\]](#).



Image from the [Institute's website](#).

AN OPEN, LOW-COST SYSTEM FOR DETECTING RADIOLOGICAL AND NUCLEAR THREATS

The **IMB-CNM** has developed a modular, low-cost system to detect radiological, biological, and chemical threats within the framework of the European NEST project. Based on an open architecture and validated in simulations in hotels, trains, and stadiums, the system has been approved as a CEN-CENELEC standard. The IMB led the integration of the radiation sensor, while the CSIC's Institute of Philosophy guaranteed a development that respects human rights and the environment. [\[+\]](#).



Imagen del dispositivo desarrollado dentro del proyecto Nest. / Nest.

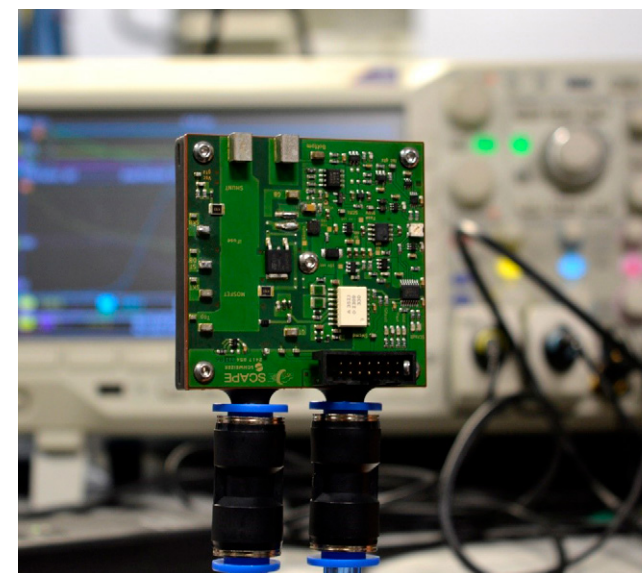
INNOVATIVE POWER ELECTRONICS TO IMPROVE ELECTRIC VEHICLE PERFORMANCE

The **IMB-CNM** has developed a prototype of a switching cell for electric vehicles, based on a compact modular structure. Using chip-embedding technology, it integrates semiconductors directly into circuit boards, improving the miniaturisation and performance of electric traction systems.

TRANSFER AND INNOVATION

SELF-HEALING RUBBER

ICTP and the Bridgestone company have patented a 'Method to obtain a self-healing natural rubber, the material thus obtained, and its use' (ref. EP23382922). This innovative technology allows natural rubber to repair itself after damage, extending its useful life and reducing waste. The 50% co-ownership of the patent reflects the close collaboration between the public and private sectors in the development of sustainable materials.



"Prototype of the switching cell developed in the SCAPE project with the chip-embedding technique, the tubes of the liquid cooling system can be observed. / Sabela Rey Cao".

ADVANCED MATERIALS, PHOTONICS, AND EMERGING COMPUTING

A MILESTONE IN QUANTUM OPTICS: PRECISELY GUIDED LIGHT RAYS AT THE NANOSCALE

The **CINN** and the University of Oviedo lead an international team that has successfully guided light in the form of concentrated and unidirectional rays at the nanometric scale. The breakthrough enables the control of light direction by adjusting its frequency, opening up new avenues for nanophotonic devices and applications in quantum computing (*Nature Communications*, 15, 9042, 2024).

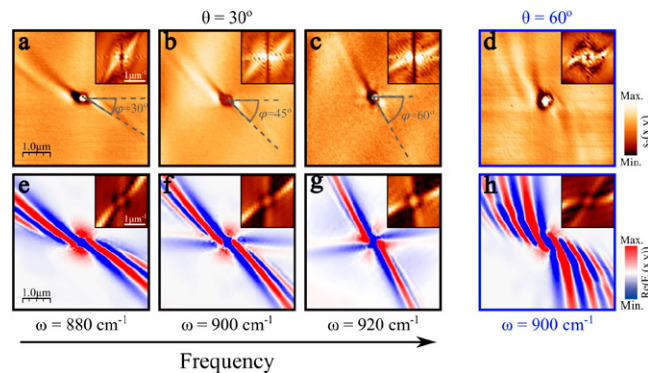


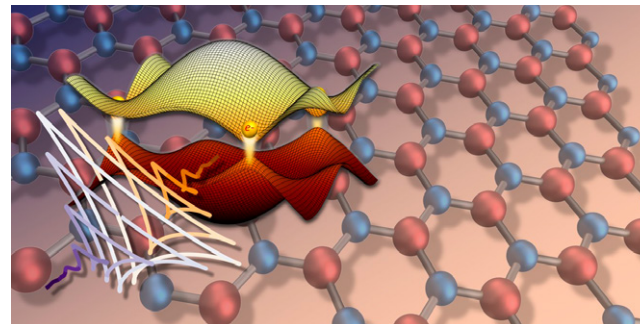
Figure 2 of the article <https://doi.org/10.1038/s41467-024-52750-3>. Light beams with a polarisation structure are shown at the nanoscale.

THE WORLD'S THINNEST HARD MAGNET

The **INMA** leads an international team that has created the thinnest hard magnet to date, made from atomic layers of chromium and tellurium. The material maintains stable magnetic properties, even with a thickness of one nanometre. The breakthrough opens up new possibilities for compact magnetic devices, sensors, and spintronic technologies (*Nature Communications* 15, 1858, 2024).

MODIFY CRYSTALLINE MATERIALS AT ULTRA-FAST SCALES WITH PULSES OF LIGHT

The **ICMM** has generated a new theory, experimentally validated, that allows the symmetry of crystalline materials to be modified with pulses of ultrafast light. The breakthrough enables the control of electronic movement with great precision, opening up new possibilities for processing information at higher speeds (*Nature Communications*, 15, 3334, 2024).



Ultrafast light enables the manipulation of the electronic quantum states of two-dimensional materials. Image taken from [the web](https://doi.org/10.1038/s41467-024-46115-z).

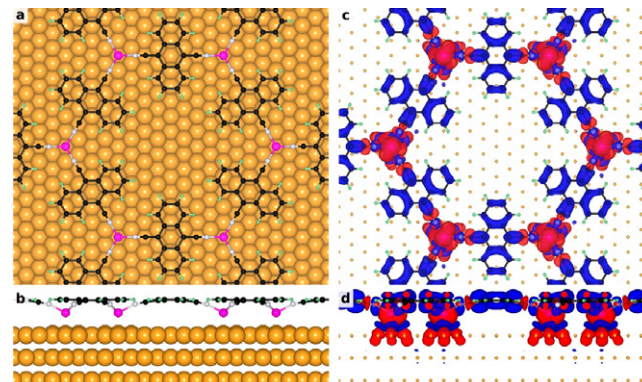
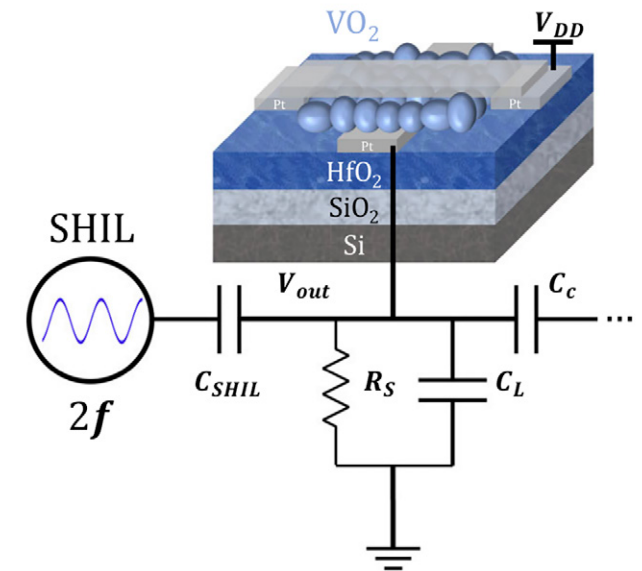


Figure 3 of the Article <https://doi.org/10.1038/s41467-024-46115-z>. Simulation of the atomic structure of the magnetic material.



Schematic representation of an oscillatory neuron based on VO₂ nanodevices.

NEW OSCILLATING NEURAL NETWORKS SOLVE COMPLEX PROBLEMS WITH ENERGY EFFICIENCY

The **IMSE-CNN** has developed, in international collaboration, an oscillating neural network with vanadium dioxide nano-oscillators integrated into silicon capable of solving optimisation, problems such as graph colouring. The system converges in just 25 cycles and surpasses current technologies in speed and energy efficiency, opening new avenues in neuromorphic computing (*Nature Communications*, 15, 3334, 2024).

SYNTHESIS AND MOLECULAR STRUCTURE

CONTROLLING COVALENT DYNAMIC CHEMISTRY BY CHANNELLING COMPOUNDS INTO STABLE STRUCTURES

The **IPNA** has demonstrated that it is possible to connect two dynamic libraries of compounds through an irreversible process, resulting in stable structures with reduced chemical complexity. The system, which can be activated by external stimuli, allows the transformation of supramolecular and fluorescent properties, opening new avenues in molecular design (*Angewandte Chemie International Edition* 63 (29), e202406654, 2024).

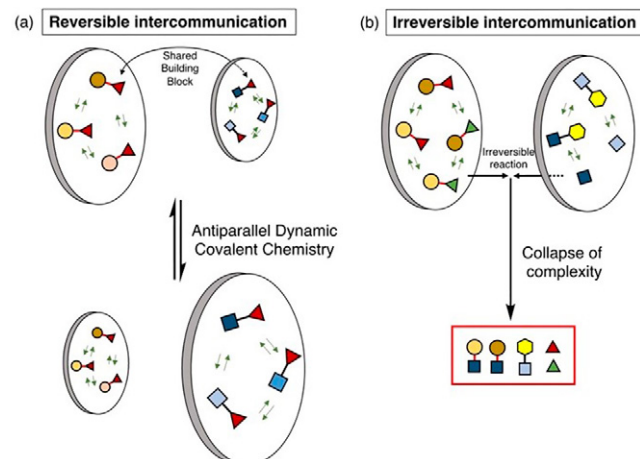


Figure 1 from the [article](#). Schematic representation of the intercommunication between two dynamic libraries.

SPYING ON MOLECULES IN SOLUTION WITH NUCLEAR MAGNETIC RESONANCE

The **IPNA** has demonstrated how nuclear magnetic resonance, combined with quantum mechanical calculations and statistical methods, enables the determination of the conformation of organic molecules in solution. This breakthrough facilitates the rational design of compounds in medicinal chemistry, biotechnology, and the development of functional materials.

NEW LASER TO CHARACTERISE ULTRA-SHORT EXCITED STATES OF MATTER

The **ISQCH** will have a new transient absorption spectrometer using laser flash photolysis, a unique piece of equipment in Spain, to study excited electronic states of ultra-short duration. This instrument will enable the characterisation of phenomena that occur on nanosecond scales, which are essential for understanding advanced photochemical and photophysical processes.

MATHEMATICS

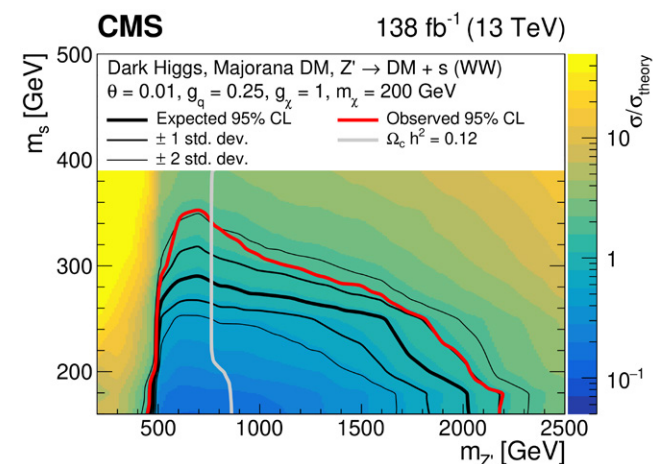
CLASSIFYING TEICHMÜLLER SPACES AS TOP-RANKING

The **ICMAT** participates in an international collaboration that has extended Teichmüller theory to higher-rank settings using Higgs bundles and a generalisation of Cayley's correspondence. The work provides new examples of Lie groups with associated deformation spaces, enriching the understanding of geometric structures in mathematics and theoretical physics (*Annals of Mathematics* 2 (200), 803-892, 2024).

COSMOS, ASTROPHYSICS, AND PHYSICS OF THE UNIVERSE

CERN'S COMPACT MUON SOLENOID (CMS) DETECTOR ADVANCES IN THE SEARCH FOR DARK MATTER

The **IFCA** collaborates with other researchers from the CMS experiment at the Large Hadron Collider at CERN in the search for dark matter particles that decay into W bosons, leptons, and large amounts of lost transverse momentum. The study refines the limits on theoretical models and contributes to the advancement of understanding dark matter (*High Energy Physics* 2024, 134, 2024).



Areas where the 'Dark Higgs' model is less likely according to the LHC data collected by CMS, with 95% confidence, in the mass plane of the 'Dark Higgs' (Y-axis) and the 'Z-prime' mediator (X-axis), for a fixed mass of the possible dark matter particle of 200 GeV. The solid red line represents the observed exclusion region, the solid black line indicates the expected exclusion region, and the thinner band in black shows the uncertainty of $\pm 1\sigma$ in the expected exclusion.

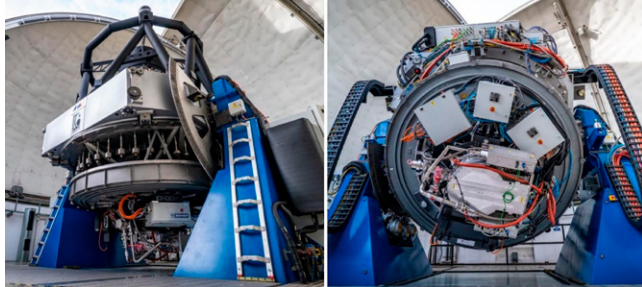


Figure of the Javalambre telescope, obtained from the [IAA website](#).
Credit: CEFECA.

FIRST DATA FROM THE J-PAS COSMIC SURVEY

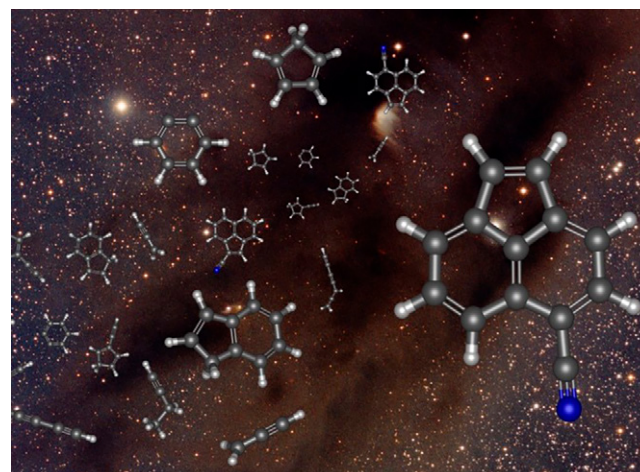
The **IFCA** and **IAA** participate in the publication of the first data from the J-PAS (Javalambre Physics of the Accelerating Universe Astrophysical Survey) project, an ambitious mission to study the cosmic evolution of the Universe and the nature of dark energy through the distribution of galaxies. The data covers 12 square degrees of the sky and includes spectrophotometric information from nearly half a million galaxies.

NEW METHOD TO MEASURE DISTANCES BETWEEN GALAXIES WITH GREATER PRECISION

The **IFF** is co-leading a study that has developed a new empirical approach to measuring extragalactic distances using Type Ia supernovae. The method reduces uncertainty to 2%, compared with 8% in previous techniques, significantly improving accuracy in observational cosmology (*The Astrophysical Journal* 977, 180, 2024).

DETECTION OF THE LARGEST MOLECULES IDENTIFIED IN SPACE

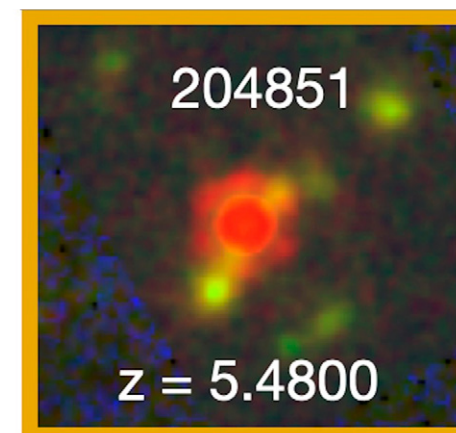
The **IFF** are leading an international team that has detected two 21-atom organic compounds in the TMC-1 cloud, the largest molecules observed in space so far. The finding suggests that PAHs may form in cold environments, challenging previous theories about their origin (*Astronomy & Astrophysics* 690, L13, 2024).



Molecules in space, image generated by the IFF and included in the [CSIC press release](#).

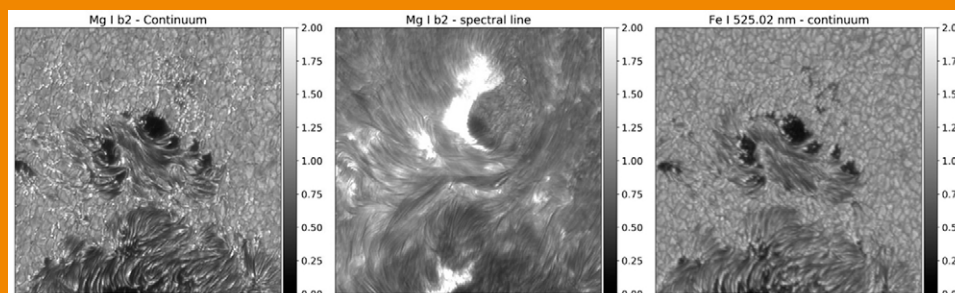
THE DUSTY NATURE OF ENIGMATIC 'RED DOT' GALAXIES

The **CAB** is leading a study of the 'red dot' galaxies discovered by the James Webb Space Telescope, identifying them as very efficient producers of dust in the early universe. Their high temperatures point to extreme heating sources, such as young massive stars or supermassive black holes (*The Astrophysical Journal* 968, 1, 2024).



Images of one of the 'red dots' studied with the JWST's MIRI instrument.

Images from the [IAA website](#).
Images obtained, continuously in three different wavelengths of the solar spectrum, during the activation of a solar flare in an active region of the Sun. The sequence, recorded with TuMag aboard Sunrise III simultaneously with the SUSI and SCIP instruments, shows the complete evolution of the flare, from its beginning to its end, with cadences of one minute for TuMag and seconds for SCIP and SUSI. Credits: Pablo Santamarina (IAA-CSIC).

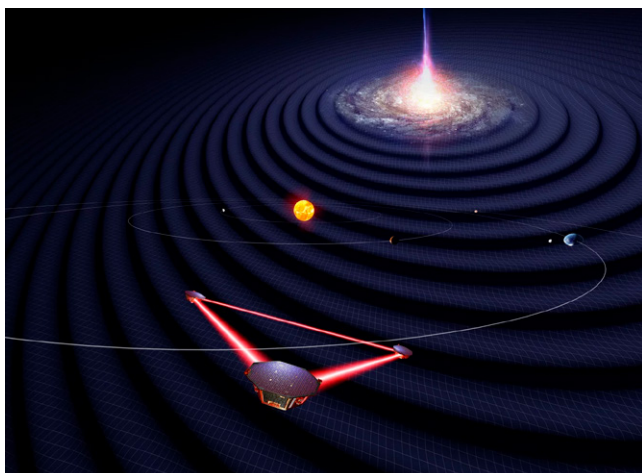


THE SUNRISE III MISSION CAPTURES DATA FROM THE SUN AT UNPRECEDENTED RESOLUTION

The **IAA** is participating in the Sunrise III mission that has captured high-resolution solar data thanks to a telescope carried by a stratospheric balloon. The project investigates magnetic fields and plasma flows in the solar atmosphere, which are key to understanding phenomena such as solar storms and coronal mass ejections.

GREEN LIGHT FOR LISA, THE FIRST GRAVITATIONAL-WAVE OBSERVATORY IN SPACE

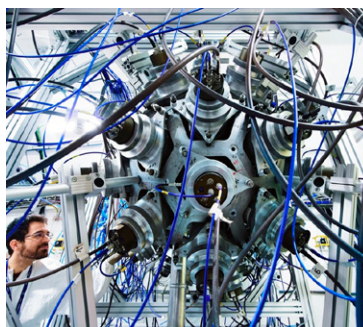
The **ICE** and the Institute of Space Studies of Cataluña are co-leading Spain's participation in the LISA mission, which is scheduled for launch in 2035. It will consist of a constellation of three satellites forming an equilateral triangle of 2.5 million km on each side, orbiting the Sun. The satellites will exchange laser beams to detect gravitational waves generated by cosmic events, such as the merger of supermassive black holes.



Artist's rendering of the LISA mission satellites in the solar system. Credits: University of Florida/Simon Barke (CC BY 4.0).

A KEY NUCLEAR REACTION TO UNDERSTANDING THE CHEMICAL EVOLUTION OF OUR GALAXY AND THE SOLAR SYSTEM HAS BEEN RECREATED AT CERN

The **IFIC** leads a team that has recreated a fundamental nuclear reaction to explain the formation of Lead-204, an isotope that allows tracing the chemical evolution of the galaxy and dating the first solid materials in the solar system (*Physical Review Letters* 133, 052702, 2024).



Photograph of the device at CERN, obtained from the [CSIC press](#). Original caption: "Device for measuring reactions with neutrons at CERN. / Julien Marius Ordan-CERN".

A GIANT PLANET AS LIGHT AS COTTON FLOSS HAS BEEN DISCOVERED

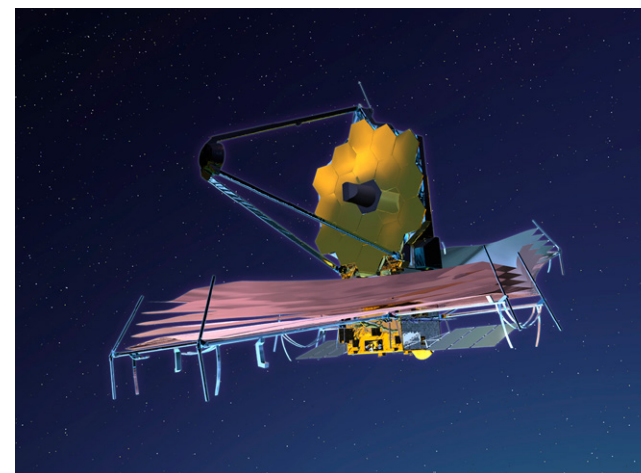
The **IAA** co-leads an international team that has discovered WASP-193b, the second lightest planet discovered to date in orbit around a distant star in our galaxy. The discovery challenges current models of planetary formation and evolution (*Nature Astronomy*, volume 8, 909–919, 2024).

THREE SURPRISINGLY COOL YOUNG NEUTRON STARS DETECTED

The **ICE** leads an international team that has identified three young neutron stars with abnormally low temperatures for their age, which challenges most current theoretical models of the thermal evolution of these objects (*Nature Astronomy* 8, 1020–1030, 2024).

LABORATORY ASTROPHYSICS HELPS INTERPRET OBSERVATIONS FROM THE JAMES WEBB SPACE TELESCOPE

The **IEM** confirms, through data from the James Webb telescope and validated with laboratory experiments, the presence of ice grains, micrometric dust, and OH bonds in water molecules in space. The results help to understand the formation of complex molecules in the interstellar medium (*Nature Astronomy* 8, 1169–1180, 2024; *Nature Astronomy* 8, 359–367, 2024).



James Webb Space Telescope.

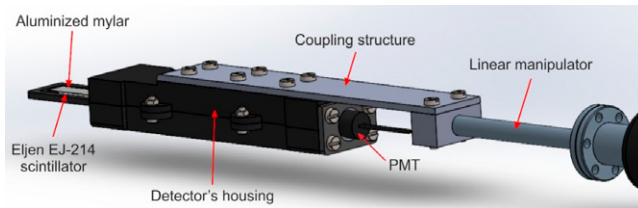
DESIGN OF A RADIOMETER TO STUDY THE ATMOSPHERE OF URANUS

The **IMSE-CNM** is involved in the development of the Uranus Multi-Experiment Radiometer that will analyse aerosols, ultraviolet radiation, and warming rates in the planet's atmosphere. Designed for a future descent mission, the instrument employs lightweight technology derived from Martian missions (*Space Science Reviews* 220, 6, 2024).

EMERGING TECHNOLOGIES AND COMPLEX SYSTEMS

NEW ION DETECTOR IMPROVES THE ACCURACY OF TEMPORAL MEASUREMENTS ON CAN NUCLEAR MICROPROBE

The **CNA** and **I3M** have installed and characterised a time-of-flight detector based on an ultra-thin plastic scintillator in the centre's nuclear microprobe. The system improves the control and characterisation of proton beams in real time, with applications in nuclear physics and medicine (*Sensors* 25, 3, 2024).



Design of the new time-of-flight detector.

NUCLEAR TEST PLUTONIUM TRACKED USING PIONEERING TECHNIQUE

The **CNA** and the International Atomic Energy Agency have traced plutonium released in atmospheric nuclear tests in the 1950s and 1960s by detecting the isotope ^{244}Pu . The measurement was carried out using mass spectrometry with low-energy accelerators, a technique developed at the CNA and a pioneer in the world (*Journal of Environmental Radioactivity*, 278, 107485, 2024).

HOW TO DESCRIBE COMPLEX AND CHANGING SOCIAL INTERACTIONS?

The **IFISC** has developed a theoretical framework based on temporal hypergraphs to analyse how social groups are formed, dissolved, and evolve. The study goes beyond traditional models of peer interactions and opens new avenues for understanding human dynamics in diverse social contexts (*Nature Communications*, 15, 4754, 2024).

CREATION OF THE HUMAN-ARTIFICIAL INTELLIGENCE INTERACTION LABORATORY

IIIA. A new laboratory has been established for the development of human-centred AI, featuring robots for studying human-robot interaction, equipment for analysing interactions in virtual and simulation environments, high-performance workstations, and flexible systems for recording experiments.



Image of the IIIA obtained from [Wikipedia](#).

THE ENERGY COST OF COMPUTING AND ITS RELATIONSHIP TO LIVING SYSTEMS

The **IFISC** has participated in research that has established fundamental energy limits for information processing, connecting computation and thermodynamics in out-of-equilibrium systems. The theoretical framework addresses real-world conditions and helps design more efficient systems, also offering new insights into how living systems process information (*Physical Review X* 14, 021026, 2024).

DIGITAL TECHNOLOGY TO PRESERVE VERNACULAR HERITAGE IN MONTESINHO NATURAL PARK

The **ITEFI** has developed, in an international collaboration, an innovative methodology that integrates Information and Communication Technologies with Geographic Information Systems to document and catalogue the vernacular architectural heritage in the Montesinho Natural Park (Portugal). This tool enables the traditional constructions of the region to be accurately recorded and georeferenced, facilitating their conservation and valorisation (*International Journal of Architectural Heritage*, 1-25, 2024).



Image of Montesinho Park, [Wikipedia](#).

SUPPORT STRUCTURES FOR RESEARCH ACTIVITY

- 64** Human resources
- 65** Research and research support structures
- 68** Large research infrastructures
- 73** Cross-cutting: Equality, Ethics, Sustainability, Citizen Science

3

HUMAN RESOURCES

STAFF BY FUNCTIONAL GROUPING

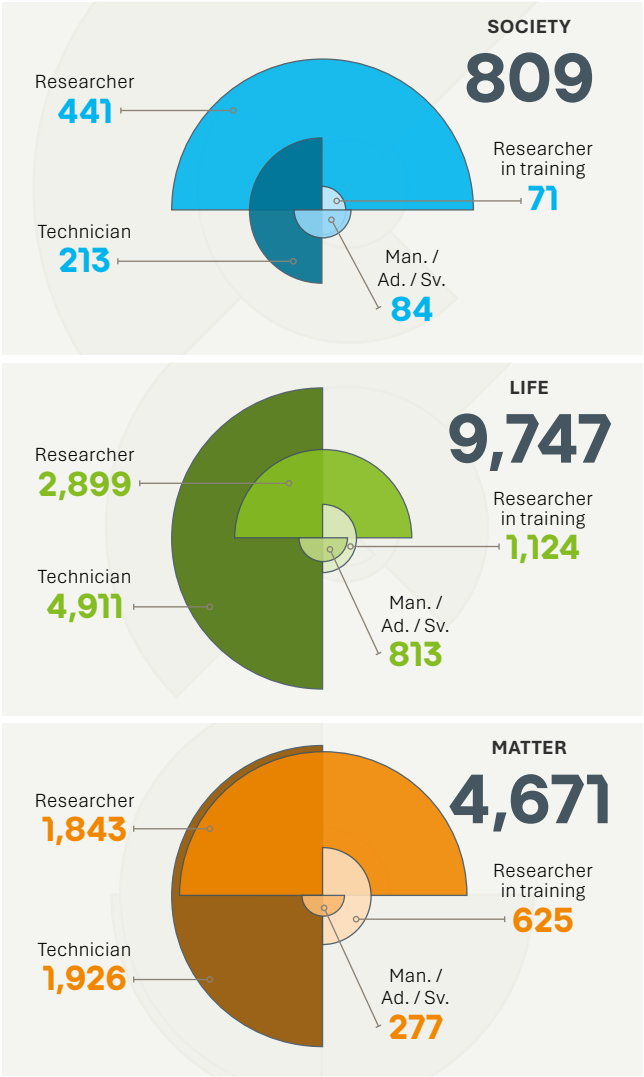


STAFF BY AUTONOMOUS REGION

	RESEARCHER	RESEARCHER IN TRAINING	TECHNICIAN	MANAGEMENT/ADMIN./SERVICES	TOTAL
ANDALUCÍA	792	243	1,225	273	2,533
ARAGÓN	210	73	262	44	589
CANARIAS	60	15	82	22	179
CANTABRIA	77	21	118	21	237
CASTILLA Y LEÓN	83	39	144	38	304
CASTILLA-LA MANCHA	19	3	54	6	82
CATALUÑA	837	329	934	142	2,242
COMUNIDAD DE MADRID	2,066	683	3,042	851	6,642
COMUNIDAD FORAL DE NAVARRA	11	6	19	3	39
COMUNITAT VALENCIANA	462	272	628	89	1,451
EXTREMADURA	11	3	7	0	21
GALICIA	185	26	385	75	671
ILLES BALEARS	108	32	106	15	261
LA RIOJA	18	5	24	4	51
PAÍS VASCO	34	8	15	5	62
PRINCIPADO DE ASTURIAS	113	31	155	35	334
REGIÓN DE MURCIA	101	32	230	34	397
ROMA	7	0	2	3	12

Source: GESPER.

STAFF BY CORE AREA*



* The area assigned to research and research trainee staff is the staff area. Other staff members are assigned to the area of the ICU to which they are attached.



RESEARCH AND RESEARCH SUPPORT STRUCTURES

17
INTERDISCIPLINARY
THEMATIC PLATFORMS

121
RESEARCH
INSTITUTES

70	49	2
OWN	JOINT	ASSOCIATED

4
SPECIALISED
TECHNICAL UNITS

3	1
OWN	JOINT

10
CSIC CONEXIONES

3
NATIONAL
CENTRES

IGME	IEO	INIA
12 TERRITORIAL UNITS	9 OCEANOGRAPHIC CENTRES	

9
SERVICE INTEGRATION
CENTRES

6	3
OWN	JOINT

10
INSTITUTIONAL
DELEGATIONS

- RESEARCH INSTITUTES
- NATIONAL CENTRES
- IEO OCEANOGRAPHIC CENTRES
- IGME TERRITORIAL UNITS
- DELEGATIONS
- SERVICE INTEGRATION CENTRES
- SPECIALISED TECHNICAL UNITS



CLICK ON EACH AUTONOMOUS REGION
TO SEE THE DETAILS

27 COLLABORATIVE STRUCTURES, which contribute to the training of personnel, the promotion of public-private collaboration, and the ability to counsel companies and administrations.

17 INTERDISCIPLINARY THEMATIC PLATFORMS (PTIs). GROUPED INTO **4** THEMATIC AREAS

ENERGY, INDUSTRIAL, AND MATERIALS TRANSITION

- 1. PTI+ TRANSENER
- 2. PTI+ SUSPLAST
- 3. PTI FAB3D
- 4. PTI SosEcoCir

01

ECOSYSTEMS, BIODIVERSITY, AND SUSTAINABILITY OF NATURAL RESOURCES

- 5. PTI+ SUSTAINABLE OCEANS (OCEANS+)
- 6. PTI AGRIAMBIO
- 7. PTI GREEN HORIZON
- 8. PTI SOILBIO

02

HEALTH, WELLBEING, AND FOOD SYSTEMS

- 9. PTI+ GLOBAL HEALTH
- 10. PTI+ NEUROAGING
- 11. PTI FOOD ALLERGY
- 12. PTI AGRO4FOOD

03

DIGITAL TRANSFORMATION, SOCIETY, AND EMERGING TECHNOLOGY

- 13. PTI+ QTEP
- 14. PTI+ CLIMA
- 15. PTI COUNTRY
- 16. PTI DIGITAL SCIENCE
- 17. PTI MOBILITY 2030

04

10

**CSIC CONEXIONES/
CSIC HUBS**

- 1. GEOSCIENCES CONNECTION
- 2. BCB CONNECTION
- 3. WHEAT CONNECTION
- 4. GENOME CONNECTION

- 5. PHOTOCATALYSIS CONNECTIONS
- 6. LIFE CONNECTION (LIFEHUB)
- 7. ARTIFICIAL INTELLIGENCE CONNECTION (AIHUB)

- 8. CANCER CONNECTION
- 9. NANOMEDICINE CONNECT.
- 10. ARCHAEOLOGY CONNECT.



CLICK ON EACH PTI
AND CONNECTION

LARGE RESEARCH INFRASTRUCTURES

INTERNATIONAL

A CSIC RESEARCHER ASSUMES THE PRESIDENCY OF THE EUROPEAN STRATEGY FORUM ON RESEARCH INFRASTRUCTURES (ESFRI)

José Luis Martínez, Research Professor at the ICMC, has become the eighth Chair of ESFRI by assuming the presidency of the Forum for a period of three years, ending on December 31, 2026, coinciding with the publication of the ESFRI Roadmap 2026. Its work is focused on renewing the roadmap of Europe's major scientific facilities and improving their coordination.



José Luis Martínez, eighth Chair of ESFRI since its creation in 2002.

CREATION OF THE OFFICE OF MAJOR INFRASTRUCTURES (OGI)

Within the CSIC, a transversal unit has been created, whose main objective is to optimise the organisation's participation in major research infrastructures. This unit undertakes tasks of dynamization, coordination, documentation, and implementation of the actions assigned to the OGI in the CSIC's Major Infrastructures Action Plan.

THE CSIC HOSTS THE CELEBRATION OF THE 70TH ANNIVERSARY OF CERN IN SPAIN

Organised by the Ministry of Science, Innovation, and Universities (MICIU), together with the CSIC, CIEMAT, AEI, CDTI, CPAN, and FECYT, the meeting aimed to assess the state of Spanish participation in CERN, within the framework of the institution's 70th anniversary, as well as to discuss its future prospects.



Information panel of the 70th Anniversary of CERN in Spain.



Official photo of the ICRI2024 conference.

CSIC'S PARTICIPATION IN ICRI 2024

The International Conference on Research Infrastructures (ICRI 2024) held in Brisbane (Australia) was attended by CSIC members who aimed to continue the work of internationalisation of the CSIC's infrastructures and establish links with representatives of other infrastructures.

CSIC PARTICIPATION IN ESFRI INITIATIVES (EUROPEAN STRATEGY FORUM ON RESEARCH INFRASTRUCTURES)

NEWS 2024

FORMAL PARTICIPATION OF THE CSIC IN INFRAFRONTIER, a top-level European research infrastructure that offers mouse disease models for the biomedical community. Objective: to provide the necessary tools to understand genetic function in human health and disease. Its legal form is ERIC.



FORMAL AND LEADERSHIP PARTICIPATION (CSIC IS THE COORDINATOR OF THE NATIONAL NODE):

1. Distributed System of Scientific Collections (**DISSCo**): <https://www.dissco.eu/> | <https://dissco-spain.es/>
2. Integrated European Long-Term Ecosystem (**eLTER**): <https://www.elter-ri.eu/>
3. European Plate Observing System (**EPOS**): <https://www.epos-eu.org/>
4. European Research Infrastructure for Heritage Science (**E-RIHS**): <https://www.e-rihs.eu/> | <http://www.e-rihs.es/>
5. European Synchrotron Radiation (**ESRF-SpLine**): <https://www.esrf.fr/> | <https://www.esrf.fr/UsersAndScience/Experiments/CRG/BM25>
6. European Industrial Biotechnology Innovation and Synthetic Biology Accelerator (**EU-IBISBA**): <https://ibisba.eu/>
7. Institut Max von Laue - Paul Langevin (**ILL**): <https://www.ill.eu/>
8. European Research Infrastructure for the generation, phenotyping, archiving and distribution of mouse disease models (**INFRAFRONTIER**): <http://www.infrafrontier.eu/>
9. Integrated Structural Biology Infrastructure (**INSTRUCT**): <https://instruct-eric.org/>
10. Square Kilometre Array (**SKAO**): <https://www.skao.int/>

CSIC'S PARTICIPATION IN ESFRI INITIATIVES IT DOES NOT LEAD:

A) FORMAL

11. Aerosols, Clouds and Trace gases Research Infrastructure (**ACTRIS**): <https://www.actris.eu/> | <https://www.actris.es/>
12. Common Language Resources and Technology Infrastructure (**CLARIN**): <https://www.clarin.eu/> | <https://www.clariah.es/es/home>
13. Cherenkov Telescope Array (**CTA**): <https://www.cta-observatory.org/>
14. Digital Research Infrastructure for the Arts and Humanities (**DARIAH**): <https://www.dariah.eu/>
15. European Brain ReseArch INfrastructureS (**EBRAINS**): <https://www.ebrains.eu/> | <https://neurotec.upm.es/ebrains/>
16. A distributed infrastructure for life-science information (**ELIXIR**): <https://elixir-europe.org/>
17. Extremely Large Telescope (**ELT**): <https://elt.eso.org/>
18. European Solar Telescope (**EST**): <https://www.est-east.eu/>
19. Einstein Telescope (**ET**): <https://www.et-gw.eu/>
20. European Infrastructure of Open Screening Platforms for Chemical Biology (**EU-OPENSREEN**): <https://www.eu-openscreen.eu/index.html> | <https://www.es-openscreen.com/>

21. European contribution to the international Argo Programme (**EURO-ARGO**): <https://www.euro-argo.eu> | <https://www.oceanografia.es/argo/>
22. European Research Infrastructure for Imaging Technologies in Biological and Biomedical Sciences (**EUROBIOIMAGING**): <https://www.eurobioimaging.eu/>
23. Facility for Antiproton and Ion Research (**FAIR**): <https://fair-center.de/>
24. High-Luminosity Large Hadron Collider (**HL-LHC**): <https://home.cern/science/accelerators/high-luminosity-lhc>
25. The KM3 Neutrino Telescope 2.0 (**KM3NeT 2.0**): <https://www.km3net.org/>
26. Open scholarly communication in the European Research Area for Social Sciences and Humanities (**OPERAS**): <https://operas-eu.org/>

B) INFORMAL

27. Analysis and Experimentation on Ecosystems (**ANAEE**): <https://www.anaee.eu/>
28. Research Infrastructure for Environmental Exposure assessment in Europe (**EIRENE**): <https://eirene.eu/>
29. European X-Ray Free-Electron Laser Facility (**EU-XFEL**): <http://www.xfel.eu/>
30. The Generations and Gender Programme (**GGP**): <https://www.ggp-i.org/>

LARGE RESEARCH INFRASTRUCTURES

NATIONAL

UNIQUE SCIENTIFIC AND TECHNICAL INFRASTRUCTURES (ICTS)

1. Doñana Biological Reserve (**RBD**): <https://icts-donana.csic.es/>
2. Spanish Oceanographic Fleet (**FLOTA**): <https://www.ieo.es/es/flota> | <http://www.utm.csic.es/es>
3. Spanish Antarctic Base (**BAE**): <http://www.utm.csic.es/es>
4. Bluefin Tuna Farming Infrastructure (**ICAR**): <http://icar.ieo.es/>
5. High biological security laboratory of the Centre for Research in Animal Health (**CISA**): <http://www.rlasb.es/>
6. Balearic Islands Coastal Observation System (**SOCIB**): <https://www.socib.es/>
7. Calar Alto Astronomical Observatory (**CAHA**): <http://www.caha.es/>
8. National Accelerator Centre (**CNA**): <https://cna.us.es/index.php/es/>
9. Integrated Infrastructure for the Production and Characterisation of Nanomaterials, Biomaterials, and Systems in Biomedicine (**NANBIOSIS**): <https://www.nanbiosis.es/>
10. Integrated Micro and Nanofabrication Clean Room (**MICRONANOFABS**): <https://micronanofabs.org/>
11. Manuel Rico Nuclear Magnetic Resonance Laboratory (**LMR**): <https://lmr.csic.es/en/>
12. Galician Supercomputing Centre (**CESGA**): <https://www.cesga.es/>

NEWS 2024

CALAR ALTO OBSERVATORY (CAHA)

The international **CAVITY** project, led by the University of Granada and based on three-dimensional images taken at Calar Alto, has published a sample of 100 galaxies located in the so-called "voids"—the most uninhabited areas of the Universe. These galaxies represent a pristine population, useful as a reference sample for cosmological studies. The two-dimensional spectra obtained with the PMAS instrument on the 3.5-metre telescope are publicly available at <https://cavity.caha.es>.



Image of the observatory captured by Rubén Alguero.

NATIONAL ACCELERATOR CENTRE (CNA)

NEW ION DETECTOR FOR ULTRA-PRECISION TEMPORAL MEASUREMENTS IN THE NUCLEAR MICROPROBE OF THE NATIONAL ACCELERATOR CENTRE

A team from the CNA and I3M has developed an innovative system to detect charged particles using an ultra-thin plastic scintillator, which enables precise temporal measurements through a fast response (~2 ns) and low energy loss for multi-MeV protons. The scintillator, coupled to a photomultiplier and protected with mylar, has been integrated into the CNA's nuclear microprobe. Its implementation opens up new possibilities in rapid process studies in semiconductor materials.

RESEARCHERS FROM THE CNA AND IAEA TRACED THE PLUTONIUM RELEASED IN ATMOSPHERIC NUCLEAR TESTS THANKS TO THE DETERMINATION OF ^{244}Pu

^{244}Pu is the longest-lived, scarcest, and least studied plutonium isotope, with a natural (supernovae and stellar mergers) and anthropogenic origin (nuclear tests of the 50s-60s). Its detection requires ultra-sensitive techniques, such as accelerator mass spectrometry (AMS). At the CNA, this technique has been optimised with its 1 MV AMS system, unique in Spain. Measurements have been validated in sediments with $^{244}\text{Pu}/^{239}\text{Pu}$ isotopic ratios of the order of 10^{-4} and even lower, demonstrating high sensitivity for environmental studies.

SPANISH OCEANOGRAPHIC FLEET

THE UTM ORGANISED THE ANNUAL MEETING OF EUROPEAN RESEARCH VESSEL OPERATORS (ERVO 2024)

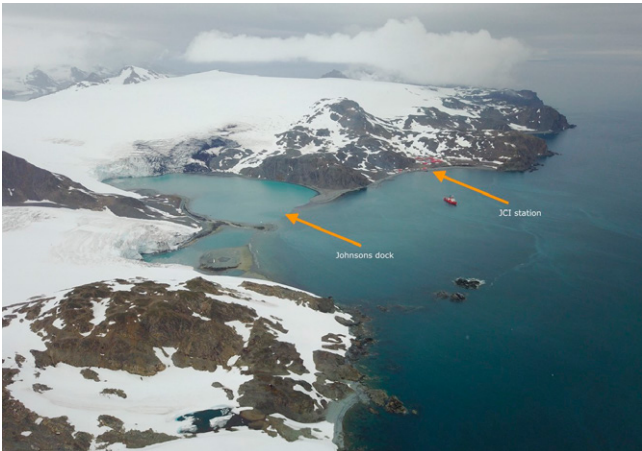
ERVO is a key event that addresses common issues and develops best practices to improve services for the scientific community. Key topics, such as innovation in marine technologies, sustainability in oceanographic research, and future collaborations between European institutions, were discussed.



Photo of the attendees at the 26th ERVO meeting.

DELIVERY OF THE NEW GLOBAL OCEANOGRAPHIC RESEARCH VESSEL B/O ODÓN DE BUEN

The largest oceanographic vessel in Spain has been delivered to the CSIC in Cadiz. Managed by the UTM, it is 84.3 metres long and has advanced technology for researching biodiversity and climate change. Its construction, which began in 2022, cost 85 million euros, with 80% of the cost financed by European funds.



Area where the underwater observatory will be located.

INSTALLATION OF AN UNDERWATER OBSERVATORY IN ANTARCTICA THANKS TO THE COLLABORATION BETWEEN UTM AND OCEAN NETWORKS CANADA (ONC)

The purpose of the collaboration is to operate an underwater observatory at the Spanish Antarctic Base Juan Carlos I, which will monitor the Southern Ocean in near real time, providing crucial data on climate and biodiversity. It will utilise advanced technology and be connected via satellite, contributing to the study of one of the least-explored regions on the planet.



Visit to the oceanographic vessel Odón de Buen.

INTEGRATED CLEAN ROOM FOR MICRO AND NANOFABRICATION (MICRONANOFABS)

- The staff of the Clean Room and the IMB-CNM were involved in the creation and theoretical and practical teaching of the **university master's degree in Semiconductor Engineering and Microelectronic Design** (UPC-UB-UAB-URV-CSIC), the first official Spanish master's degree combining microelectronic design and manufacturing technology.
- Publication of the [Book of Solutions](#), a catalogue designed to publicise the services, equipment, and technologies of the centres that belong to the Spanish Network of Micro and Nano Manufacturing Clean Rooms.

INTEGRATED INFRASTRUCTURE FOR THE PRODUCTION AND CHARACTERISATION OF NANOMATERIALS, BIOMATERIALS, AND SYSTEMS IN BIOMEDICINE (NANBIOSIS)

Expansion of the "Cutting-Edge Biomedical Solutions" (CEBS) program, which offers integrated solutions to advanced biomedical challenges, combining the expertise and capabilities of several NANBIOSIS units with the launch of CEBS focused on proteomics, synthesis, and functionalisation of customised peptides and nanovesicles.



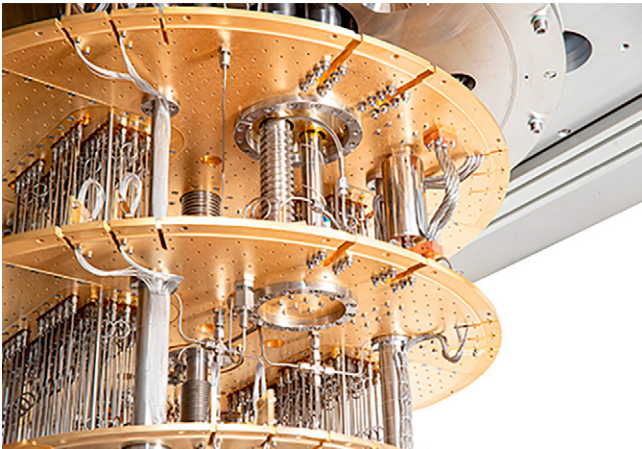
ICTS NANBIOSIS QR code.

DOÑANA BIOLOGICAL RESERVE (RBD)

Within the framework of the PENELOPE project, "Putting in value the DoñaNa E-infraestructure for Long-term monitoring of natural ProcessEs", financed with funds from the PRTR NextGeneration EU, work has been carried out on the launch of a new website that includes the **data portal "Global Change Observatory"**, where the results of environmental monitoring, such as the flood state of the marsh or the presence of waterfowl, can be easily visualized.



Environmental monitoring in the Doñana Biological Reserve

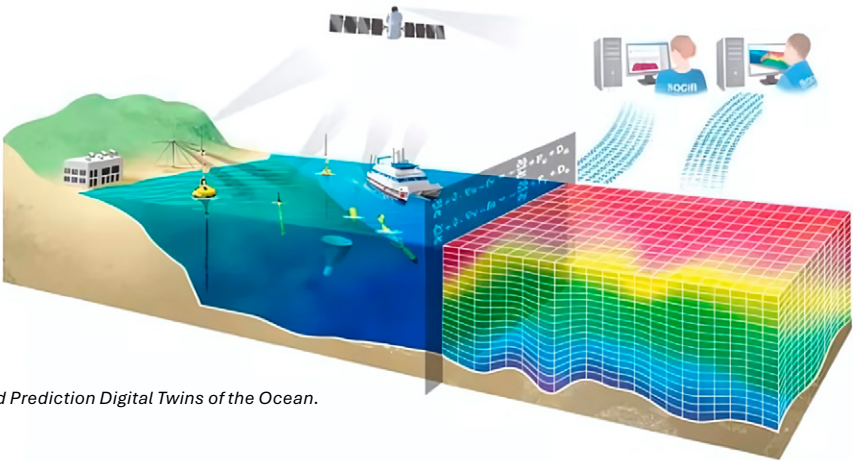


Quantum computer.

GALICIAN SUPERCOMPUTING CENTER (CESGA)

It manages unique infrastructures for R+D+i, such as the **FinisTerra Supercomputer** (which incorporates huge capabilities for artificial intelligence) or the **QMIO Quantum Computer** (which has the highest number of qubits [32] in a research institution in southern Europe, available since May 2024).

In 2024, 346 users from 63 CSIC centres used CESGA resources to develop 144 research projects.

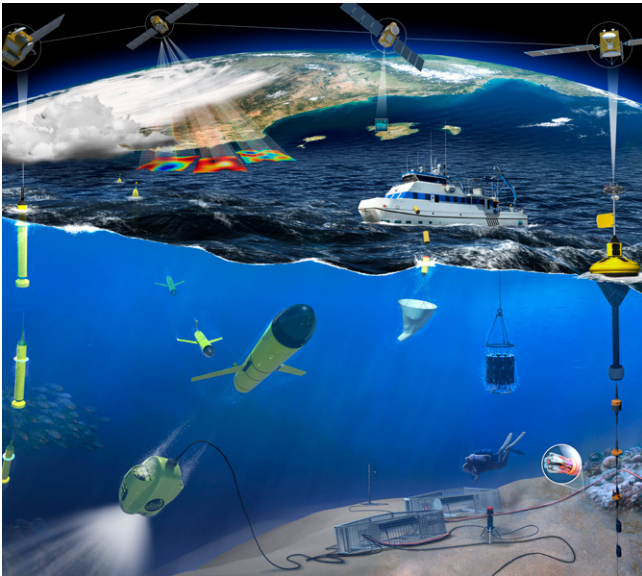


Observation and Prediction Digital Twins of the Ocean.

COASTAL OBSERVATION SYSTEM OF THE BALEARIC ISLANDS (SOCIB)

2024 | SOCIB PROMOTES THE DEVELOPMENT OF REGIONAL DIGITAL TWINS OF THE OCEAN WITH TWO PROTOTYPES IN THE BALEARIC SEA

The Co-design, Implementation, and Management Plan for two digital twins in the Balearic Sea has been completed: one for the sustainable management of Cabrera National Park and the other for adaptation to climate change on the urban beach of Cala Millor. These developments form part of the international Digital Twins of the Ocean (DITTO) initiative, as well as the European Digital Twin Ocean (EDITO) strategy, promoted by the EC. The two prototypes have been selected as "Early Applications" by the European Digital Twin Ocean – EDITO-Infra, thanks to their ability to respond to specific needs for management and adaptation to climate change.



Multiplatform Observation and Prediction System of the ICTS SOCIB.

CROSS-CUTTING: EQUALITY

The CSIC has **TWO INTERNAL BODIES** to implement the equality strategy and promote the inclusion of the gender perspective as a transversal category in science.

Comisión Delegada de Igualdad (CDI)



Diagnoses and proposes actions in the field of equality **that affect all CSIC staff members.**



Studies the causes that hinder the entry and development of **women's research careers at the CSIC** and proposes actions to eliminate existing barriers.



Together with them, an extensive network of [Equality Committees \(ECs\) of the ICUs](#) fundamental to implement the III Equality Plan in the centres. In 2024, the number of centres that have constituted their EC has reached **83%** of the total.

MILESTONE

→ Publication of the [II Evaluation of the III Plan for Equality between Women and Men at the CSIC](#) in which the degree of achievement and compliance with objectives is reviewed.

In general, the measures envisaged in the plan have been reasonably fulfilled, although there are still pending challenges. Specifically, the Delegate Commission for Equality (DCE) poses the general challenge of identifying the underlying problem of inequalities reflected in this evaluation, with the aim of establishing the necessary mechanisms to achieve real and effective equality in the areas of gender violence, promoting attendance at equality courses, and combating sexual harassment, reinforcing family conciliation, integrating diversity in research groups and encouraging a greater proportion of women in ICU management positions, as well as the correction of the gender bias seen in PRO productivity, among other measures.

→ One of these objectives, the [update of the CSIC's Protocol for Prevention and Intervention against Sexual and Gender-Based Harassment](#), was approved on April 29, 2024, incorporating the update of the regulations on equality and responding to the wish for continuous improvement of the mechanisms to ensure that the CSIC is a safe institution. Among the actions that have been carried out, it is worth highlighting:

- The signing of the **General Protocol for Early Warning Action** to coordinate actions in the event of harassment on ships.
- The creation of the **Commissioner to promote a healthy and safe work environment.**
- The preparation of the **Guides for victims, management teams, and campaign leadership** that will be published in 2025.

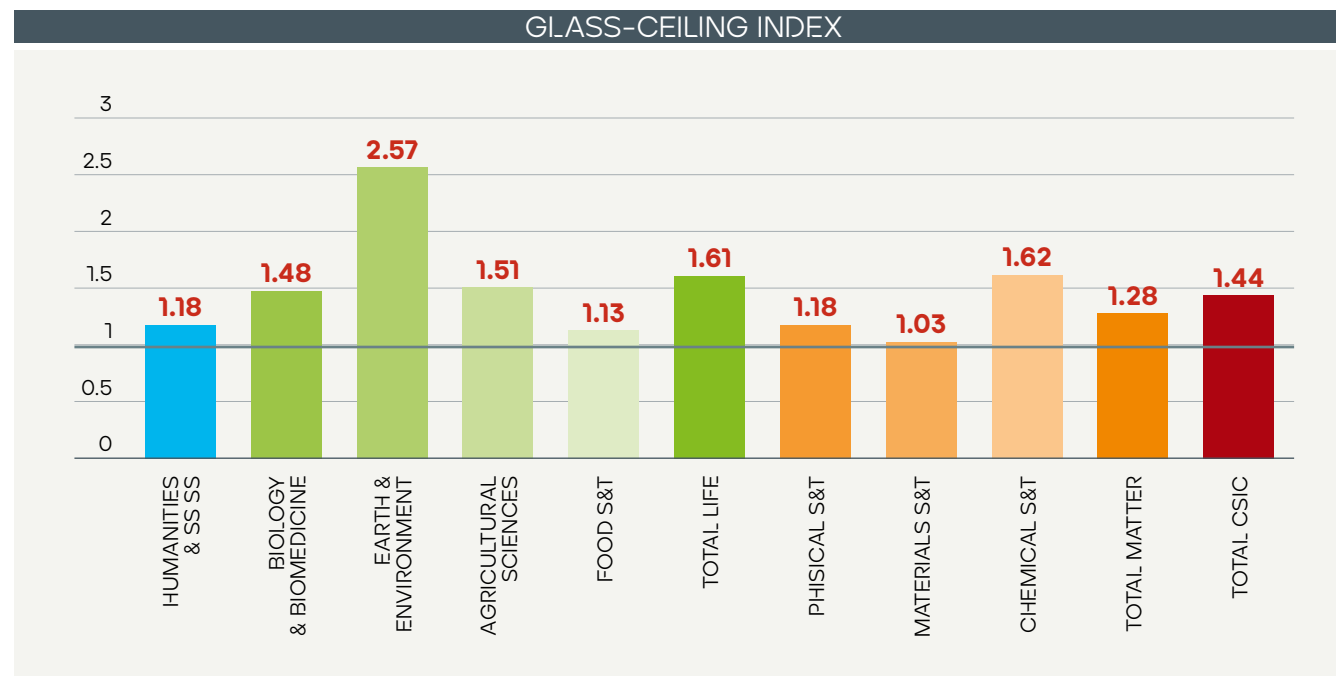
→ [IV Meeting of Equality Committees of the CSIC](#) at the *Instituto de la Grasa* of Seville. Relevant topics were discussed, such as prevention and intervention in cases of sexual and gender-based harassment, training in equality, intersectionality, family reconciliation, and the application of the gender perspective in research.



IV Meeting of Equality Committees of the CSIC.

→ Publication of the [Women Researchers Report \(IMI\) 2024](#) with disaggregated information and data on the composition of the CSIC staff and their research and training activity. Relevant data:

- Increase in the percentage of female directors, which has risen to 31.9% (26.1% in 2023).
- No improvement was observed in the proportion of Research Professors (26.7%).
- Slight worsening of the Glass-Ceiling Index (GCI), being 1.44 overall for the CSIC. The information on staff by scientific areas allows us to identify those with particularly worrying data, such as the increase in the GCI in the LIFE area in general and, especially, in the Land and Environment subarea.



→ Delivery of the [VI Accreditation Badge in Gender Equality of the CSIC](#) al to the Margarita Salas Biological Research Centre (**CIB**), with Awards to the Institute of Materials Science of Madrid (**ICMM**), as well as to the Pascual Vila Research and Development Centre (CID).

→ Recognition of the CSIC as a "**Reference Institution in women's leadership**" in the II Edition of the Association of Women in the Public Sector Awards.

→ Celebration of the [International Day of Women and Girls in Science \(11F\)](#) with more than 200 free activities at different locations aimed at educational centres and the general public, which served to promote meetings with CSIC researchers and technicians.



ETHICS AND SCIENTIFIC INTEGRITY

ETHICAL EVALUATION OF RESEARCH

822

EVALUATIONS
CARRIED OUT

565

APPLICATIONS
RECEIVED

235

ANIMAL EXPERIMENTATION
PROJECTS

330

PROJECTS WITH BIOETHICAL
AND/OR BIOSAFETY
IMPLICATIONS

518

EVALUATIONS OF
RESEARCH ACTIVITIES

155

WITH THE PARTICIPATION OF HUMAN BEINGS,
THEIR SIMPLES, AND DATA

194

WITH GMO

169

WITH BIOLOGICAL RISK AGENTS

69

EVALUATIONS OF STATISTICAL
METHODS AND CALCULATIONS

SCIENTIFIC INTEGRITY CONFLICTS

MANAGEMENT OF

8

CONFLICTS

SUSTAINABILITY

1st CSIC SUSTAINABILITY PLAN 2024-2026



- CHALLENGES**
- 1. Reduce the environmental impact of its activities.
 - 2. Promote a more efficient and resource-friendly organisational model.
 - 3. Fostering an internal culture of sustainability.

STRUCTURE 4 STRATEGIC AXES, 10 LINES OF ACTION, 32 SPECIFIC ACTIONS WITH COMPLIANCE INDICATORS.	1. RESPONSIBLE AND EFFICIENT CONSUMPTION OF ENERGY AND WATER L1 Buildings. L2 Information and Computer Technologies (ICT).	2. SUSTAINABLE MOBILITY L3 Daily Staff Mobility. L4 Service Trips.	3. SOCIAL, DEMOGRAPHIC, AND EGALITARIAN SUSTAINABILITY L5 Internal plural demography. L6 Accessibility. L7 Sustainable public procurement.	4. CULTURE OF SUSTAINABILITY AND GOOD GOVERNANCE FOR A CIRCULAR ECONOMY L8 Food. L9 Waste Recycling. L10 Awareness and sustainable research.
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SUSTAINABILITY COMMITTEE OF THE CSIC



Created with a multidisciplinary approach, comprising
22 members with different backgrounds and areas of expertise.

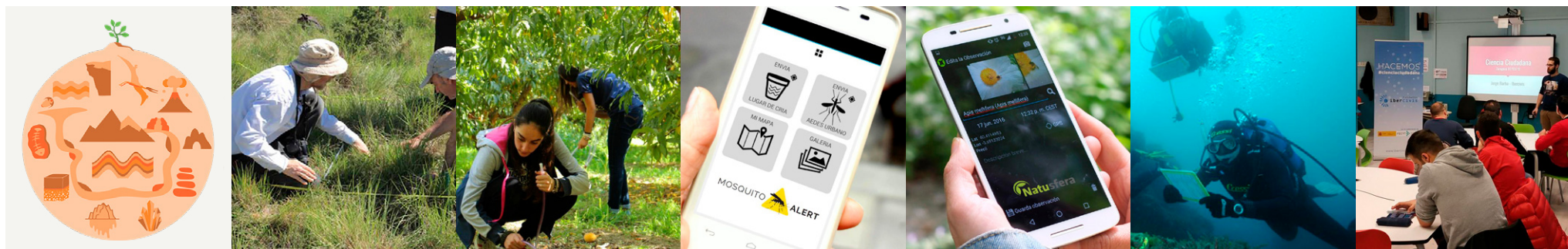
38 research institutes and the CN INIA have already
constituted their own sustainability committee.



CITIZEN SCIENCE

Science by and for the people. Also with them.

CITIZEN SCIENCE PROJECTS



SPONSOR A ROCK

Promoted by the IGME-CSIC for the conservation of Geological Heritage, its objective is to conserve and improve the protection of Spanish geological heritage through the active involvement and mobilisation of the non-specialised public, companies, and associations, together with professionals from the scientific community.

ADOPT A PLANT

Anyone can collaborate in the tracking and monitoring of species and habitats of interest to the European Union that are present in Aragón.

MELANOGASTER. CATCH THE FLY

Secondary school students and teachers collect and classify specimens of the fly *Drosophila melanogaster* as part of a project aimed at understanding how organisms adapt to the environment.

MOSQUITO ALERT

Citizens, researchers, and public health and environmental managers come together to fight against the tiger mosquito and the yellow fever mosquito, vectors of Zika, Dengue, and Chikungunya.

NATUSFERA

Photograph the nature that surrounds you and share your observations through this platform. You will be able to expand your knowledge of biodiversity and help the scientific community obtain data on species distributions.

SEA OBSERVERS

If you like the sea, dive, sail, fish, do water sports, or go to the beach, you can get involved in marine research by sharing your observations and experiences through this platform.

IBERCIVIS

The CSIC participates in this private, non-profit foundation that promotes citizen science, voluntary computing, and collective intelligence through multiple initiatives.

INSTITUTIONAL RELATIONS AND SCIENTIFIC COLLABORATION

79 National

81 International

4

INSTITUTIONAL RELATIONS AND SCIENTIFIC COLLABORATION

NATIONAL

1,295
ACTIVE
AGREEMENTS

SCIENTIFIC COLLABORATION	72
EDUCATIONAL COLLABORATION	49
R+D	43
TRAINING	32
SCIENTIFIC CULTURE	6
INSTALLATIONS AND EQUIPMENT	5

221
NEW AGREEMENTS

EXPERT ASSESSMENT	5
MAJOR INFRASTRUCTURES	5
JOINT INSTITUTIONS	2
STAFF	1
TECHNOLOGICAL SUPPORT	1

- Agreement between the Barcelona Supercomputing Center-National Supercomputing Center (BSC-CNS) and 45 participating entities (including the CSIC) in the **Data Science Program "Data Infrastructure for Personalised Medicine" (IMPACT-Data)**. The overall objective of the programme is to develop a system for collecting, integrating, and analysing clinical and molecular data aimed at improving the health of each individual patient for the benefit of society. The subsidy granted to the BSC-CNS is 4,549,380 euros distributed among the signatory parties.
- Agreement with the Regional Government of Castilla y León, the City Council of Salamanca, and Unicaja Banco, SA, for the **launch of the "CSIC-María la Brava" House of Science in Salamanca**. This scientific infrastructure is conceived as an open space for scientific dissemination, as well as educational and cultural entertainment for all citizens, inspired by the experience, background, and research quality accredited by the CSIC.



House of Science_3. Signing ceremony at Salamanca Town Hall. From left to right: Alberto Gurrionero, Deputy Director of the Castilla y León South Region of Unicaja; Rocio Lucas Navas, Minister of Education of the Regional Government of Castilla y León; Carlos García Carbayo, Mayor of Salamanca; and Carlos Closa Montero, Vice-President of Organisation and Institutional Relations of the CSIC.

- Agreement with Promotur Turismo Canarias, SA, the University of La Laguna, the General Foundation of the University of La Laguna, and the University of Las Palmas de Gran Canaria, for the joint implementation of actions for the **intelligent management and creation of the Blue Tourism product**, to regulate the cooperation between the parties for the **development of six subprojects in the Islas Canarias**: **1)** Destination of volcanoes; **2)** Promoting the ocean health of the Islas Canarias; **3)** Unique marine nature for your health and well-being; **4)** Protectors against climate change; **5)** A sea of sounds; **6)** Reference for the Study of the Quality of the Planet's Waters. The subprojects have 3,200,000 euros available for their execution.
- The CSIC has agreements with **80 universities**, allowing their **students** to undertake academic internships for bachelor's and/or master's degrees, Final Degree Projects (TFG), Final Master's Projects (TFM), or doctoral studies in the organisation's institutes and centres.

8,302
REPORTS

PRODUCED BY THE NATIONAL CENTRES AS **TECHNICAL REFERENCE AND SUPPORT SERVICES FOR PUBLIC POLICIES**

824



Instituto Español de Oceanografía

395



Instituto Geológico y Minero de España

7.083



Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria

MAIN BENEFICIARIES:

Ministry for Ecological Transition and the Demographic Challenge

Ministry of Agriculture, Fisheries, and Food

49 JOINT RESEARCH INSTITUTES SHARED
WITH **42** ENTITIES AND INSTITUTIONS:

24
PUBLIC UNIVERSITIES

HIGHLIGHTING, BY NUMBER OF INSTITUTES, **THE UNIVERSITIES OF SEVILLE, THE AUTONOMOUS UNIVERSITY OF MADRID, AND THE POLYTECHNIC UNIVERSITY OF VALENCIA**

9
AUTONOMOUS GOVERNMENTS

PARTICIPATE IN ITS FINANCING, HIGHLIGHTING, BY NUMBER OF INSTITUTES, **THE JUNTA DE ANDALUCÍA, THE GENERALITAT DE CATALUNYA AND THE PRINCIPADO DE ASTURIAS**

9
OTHERS

128 **ACTIVE R+D+I UNITS ASSOCIATED WITH THE CSIC**

21 CREATED

28 RENEWED

63

EXTERNAL ENTITIES
(**65%** UNIVERSITIES)

ARE ASSOCIATED WITH THE CSIC THROUGH

59 RESEARCH INSTITUTES

PARTICIPATION IN **372** ENTITIES AND BODIES

56
FOUNDATIONS

8
COMPANIES + EIGS

21
PUBLIC BODIES

14
CONSORTIA

42
ASSOCIATIONS

231
ENTITIES WITHOUT
LEGAL PERSONALITY

IN 2024
THERE WERE

15
NEW AFFILIATIONS

1
DISAFFILIATION

INSTITUTIONAL RELATIONS AND SCIENTIFIC COLLABORATION

INTERNATIONAL

MEETINGS TO DISCUSS THE FUTURE OF SCIENCE IN EUROPE

- Two meetings were held in Brussels, in the context of the **G6 for Science**: one with the European Commissioner for Innovation, Research, Culture, Education and Youth; the other including a meeting with the President of the Council of the European Innovation Council and the President of the European Research Council, and meetings with the Director-General for Research and Innovation of the European Commission and a member of the Committee on Industry, Research, and Energy (ITRE).
- Participation of the CSIC, which holds the Vice-Presidency of **Science Europe**, in five international forums.



Patrick Cramer, president of Max Planck; Maria Chiara Carozza, president of the CNR; Eloisa del Pino, president of the CSIC; Otmar Wiestler, president of Helmholtz; and Antoine Petit, resident of the CNRS.

- Celebration of the "**Spain Science & Innovation 2024**" event at the CSIC Delegation in Brussels, where the main milestones and impact of Spanish participation in the European Union's Framework Programmes for Research and Innovation since their inception in 1984 were reviewed. [Link to the news](#).



The Vice President of International Relations of the CSIC, Javier Moreno, at the conference "**Spain Science & Innovation 2024**".

- Publication of the [preliminary position](#) of the CSIC for the preparation of the tenth EU Research and Innovation FP 2028-2034, defending the role of FPs for the development of the Union and the promotion of its values, highlighting the role of collaborative research.

CAPACITY-BUILDING IN SCIENTIFIC MANAGEMENT AT THE INTERNATIONAL LEVEL

Participation of the CSIC in the **annual conference** of the European Association of Research Managers and Administrators (**EARMA**) and, for the first time, actively as a member of the Organising Committee of Annual Conferences, which is accessed through a public call and selection.

SCIENCE DIPLOMACY

- Signing of a **scientific cooperation agreement with the Spanish Agency for International Development Cooperation** (AECID). The aim is to deepen and systematise the collaboration of both institutions in Science for Development, seeking to enhance and strengthen the promotion of Spanish scientific knowledge abroad. The agreement complements the training activities initiated in 2023 with the Diplomatic School.



CSIC-AECID signing ceremony at the CSIC headquarters, Madrid.

- Active participation of the CSIC in the **External Action Strategy for Africa** of the Ministry of Foreign Affairs, European Union, and Cooperation, contributing and participating in the VII Meeting of the Africa Roundtable.
- Participation in the **IX Meeting of Spanish Science, Technology and Innovation Diplomacy** and the Network of Associations of Spanish Scientists and Researchers Abroad.



Participation of the president in the IX Science Diplomacy Meeting organised by the FECYT.

- The CSIC joins the **European Union Science Diplomacy Alliance (EUSDA)**, which seeks to develop, maintain, and organise joint research projects, policy advice, capacity-building, and training activities in science diplomacy.



Event held at the European Parliament in Brussels, attended by representatives of European research organisations, low- and middle-income countries, the European Commission, and UNESCO. In the centre of the image, the deputy vice-president for Internationalisation, Isabel Díaz.

- The CSIC is a co-founding partner of the **European Research Alliance for Sustainable Development (ERASuD)**, composed of 12 leading research organisations in Europe, and seeks to influence European policymakers to continue collaborating equitably in the long term with low- and middle-income countries to better address the interconnected challenges facing our planet.

RESEARCH SECURITY

In 2024, the EU Council adopted the Recommendation on enhancing research security to protect critical sectors of European scientific and technological research. The CSIC has participated in national and international meetings for the development of operational and institutional recommendations, such as the Conference on Research Security on the margins of the annual Congress of the European Association of Research Managers and Administrators (EARMA) or the G7 Conference on Security and Integrity in the Global Research Ecosystem.

STRENGTHENING INTERNATIONALISATION THROUGH NEW INITIATIVES

- The CSIC **signed 86 new international agreements**, including bilateral staff mobility agreements with the National Research Centre of Italy, the National Research Centre of Morocco, and the National Council for Scientific and Technological Development of Brazil.
- The first edition of actions for the **mobility** of research staff (researchers, technicians, and managers) attached to the CSIC in research centres and universities of the **Ibero-American Community of Nations** has been announced, within the framework of the CSIC-Carolina Foundation collaboration agreement.
- Signing of a **scientific cooperation agreement** with the **African Academy of Sciences (AAS)** to foster collaboration between scientific staff and research groups in scientific and technological fields in which both parties have a clear interest.
- The **first stays in the USA of CSIC research staff begin** thanks to the CSIC-Fulbright Program, which, every year, finances up to 10 scholarships aimed at carrying out research and/or training stays in the USA and Spain by CSIC research staff and scientific staff attached to American institutions, respectively.
- With the aim of **attracting and retaining ERC research staff at the CSIC**, the 1st edition of the Pro-ERC Programme and Action Plan 2024-2026 distinctions has been launched, which includes the MENTO, FUNDS, and AGAIN grants, which recognise the degree of success of mentoring, incentive in participation, and results, respectively, in the Horizon Europe ERC calls.

THE CSIC JOINS FOUR FOREIGN LEGAL ENTITIES



EUROPEAN PLATFORM ON SMART SYSTEMS INTEGRATION (EPOSS)

It aims to coordinate activities in the field of Intelligent Systems Integration, one of its main objectives being to develop a vision and establish a Strategic Research Agenda.



MED VET NET ASSOCIATION → EUROPEAN ONE HEALTH ASSOCIATION (EOHA)

It promotes the “One Health” approach to combating zoonoses and antimicrobial resistance (AMR) and supporting a healthy and sustainable food supply chain across Europe and beyond.



MICROBIOMESUPPORT ASSOCIATION

Dedicated to ensuring that microbiome science manages the transition from R+D to the implementation phase and supports the transition to a future-proof food system that ensures food security, “One Health” and human well-being.



EI CLIMATE-KIC

It is the largest EU initiative working to accelerate the transition to a zero-carbon and climate-resilient society.

SCIENCE FOR SOCIETY

- 85** The CSIC in the DANA
- 87** Science for public policy
- 89** Scientific dissemination
- 94** CSIC Alumni

5

THE CSIC IN THE DANA

SCIENTIFIC-TECHNICAL ADVICE AND DECISION-MAKING SUPPORT FOR EMERGENCY MANAGEMENT

ACTIVATION OF THE CSIC EMERGENCY ADVISORY PROTOCOL: 30TH OCTOBER

8 MULTIDISCIPLINARY TEAMS AND GROUPS

1. Floods.
2. Hydrogeology and pollution.
3. Waste management.
4. Effect on the marine environment.
5. Health risks.
6. Ground movements.
7. Effects on infrastructures and buildings.
8. Social risks.

WITH THE SUPPORT OF 8 TEAMS AND GROUPS OF:

- GIS (Geographic Information System).
- Remote sensing.
- Drones.
- Occupational Risk Prevention.
- Communication.
- Management.
- Logistics: CSIC Delegation in the Comunitat Valenciana.



PARTICIPATION IN 83 CECOPI MEETINGS AND SEVERAL WORKING GROUPS

225
REPORTS ISSUED

91
FOLLOW-UP

134
SCIENTIFIC-TECHNICAL

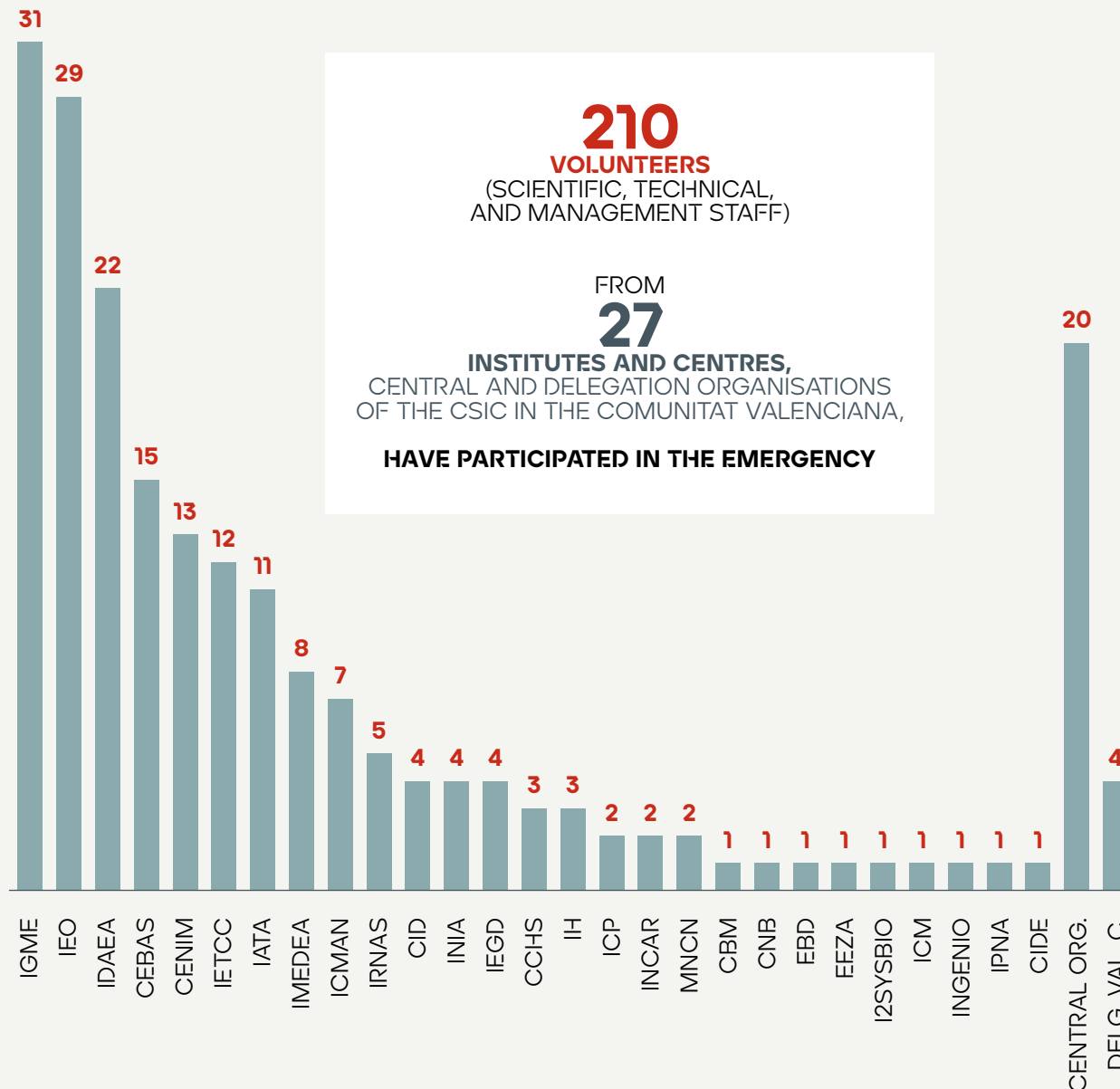
MAIN CONTENTS OF THE REPORTS:

- Estimation of affected areas.
- **Mud:** Estimation of the volume / Suitability of the land for dumping / Studies for its thickening.
- Biological analyses and polluting compounds in mud and **water from the** Poyo and Albufera ravines.
- **Ocean floor** exploration, generation of detailed bathymetry and current models.
- Air and **groundwater quality monitoring.**
- **Building** damage.
- Treatment and use of **waste.**
- **Ground** movements.
- Soil contamination **in fields.**

5
RESEARCH PROJECTS
ACTIVATED

1,397,873.70€
INVESTED

TRANSFER OF RESULTS
44 TRADE SECRETS
4 PATENT APPLICATIONS



21
FIELD
CAMPAIGNS

OBJECTIVES:

- Search for objects at sea.
- Quarries for mud collection.
- Assessment of the situation and support with drones.
- Effects on structures and buildings.
- Sampling of contaminated mud, dust and soil.
- Study of moulds and damp.
- Thickening of mud in garages.
- Sampling of household waste, treatment and revaluation.
- Air quality.
- Marine environment impact.

SCIENCE FOR PUBLIC POLICY

- **Creation of the Scientific Advisory Unit for Public Policy (UAC)**

Attached to the Presidency of the CSIC, which will support the National Office of Science Advice (ONAC). Its function is to inform, assist, and advise ministerial departments on any public policy that requires scientific evidence. To this end, it is responsible for collecting, analysing, and distributing knowledge from the national and international scientific community, which may be relevant for decision-making by ministerial departments that request it.



- Preparation of **SIX new thematic reports** that present **solid scientific evidence** regarding a scientific and social problem. The knowledge generated in CSIC centres and institutes is transformed into contributions accessible to a non-specialised audience, providing information that supports political decision-making.



1. RISKS AND THREATS OF EXTREME MARINE EVENTS

It reviews three types of marine events: marine heatwaves, coastal phenomena, and harmful algal blooms, with the aim of understanding the mechanisms that generate extreme events and establishing early warning systems and predictive models to advise administrations on managing their risks in the marine environment.



2. LIVING MARINE RESOURCES

It highlights the major challenges faced by the seafood industry, which must contribute to a healthy, affordable, and efficient diet while ensuring the conservation of exploited resources and the well-being of the socio-ecological system.





3. METABOLIC DISEASES

It analyses the social, health, and economic problems posed by the increase in obesity, type 2 diabetes, and cardiovascular diseases. It covers the most outstanding lines of research aimed at resolving the current challenges of metabolic diseases, thereby facilitating the transfer of basic and translational knowledge generated at the CSIC.



4. THE VOLCANIC RISK

It explores key concepts, analyses their impacts, and provides a comprehensive framework for the study and effective management of volcanic risks within the CSIC's lines of research, enabling early preparedness, a coordinated response, and a sustainable recovery from volcanic eruptions.



5. WHEN FRESH WATER BECOMES SALTY

It explains the leading causes of salinisation of freshwater ecosystems (rivers, lakes, wetlands, etc.) and its impact on ecosystems, the economy, and human health. It presents the priority lines of research and proposes management measures, including recommendations to improve public policy.



6. LIGHT POLLUTION

It explains the challenge of tackling the increasing proliferation of artificial light on our planet. It reviews their potential impacts, which extend to areas as diverse as environmental and human health, astronomical observations, or our cultural heritage.



COLLECTION OF 17 THEMATIC REPORTS



SCIENTIFIC DISSEMINATION

19,543 SCIENCE DISSEMINATION INITIATIVES
CARRIED OUT BY THE INSTITUTES, CENTRES, AND INSTITUTIONAL DELEGATIONS OF THE CSIC

14,941 FACE-TO-FACE WITH **1,558,894** ATTENDEES:

2,945
CONFERENCES

3,687
GUIDED TOURS

5,402
WORKSHOPS

97
COMPETITIONS OF THEIR OWN CREATION

141
EXHIBITIONS

4,602 NON-FACE-TO-FACE:

1,016
VIDEOS

27
MOBILE APPS

512
SCIENCE
WEBSITES
AND BLOGS

MUST-SEE OUTREACH EVENTS

3RD EDITION CSIC CINEMA with colloquium and screening sessions at the CSIC central campus in Madrid, and a session at the Institute of Marine Sciences in Barcelona. The screenings, free of charge, were inclusive and accessible to people with some type of disability thanks to subtitling, audio description, sign language interpretation, and the use of magnetic loops. **1700 ATTENDEES**, 5% of whom had some type of disability.

Celebration of **THE EUROPEAN RESEARCHERS' NIGHT**
CSIC Specialists in all areas of knowledge were present in 12 autonomous communities, sharing their science in multiple formats.



CSIC Cinema included films on marine sciences to celebrate the Decade of the Oceans. Image of the session of *The Impossible* on July 11th at the ICM in Barcelona.

Participation in the **XXIV SCIENCE AND TECHNOLOGY WEEK** with **+ 300 ACTIVITIES**. This event, with its solid history, has become a benchmark for scientific dissemination in Spain. RTVE's '*Saber y Ganar*' programme dedicated five episodes to the Science and Technology Week at the CSIC.



Open day of the Centre for Advanced Studies of Blanes during its Science Week.

Celebration of Christmas at [CSIC X+](#) with a trip to the **poles uniting science, culture, and tradition**. On the one hand, a 'Polar Expedition' was carried out for children in the LABs X+ of the National Museum of Natural Sciences. On the other hand, the 'Sound Expedition' was carried out, where artists and researchers from the CSIC revealed the sounds of their Christmas in cities such as Gijón, Zaragoza, Madrid, and Granada.



'CSIC X+ sound expedition' at the "Las Armas" in Zaragoza with the artists Queralta Lahoz, Gorka Urbizu, The New Raemon, and the researcher Jesús Revuelto, from the Pyrenean Institute of Ecology.

UNIQUE PROJECTS

PODCAST 'SCIENCE TO READ' made from the books of the collection, *What do we know about?*. In the **11 episodes broadcast** during 2024, issues such as the ethics of artificial intelligence, the immune system, or science in the kitchen were discussed, alongside the authors.



Recording of 'Science to read' on World AIDS Day with researcher Sonia de Castro, co-author of the book 'HIV and AIDS'.

The **SCIENCE CITY PROJECT** is present in **59 locations** throughout Spain. **+ 100 activities** were organised and attended by **+ 22,500 people**.

INAUGURATION OF FOTCIENCIA20 (PHOTOSCIENCE20), comprising 49 scientific photographs that travelled to [various locations](#) in Spain and abroad. An embossed version of the ten winning images was incorporated, which, together with an additional audio description, allowed them to be enjoyed by people with low vision.

EDUCATION AND DIDACTICS OF SCIENCE

CAZABULOS (MYTH-BUSTERS)

EDUCATIONAL PROGRAM aimed at 7th- and 8th-grade primary school students to identify and debunk **scientific hoaxes**. The initiative offers activities such as a science and humour show, online training, and a video contest. In the 1st edition, **2,300 students** participated.



Winners at the final gala of Cazabulos (Myth-busters) held on June 13, 2024, at the CSIC headquarters in Madrid.

SCIENCE IN THE NEIGHBOURHOOD

Now in its 8th edition, the project was held in Barcelona. After consolidating its network of centres in Seville and Madrid, it added five secondary schools and two neighbourhood centres in Barcelona's districts, with the aim of **bringing scientific culture to vulnerable areas** of these large cities. It reached around **13,700 people** through **180** inclusive and egalitarian activities.

EDUCATION AND DIDACTICS OF SCIENCE

THE CSIC AT SCHOOL

- 14 **SCIENTIFIC TRAINING** courses, seminars, and workshops were given to some **550 teachers**.
- Four **AUTONOMOUS SCIENTIFIC MEETINGS WERE HELD** between children, teachers, and research staff of the CSIC, with + 1,500 attendees and the presentation of +20 research projects.
- Within the framework of the Erasmus+ project, two mobilities took place **TO THE CITIES OF BYDGOSZCZ AND THESSALONIKI**, together with more than 40 teachers from schools in six autonomous communities.
- The new series of **FIVE FILMS, "DISCOVERING THE UNSEEN WORLD,"** was presented as a didactic resource for classrooms in the early stages of education.
- **VIII INTERNATIONAL SCIENTIFIC CONFERENCE 'THE CSIC AT SCHOOL'** with the aim of reinforcing values, culture, and equality and showing the results of the new methods of teaching science with which they work in the classroom. **+100 specialists in education and science attended.**



Attendees at the VIII International Scientific Conference 'The CSIC at School' held at the CSIC headquarters.

BICHOS (Creatures), 2nd title of the collection **Mentes Curiosas, Curiosas Mentes'** (**Curious Minds, Mindfully curious**) for children and young people, in co-edition with Zahorí Books.



Cover of the book 'Women Illustrate Botany'.

'WOMEN ILLUSTRATE BOTANY: ART, SCIENCE, AND GENDER', published by the CSIC Publishing House, has received the **1st prize** in the **Art Books** category of the Best Edited Books Awards **of the Ministry of Culture**.

Organisation of the **11th International Prize for Scientific and Nature Illustration ILLUSTRACIENCIA**, with a special category 'Cajal Year' and, for the first time, in an accessible format for people with visual disabilities.



Desert flat snake on the poster of the exhibition *Ilustraciencia 11*. Work by Alejandro González, winner of the Naturalist Illustration Prize.

BOOKS

LARGE OUTREACH VENUES



International Botanical Congress 2024.

ROYAL BOTANICAL GARDEN

FOR THE 1ST TIME, THE INTERNATIONAL BOTANICAL CONGRESS (IBC 2024) WAS HELD IN SPAIN, CO-ORGANISED BY THE RJB AND THE SPANISH BOTANICAL SOCIETY

Nearly 3,000 people participated during the congress in the hundreds of presentations, symposia, conferences, and workshops that took place. Madrid City Council has recognised this congress as an "ambassador" of a global reference by awarding it the "Recognition Night" prize.

THE PROJECT 'THE ACCESSIBLE GARDEN', AWARDED AT THE II CSIC AWARDS FOR SCIENTIFIC DISSEMINATION AND CITIZEN SCIENCE

It favours diversity and inclusion in the field of botanical dissemination by addressing the attention to diverse groups, such as people with cognitive, hearing, motor, or sensory disabilities, people with ASD, vulnerable groups or at risk of social exclusion, or with difficulties in getting to the RJB to carry out an activity.



Gardens of the Royal Botanical Garden.

NATIONAL MUSEUM OF NATURAL SCIENCES

CREATION OF THE PODCAST "EL GABINETE SONORO" (THE SOUNDING CHAMBER)

It aims to make the Museum known through stories and fictions aimed at all audiences. The episodes feature collections, exhibitions, or research that take place at the institution and include an agenda to highlight events, as well as a soundscape of nature that closes each program.



A graphic image to illustrate the new MNCN Podcast.



Photograph by Tim Flach next to a lion specimen from the MNCN collection.

PHOTOGRAPHIC EXHIBITION "EMOTIONS IN DANGER"

Tim Flach is one of the most prestigious animal photographers in the world, who tries to raise awareness and move people through images of endangered species. As a researcher, he focuses his studies on the emotional connection that people establish with certain images and applies these findings to the search for the sustainability of species and their habitats. The exhibition featured naturalised specimens of endangered species from the Museum's collections, which were exhibited to the public for the first time.

GEOMINING MUSEUM

INAUGURATION OF THE EXHIBITION "GEOLOGY AND MINING FOR THE HABITABILITY OF THE PLANET"

On the occasion of the 175th anniversary of the IGME-CSIC National Centre, an exhibition was presented that showcases how geology can help face the challenge of ecological transition.



Inauguration of the exhibition for the 175th anniversary of the IGME-CSIC National Centre.

PRESENTATION OF THE DOCUMENTARY "AMBER PLANET. THE ASTONISHING CRETACEOUS FORESTS"

The documentary proposes a multidisciplinary investigation based on a curious fact: for some as yet unknown reason, the great Cretaceous forests produced enormous amounts of resin intermittently for almost 60 million years, giving rise to amber deposits spread throughout the planet.

HOUSE OF SCIENCE SEVILLE

EXHIBITION "ANDALUCÍA: BIODIVERSITY LABORATORY"

Produced entirely by the House of Science CSIC, it explores the extraordinary biodiversity of Andalucía, highlighting the importance of scientific research for the conservation of the region's natural heritage.



General view of the exhibition "Andalucía, biodiversity laboratory", with interactive panels, reproductions, and educational resources.

THE HOUSE OF SCIENCE HOSTS THE 13TH EDITION OF THE EUROPEAN RESEARCHERS NIGHT

Scientific institutions in the city of Seville conducted experiments, interactive workshops, talks, gymkhanas, and various scientific dissemination activities in our facilities. This included over 70 researchers, 80 activities, and 6,000 visitors.



Photograph of the inaugural conference of the series given by Diego Kersting (IATA) in Castellón.

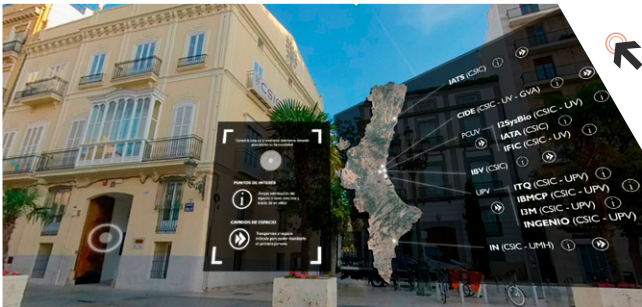
HOUSE OF SCIENCE VALENCIA

LECTURE SERIES 'THE MANY FACES OF CLIMATE CHANGE'

The cycle consisted of **six lectures** given at the CSIC's House of Science in Valencia and at the Menador Cultural Area in Castelló de la Plana. Almost 300 people attended in person, and the series accumulated more than 4,143 views on the YouTube channel.

VIRTUAL VISITS TO CSIC CENTRES IN THE COMUNITAT VALENCIANA

Visits can be viewed using virtual reality goggles, or a web version is also available. The version for VR goggles was premiered at the Expociència open day in May 2024, where nearly 4,000 people attended.





CSIC
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS

ALUMNI

Network of collaboration and exchange of personal and professional experiences regarding science and innovation.



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APPROVAL OF THE CSIC ALUMNI STRATEGIC PLAN



IF YOU HAVE FORMED PART OF THE CSIC AT ANY TIME, JOIN THE NETWORK

BECOME CSIC ALUMNI !!!

ANNEXES

1	SERVICE INTEGRATION CENTRE	2	SPECIALISED TECHNICAL UNITS	2	OCEANOGRAPHIC CENTRES
4	TERRITORIAL UNITS	1	DELEGATION		

ACRONYMS	NAME	KIND	AREA/SUB-AREA	ADDRESS	MUNICIP./ PROVINCE	TELEPHONE	WEB
CABD	Andalusian Centre for Developmental Biology	Research Inst. (I)	CAL/Biology and Biomedicine	"Ctra. De Utrera Km.1 - 41013"	Sevilla	954 97 79 11	http://www.cabd.es
CABIMER	Andalusian Centre of Molecular Biology and Regenerative Medicine	Research Inst. (I)	CAL/Biology and Biomedicine	Avda. Américo Vespucio, S/N. Isla de La Cartuja - 41092	Sevilla	954 46 80 04	http://www.cabimer.es
EBD	Doñana Biological Station	Research Inst. (O)	CAL/Earth and Environment	Avda. Américo Vespucio Nº 26. Isla de La Cartuja - 41092	Sevilla	954 23 23 40/ 95 446 67 00	http://www.ebd.csic.es/
EEA	School of Arab Studies	Research Inst. (O)	CAS/Humanities	Cuesta del Chapiz, 22 - 18010	Granada	958 22 22 90/ 34 59	http://www.eea.csic.es/
EEZ	Zaidín Experimental Station	Research Inst. (O)	CAL/Agricultural Sciences	C/ Profesor Albareda, 1 - 18008	Granada	958 18 16 00	http://www.eez.csic.es/
EEZA	Experimental Station of Arid Zones	Research Inst. (O)	CAL/Earth and Environment	Ctra. de Sacramento S/N - 04120	La Cañada de San Urbano/Almería	950 28 10 45	http://www.eeza.csic.es/
IAA	Institute of Astrophysics of Andalusia	Research Inst. (O)	CAM/Physics, Mathematics, Robotics and Computing Science and Technology	Glorieta de la Astronomía S/N - 18008	Granada	958 12 13 11	http://www.iaa.csic.es
IACI-CSIC	Andalusian Institute of Earth Sciences	Research Inst. (O)	CAL/Earth and Environment	Avenida de las Palmeras Nº 4 - 18100	Armilla/Granada	958 23 00 00	http://www.iaci.csic.es
IAS	Institute of Sustainable Agriculture	Research Inst. (O)	CAL/Agricultural Sciences	Alameda del Obispo, S/N - 14004	Córdoba	957 49 92 00/ 01 02	http://www.ias.csic.es/
IBIS	Seville Institute of Biomedicine	Research Inst. (I)	CAL/Biology and Biomedicine	Avda. Manuel Siurot S/N Campus del Hospital Universitario Virgen del Rocío - 41013	Sevilla	95 592 30 00	http://www.ibis-sevilla.es
IBVF	Institute of Plant Biochemistry and Photosynthesis	Research Inst. (I)	CAL/Agricultural Sciences	Avda. Américo Vespucio, S/N. Isla de La Cartuja - 41092	Sevilla	95 448 95 06	https://www.ibvf.us-csic.es
ICMAN	Andalusian Institute of Marine Sciences	Research Inst. (O)	CAL/Earth and Environment	Campus Río San Pedro - 11519	Puerto Real/Cádiz	956 83 26 12	http://www.icman.csic.es/
ICMS	Materials Science Institute of Seville	Research Inst. (I)	CAM/Materials S&T	Avda. Américo Vespucio, S/N. Isla de La Cartuja - 41092	Sevilla	95 448 95 27	http://www.icms.us-csic.es
IESA	Institute of Advanced Social Studies	Research Inst. (O)	CAS/Social Sciences	Pz. Campo Santo de los Mártires, 7 - 14004	Córdoba	957 76 06 25/27	http://www.iesa.csic.es
IG	Institute of Fat	Research Inst. (O)	CAL/Food S&T	Universidad Pablo de Olavide Edificio 46 Ctra. de Utrera Km 1 - 41013	Sevilla	954 61 15 50	http://www.ig.csic.es
IHSM	Institute of Subtropical and Mediterranean Horticulture La Mayora	Research Inst. (I)	CAL/Agricultural Sciences	Algarrobo-Costa - 29750	Algarrobo/Málaga	95 254 89 90	http://www.ihsm.uma-csic.es/

ANDALUCÍA (CONT.)

ACRONYMS	NAME	KIND	AREA/SUB-AREA	ADDRESS	MUNICIP./ PROVINCE	TELEPHONE	WEB
IIQ	Institute for Chemical Research	Research Inst. (I)	CAM/Chemical S&T	Avda. Américo Vespucio, 49. Isla de La Cartuja - 41092	Sevilla	95 448 95 53	http://www.iiq.csic.es
IMSE,CNM	Seville Microelectronics Institute	Research Inst. (I)	CAM/Physics, Mathematics, Robotics and Computing Science and Technology	Avda. Américo Vespucio, Nº 28. Isla de La Cartuja - 41092	Sevilla	95 446 66 66	http://www.imse-cnm.csic.es
IPBLN	Lopez Neyra Institute of Parasitology and Biomedicine	Research Inst. (O)	CAL/Biology and Biomedicine	Avd. del Conocimiento, S/N - 18100	Armilla/Granada	958 18 16 21/28/26	http://www.ipb.csic.es/
IRNAS	Institute of Natural Resources and Agrobiology of Seville	Research Inst. (O)	CAL/Agricultural Sciences	Avda. Reina Mercedes, 10 - 41012	Sevilla	95 462 47 11	http://www.irnase.csic.es/
CICCARTUJA	Isla de La Cartuja Scientific Research Centre	SIC (I)		Avda. Americo Vespucio, S/N. Isla de La Cartuja - 41092	Sevilla	954 48 95 01	http://www.ciccartuja.es/
CNA	National Accelerator Centre	STU (I)	CAM/Physics, Mathematics, Robotics and Computing Science and Technology	C/ Tomas Alba Edison, 7 Isla de La Cartuja - 41092	Sevilla	954 46 05 53	http://www.centro.us.es/cna
REBIS	Seville Researcher Residence and Library	STU (O)		C/ Alfonso XII, 16 - 41002	Sevilla	954690110	www.rebis.csic.es
IEO-COCAD	Cadiz Oceanographic Centre	Oceanograph.C (O)	CAL/Earth and Environment	Puerto Pesquero, Muelle de Levante, S/N. - 11006	Cádiz	956 294 189	http://www.ieo.es/cadiz
IEO-COMA	Malaga Oceanographic Centre	Oceanograph.C (O)	CAL/Earth and Environment	Puerto Pesquero, S/N. - 29640	Fuengirola/Málaga	95 2197124	http://www.ieo.es/malaga
IGME-UT	Almeria Territorial Unit	Territorial U. (O)	CAL/Earth and Environment	"Ctra. de Sacramento, S/N 'La Cañada de San Urbano - 04120"	Almería	950 281 045	https://www.igme.es/unidad-territorial/almeria/
IGME-UT	Granada Territorial Unit	Territorial U. (O)	CAL/Earth and Environment	Urb. Alcázar del Genil, 4 'Edif. Zulema, Bajo y 1ºC - 18006	Granada	958 183 143	https://www.igme.es/unidad-territorial/granada/
IGME-UT	Seville Territorial Unit	Territorial U. (O)	CAL/Earth and Environment	"SubDelegation de Gobierno 'Pza. de España - Torre Norte - 41013"	Sevilla	954 236 611 - 954 236 677	https://www.igme.es/unidad-territorial/sevilla/
IGME-UT	Córdoba-Peñarroya Territorial Unit	Territorial U. (O)	CAL/Earth and Environment	"Ctra. Estación, S/N 'Polígono la Papelera - 14200"	Peñarroya/Córdoba	957 562 511	https://www.igme.es/servicios-e-infraestructuras/litoteca/
DI	CSIC Institutional Delegation in Andalusia	Delegation		Avda. de María Luisa S/N - 41013	Sevilla	954 23 23 49	delegacion.andalucia.csic.es

ARAGÓN

RESEARCH INSTITUTES 3 OWN 2 JOINT

1	SERVICE INTEGRATION CENTRE	1	TERRITORIAL UNIT	1	DELEGATION
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ACRONYMS	NAME	KIND	AREA/SUB-AREA	ADDRESS	MUNICIP./ PROVINCE	TELEPHONE	WEB
EEAD	Aula Dei Experimental Station	Research Inst. (O)	CAL/Agricultural Sciences	Avda. Montañana, 1005 - 50059	Zaragoza	976 71 61 00	http://www.eead.csic.es/
ICB	Institute of Carbochemistry	Research Inst. (O)	CAM/Chemical S&T	C/ Miguel Luesma Castan, 4 - 50015	Zaragoza	976 73 39 77	http://www.icb.csic.es/
INMA	Institute of Nanoscience and Materials of Aragon	Research Inst. (I)	CAM/Materials S&T	Facultad de Ciencias. c/Pedro Cerbuna,12 - 50009	Zaragoza	976 76 28 61	https://inma.unizar-csic.es/
IPE	Pyrenean Institute of Ecology	Research Inst. (O)	CAL/Earth and Environment	Avd. Montañana, S/N - 50016	Zaragoza	976 36 93 93	http://www.ipe.csic.es/
ISQCH	Institute of Chemical Synthesis and Homogeneous Catalysis	Research Inst. (I)	CAM/Chemical S&T	Facultad de Ciencias. C/ Pedro Cerbuna, 12. 50009	Zaragoza	976 76 12 31/ 10 00	http://www.isqch.unizar-csic.es
CEQMA	Aragon Chemistry and Materials Centre	SIC (I)		Facultad de Ciencias. C/ Pedro Cerbuna, 12. 50009	Zaragoza	976 76 12 31/ 10 00	
IGME-UT	Zaragoza Territorial Unit	Territorial U. (O)	CAL/Earth and Environment	Residencia CSIC campus Aula Dei. Avda Montaña 1005 – 50059	Zaragoza	976 555 153	https://www.igme.es/unidad-territorial/zaragoza/
DI	CSIC Institutional Delegation in Aragon	Delegation		Plaza Emilio Alfaro, 2-3 - 50003	Zaragoza	976 46 96 08	delegacion.aragon.csic.es

PRINCIPADO DE ASTURIAS

RESEARCH INSTITUTES 2 OWN 2 JOINT

1	OCEANOGRAPHIC CENTRE	1	TERRITORIAL UNIT	1	DELEGATION
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ACRONYMS	NAME	KIND	AREA/SUB-AREA	ADDRESS	MUNICIP./ PROVINCE	TELEPHONE	WEB
CINN	Nanomaterials and Nanotechnology Research Centre	Research Inst. (I)	CAM/Materials S&T	Avda. de la Vega 4-6. El Entrego - 33940	San Martín del Rey Aurelio / Oviedo	985 73 36 44	www.cinn.es
IMIB	Joint Institute for Biodiversity Research	Research Inst. (I)	CAL/Earth and Environment	Calle Gonzalo Gutiérrez Quiros 1 - 33600	Mieres / Oviedo	985 10 30 00	http://www.onioviedo.es/IMIB/
INCAR	Institute for Carbon Science and Technology	Research Inst. (O)	CAM/Chemical S&T	C/ Francisco Pintado Fe, 26 - 33011	Oviedo	98 511 90 90	http://www.incar.csic.es/
IPLA	Institute of Dairy Products of Asturias	Research Inst. (O)	CAL/Food S&T	C/ Francisco Pintado Fe, 26 - 33011	Oviedo	98 589 21 31	http://www.ipla.csic.es/
IEO-COG	Gijon Oceanographic Centre	Oceanograph.C (O)	CAL/Earth and Environment	Avda. Príncipe de Asturias, 70 Bis - 33212	Gijón	985 309 780	http://www.ieo.es/gijon
IGME-UT	Oviedo Territorial Unit	Territorial U. (O)	CAL/Earth and Environment	C/ Matemático Pedrayes, 25 - 33005	Oviedo	985 258 611 - 985 258 656	https://www.igme.es/unidad-territorial/oviedo/
DI	CSIC Institutional Delegation in Asturias	Delegation		C/ Quintana, 32 - 33009	Oviedo	984 84 24 49	delegacion.asturias.csic.es

ILLES BALEARS

RESEARCH INSTITUTES 2 JOINT

1	OCEANOGRAPHIC CENTRE	1	TERRITORIAL UNIT
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ACRONYMS	NAME	KIND	AREA/SUB-AREA	ADDRESS	MUNICIP./ PROVINCE	TELEPHONE	WEB
IFISC	Institute of Interdisciplinary Physics and Complex Systems	Research Inst. (I)	CAM/Physics, Mathematics, Robotics and Computing Science and Technology	Carretera de Valldemossa, Km. 7,2. Edificio Científico Técnico. Campus Universitat Illes Balears - 07122	Palma de Mallorca	971 17 32 90	http://ifisc.uib-csic.es
IMEDEA	Mediterranean Institute for Advanced Studies	Research Inst. (I)	CAL/Earth and Environment	C/ Miquel Marqués, Nº 21 - 07190	Esportes / Palma de Mallorca	971 61 18 18	http://www.imedeas.uib-csic.es
IEO-COB	Balearic Islands Oceanographic Centre	Oceanograph. C (O)	CAL/Earth and Environment	Muelle de Poniente, S/N. - 07015	Palma de Mallorca	971 133 720	http://www.ieo.es/baleares
IGME-UT	Palma de Mallorca Territorial Unit	Territorial U. (O)	CAL/Earth and Environment	C/ Felicià Fuster nº7, 07006	Mallorca	971 467 020	https://www.igme.es/unidad-territorial/palma-de-mallorca/

CANARIAS

RESEARCH INSTITUTES 1 OWN

1	OCEANOGRAPHIC CENTRE	1	TERRITORIAL UNIT	1	DELEGATION
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ACRONYMS	NAME	KIND	AREA/SUB-AREA	ADDRESS	MUNICIP./ PROVINCE	TELEPHONE	WEB
IPNA	Institute of Natural Products and Agrobiology	Research Inst. (O)	CAM/Chemical S&T	Avda. Astrofísico Francisco Sanchez, 3 - 38205	San Cristóbal de La Laguna / Santa Cruz de Tenerife	922 25 21 44/32 48	http://www.ipna.csic.es/
IEO-COC	Canary Island Oceanographic Centre	Oceanograph. C (O)	CAL/Earth and Environment	La Farola Del Mar 22, Darsena Pesquera 1. Parcela 8- 31180	Santa Cruz de Tenerife	922 549 400	http://www.ieo.es/canarias
IGME-UT	Las Palmas de Gran Canaria Territorial Unit	Territorial U. (O)	CAL/Earth and Environment	Calle Alonso Alvarado 43, 2ºA, 35003	Las Palmas de Gran Canaria	928 366 575	https://www.igme.es/unidad-territorial/las-palmas-de-gran-canaria/
DI	CSIC Institutional Delegation in Canarias	Delegation		Avda. Astrofísico Francisco Sánchez, 2, - 38206	San Cristóbal de La Laguna / Santa Cruz de Tenerife	922 25 17 28	delegacion.canarias.csic.es

CANTABRIA

RESEARCH INSTITUTES

2 JOINT

1 OCEANOGRAPHIC CENTRE

1 DELEGATION

ACRONYMS	NAME	KIND	AREA/SUB-AREA	ADDRESS	MUNICIP./ PROVINCE	TELEPHONE	WEB
IBBTEC	Institute of Biomedicine and Biotechnology of Cantabria	Research Inst. (I)	CAL/Biology and Biomedicine	C/Albert Einstein, 22 . Parque Científico y Tecnológico de Cantabria - 39011	Santander	942 20 39 30	http://www.unican.es/ibbtec/
IFCA	Physics Institute of Cantabria	Research Inst. (I)	CAM/Phisics, Mathematics, Robotics and Computing Science and Technology	Edificio Juan Jordá. Avda de los Castros S/N - 39005	Santander	942 20 14 59	http://www.ifca.csic.es
IEO-COST	Santander Oceanographic Centre	Oceanograph. C (O)	CAL/Earth and Environment	Promontorio de San Martín S/N. - 39080	Santander	942 291 716	http://www.ieo.es/santander
DI	CSIC Institutional Delegation in Cantabria	Delegation		Plaza Velarde, Nº5 - 39001	Santander	942 20 14 59	delegacion.cantabria.csic.es

CASTILLA - LA MANCHA

RESEARCH INSTITUTES

1 JOINT

ACRONYMS	NAME	KIND	AREA/SUB-AREA	ADDRESS	MUNICIP./ PROVINCE	TELEPHONE	WEB
IREC	Hunting Resources Research Institute	Research Inst. (I)	CAL/Earth and Environment	Ronda de Toledo, S/N - 13005	Ciudad Real	926 29 54 50	www.irec.es

CASTILLA Y LEÓN

RESEARCH INSTITUTES

1 OWN 4 JOINT

2 TERRITORIAL UNITS

1 DELEGATION

ACRONYMS	NAME	KIND	AREA/SUB-AREA	ADDRESS	MUNICIP./ PROVINCE	TELEPHONE	WEB
IBFG	Institute of Functional Biology and Genomics	Research Inst. (I)	CAL/Biology and Biomedicine	Zacarias Gonzalez, 2 - 37007	Salamanca	923 29 49 00	http://ibfg.usal-csic.es
IBGM	Institute of Molecular Biology and Genetics	Research Inst. (I)	CAL/Biology and Biomedicine	C/ Sanz y Fores, S/N - 47003	Valladolid	983 18 48 01	http://www.ibgm.med.uva.es/
IBMCC	Institute of Molecular and Cellular Biology of Cancer of Salamanca	Research Inst. (I)	CAL/Biology and Biomedicine	Campus Miguel de Unamuno - 37007	Salamanca	923 29 47 20	http://www.cicancer.org/
IGM	Institute of Mountain Livestock	Research Inst. (I)	CAL/Agricultural Sciences	Ctra. León-Vega de Infanzones (Finca Marzanas-Grulleros) - 24346	Vega de Infanzones / León	987 31 70 64 / 71 56	http://www.igm.ule-csic.es/
IRNASA	Institute for Natural Resources and Agrobiology of Salamanca	Research Inst. (O)	CAL/Agricultural Sciences	C/ Cordel de Merinas, 42-54 - 37008	Salamanca	923 21 96 06	http://www.irnasa.csic.es/
IGME-UT	León Territorial Unit	Territorial U. (O)	CAL/Earth and Environment	Parque Científico de León, Avda. Real 1, Edificio 1, 24006	León	987 262 171	https://www.igme.es/unidad-territorial/leon/
IGME-UT	Salamanca Territorial Unit	Territorial U. (O)	CAL/Earth and Environment	Plaza de la Constitución 1, Planta 3ª, 37001	Salamanca	923 265 009	https://www.igme.es/unidad-territorial/salamanca/
DI	CSIC Institutional Delegation in Castilla y León	Delegation		Edificio de Usos Múltiples, Plaza del Milenio, 1, 7ª Planta - 47014	Valladolid	983 378 422	delegacion.castillayleon.csic.es

ACRONYMS	NAME	KIND	AREA/SUB-AREA	ADDRESS	MUNICIP./ PROVINCE	TELEPHONE	WEB
CEAB	Centre for Advanced Studies in Blanes	Research Inst. (O)	CAL/Earth and Environment	C/ D'accés a la Cala St. Francesc, 14 - 17300	Blanes / Girona	972 33 61 01/02	http://www.ceab.csic.es/
CRAG	Agrigenomics Research Centre	Associated Inst. (J)	CAL/Agricultural Sciences	Campus De La Universidad Autónoma De Barcelona. C/ De La Vall Moronta, Edifici Crag. - 08193	Cerdanyola del Vallès / Barcelona	93 400 61 00/02	www.cragenomica.es
CREAF	Centre for Ecological Research and Forestry Applications	Research Inst. (J)	CAL/Earth and Environment	Edificio C Campus Universidad Autónoma de Barcelona (Bellaterra) - 08193	Cerdanyola del Vallès / Barcelona	93 581 13 12	www.creaf.es
GEO3BCN	Geosciences Barcelona	Research Inst. (O)	CAL/Earth and Environment	C/ Luis Sole I Sabaris, S/N - 08028	Barcelona	93 409 54 10	https://geo3bcn.csic.es
IAE	Institute of Economic Analysis	Research Inst. (O)	CAS/Social Sciences	Campus Universidad Autónoma de Barcelona (Bellaterra) - 08193	Cerdanyola del Vallès / Barcelona	93 580 66 12	http://www.iae.csic.es/
IBB	Botanical Institute of Barcelona	Research Inst. (J)	CAL/Earth and Environment	Passeig Migdia, S/N. Parque de Monjuïc - 08038	Barcelona	93 289 06 11	http://www.ibb.csic.es/
IBE	Institute of Evolutionary Biology	Research Inst. (J)	CAL/Earth and Environment	Passeig Marítim de la Barceloneta, 37 - 08003	Barcelona	93 230 95 07	http://www.ibe.upf-csic.es
IBMB	Barcelona Institute of Molecular Biology	Research Inst. (O)	CAL/Biology and Biomedicine	C/ Baldori Reixac, 4 - 08028	Barcelona	93 403 46 68	http://www.ibmb.csic.es/
ICE	Institute of Space Sciences	Research Inst. (O)	CAM/Physics, Mathematics, Robotics and Computing Science and Technology	Carrer de Can Magrans S/N, Campus Universidad Autónoma de Barcelona (Bellaterra) - 08193	Cerdanyola del Vallès / Barcelona	93 737 97 88	http://www.ice.csic.es
ICM	Institute of Marine Sciences	Research Inst. (O)	CAL/Earth and Environment	Passeig Marítim, 37-49 - 08003	Barcelona	93 230 95 00	http://www.icm.csic.es/
ICMAB	Materials Science Institute of Barcelona	Research Inst. (O)	CAM/Materials S&T	Campus Universidad Autónoma de Barcelona (Bellaterra) - 08193	Cerdanyola del Vallès / Barcelona	93 580 18 53	http://www.icmab.csic.es
ICN2	Centre for Research in Nanoscience and Nanotechnology	Associated Inst. (J)	CAM/Materials S&T	Campus Universidad Autónoma de Barcelona (Bellaterra) - 08193	Cerdanyola del Vallès / Barcelona	93 737 26 49	https://icn2.cat/en/
IDAEA	Institute for Environmental Diagnostics and Water Studies	Research Inst. (O)	CAM/Chemical S&T	C/ Jorge Girona Salgado, 18-26 - 08034	Barcelona	93 400 61 00	http://www.idaea.csic.es
IIBB	Biomedical Research Institute of Barcelona	Research Inst. (O)	CAL/Biology and Biomedicine	C/ Rosellon, 161. 6 y 7 Planta - 08036	Barcelona	93 363 83 00/25	http://www.iibb.csic.es
IIIA	Artificial Intelligence Research Institute	Research Inst. (O)	CAM/Physics, Mathematics, Robotics and Computing Science and Technology	Campus Universidad Autónoma de Barcelona (Bellaterra) - 08193	Cerdanyola del Vallès / Barcelona	93 580 95 70	http://www.iiia.csic.es/
IMB-CNM	Barcelona Institute of Microelectronics	Research Inst. (O)	CAM/Physics, Mathematics, Robotics and Computing Science and Technology	Campus Universidad Autónoma de Barcelona (Bellaterra) - 08193	Cerdanyola del Vallès / Barcelona	93 594 77 00	http://www.imb-cnm.csic.es
IMF	Mila y Fontanals Humanities Research Institution	Research Inst. (O)	CAS/Humanities	C/ Egipcíacas, 15 - 08001	Barcelona	93 442 34 89	http://www.imf.csic.es/
IQAC	Institute of Advanced Chemistry of Catalonia	Research Inst. (O)	CAM/Chemical S&T	C/ Jorge Girona Salgado, 18-26 - 8034	Barcelona	93 400 61 00/02	http://www.iqac.csic.es
IRII	Institute of Robotics and Industrial Informatics	Research Inst. (J)	CAM/Physics, Mathematics, Robotics and Computing Science and Technology	C/ Llorens I Artigues, 4-6, 2º - Edificio U - 8028	Barcelona	93 401 57 51	http://www.iri.csic.es
OE	Ebro Observatory	Research Inst. (J)	CAL/Earth and Environment	C/ Horta Alta, 38 - 43520	Roquetes / Tarragona	977 50 05 11	http://www.obsebre.es
CID	Centre for Research and Development Pascual Vila	SIC (O)		C/ Jorge Girona Salgado, 18-26 - 08034	Barcelona	93 400 61 00	http://www.cid.csic.es/
CMIMA	Mediterranean Marine and Environmental Research Centre	SIC (O)		Passeig Marítim, 37-49 - 08003	Barcelona	93 230 95 00	http://www.cmima.csic.es/
UTM	Marine Technology Unit	STU (O)		Passeig Marítim, 37-49 - 08003	Barcelona	93 230 95 00	http://www.utm.csic.es
DI	CSIC Institutional Delegation in Catalunya	Delegation		Egipcíacues, 15 - 08001	Barcelona	934 42 65 76	delegacion.catalunya.csic.es

C. VALENCIANA

RESEARCH INSTITUTES 3 OWN 8 JOINT

1 TERRITORIAL UNIT	1 DELEGATION
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ACRONYMS	NAME	KIND	AREA/SUB-AREA	ADDRESS	MUNICIP./ PROVINCE	TELEPHONE	WEB
CIDE	Desertification Research Centre	Research Inst. (J)	CAL/Earth and Environment	'Ctra. CV-315 Km. 10,700 - 46113	Moncada / Valencia	96 342 41 62	http://www.uv.es/cide/
I2SYSBIO	Institute of Integrative Systems Biology	Research Inst. (J)	CAL/Biology and Biomedicine	C/ Catedrático José Beltrán, 2 - 46980	Paterna / Valencia	963 544 810 / 963 544 782	https://www.uv.es/
I3M	Institute of Instrumentation for Molecular Imaging	Research Inst. (J)	CAM/Phisics, Mathematics, Robotics and Computing Science and Technology	Camino de Vera S/N Edificio 8B Acceso N, 1ª Planta - 46022	Valencia	96 387 99 07	www.i3m.upv.es
IATA	Institute of Agrochemistry and Food Technology	Research Inst. (O)	CAL/Food S&T	Avda. Catedrático Agustín Escardino Benlloch, 7 - 46980	Paterna / Valencia	96 390 00 22	http://www.iata.csic.es/
IATS	Institute of Aquaculture Torre de la Sal	Research Inst. (O)	CAL/Agricultural Sciences	C/ Torre de la Sal, S/N - 12595	Cabanes / Castellón de la Plana	964 31 95 00	http://www.iats.csic.es/
IBMCP	Primo Yufera Institute of Molecular and Cellular Biology of Plants	Research Inst. (J)	CAL/Agricultural Sciences	Ingeniero Fausto Elio, S/N. UPV-Ciudad Politécnica de la Innovación - 46022	Valencia	96 387 78 56	http://www.ibmcp.csic.es
IBV	Institute of Biomedicine of Valencia	Research Inst. (O)	CAL/Biology and Biomedicine	C/ Jaime Roig, 11 - 46010	Valencia	96 339 17 60	http://www.ibv.csic.es
IFIC	Institute of Corpuscular Physics	Research Inst. (J)	CAM/Phisics, Mathematics, Robotics and Computing Science and Technology	C/ Catedrático José Beltrán Martínez, 2 - 46980	Paterna / Valencia	96 354 34 73	http://ific.uv.es/
IN	Institute of Neurosciences	Research Inst. (J)	CAL/Biology and Biomedicine	Avda. D. Santiago Ramón y Cajal S/N - 3550	Sant Joan D'alacant / Alicante	96 523 37 00	http://in.umh-csic.es
INGENIO	Institute for Innovation and Knowledge Management	Research Inst. (J)	CAS/Social Sciences	Campus UPV. Camino de Vera S/N Edificio 8e - 46022	Valencia	96 387 70 48	http://www.ingenio.upv.es/
ITQ	Institute of Chemical Technology	Research Inst. (J)	CAM/Chemical S&T	Campus UPV. Avda de los Naranjos S/N. Edificio 6c - 46022	Valencia	96 387 78 00	http://itq.upv-csic.es/
IGME-UT	Valencia Territorial Unit	Territorial U. (O)	CAL/Earth and Environment	C/ Cirilo Amorós, 42 – 'Entreplanta - 46004	Valencia	963 943 474	https://www.igme.es/unidad-territorial/valencia/
DI	CSIC Institutional Delegation in C. Valenciana	Delegation		C/ Bailía, 1 (Plaza de la Virgen) - 46003	Valencia	96 362 27 57	delegacion.comunitatvalenciana.csic.es

EXTREMADURA

RESEARCH INSTITUTES 1 JOINT

ACRONYMS	NAME	KIND	AREA/SUB-AREA	ADDRESS	MUNICIP./ PROVINCE	TELEPHONE	WEB
IAM	Institute of Archaeology-Merida	Research Inst. (J)	CAS/Humanities	Plaza de España, 15 - 06800	Mérida / Badajoz	924 31 56 61	http://www.iam.csic.es

GALICIA

RESEARCH INSTITUTES 3 OWN 1 JOINT

2 OCEANOGRAPHIC CENTRES 1 DELEGATION

ACRONYMS	NAME	KIND	AREA/SUB-AREA	ADDRESS	MUNICIP./ PROVINCE	TELEPHONE	WEB
IEGPS	Institute of Galician Studies Padre Sarmiento	Research Inst. (J)	CAS/Humanities	Rua de San Roque, 2 - 15704	Santiago de Compostela / La Coruña	981 54 02 20/23	http://www.iegps.csic.es/
IIM	Marine Research Institute	Research Inst. (O)	CAL/Earth and Environment	C/ Eduardo Cabello, 6 - 36208	Vigo / Pontevedra	986 23 19 30	http://www.iim.csic.es/
INCIPIIT	Institute for Heritage Sciences	Research Inst. (O)	CAS/Humanities	Avda. de Vigo S/N - 15705	Santiago de Compostela / La Coruña	981 590 962	www.incipit.csic.es
MBG	Biological Mission of Galicia	Research Inst. (O)	CAL/Agricultural Sciences	Palacio de Salcedo. Carballeira, 8 (Salcedo) - 36143	Pontevedra	986 85 48 00	http://www.mbg.csic.es/
IEO-COAC	A Coruna Oceanographic Centre	Oceanograph.C (O)	CAL/Earth and Environment	Paseo Marítimo Alcalde Francisco Vázquez, 10 - 15001	Coruña (A)	981 21 81 51	http://www.ieo.es/coruna/
IEO-COV	Vigo Oceanographic Centre	Oceanograph.C (O)	CAL/Earth and Environment	Subida a Radio Faro, 50-52 - 36390	Vigo / Pontevedra	986 492 111	http://www.ieo.es/vigo
DI	CSIC Institutional Delegation in Galicia	Delegation		Rúa do Franco, 2, Apdo. 122, 15704	Santiago de Compostela / La Coruña	981 55 27 88	delegacion.galicia.csic.es

ACRONYMS	NAME	KIND	AREA/SUB-AREA	ADDRESS	MUNICIP./ PROVINCE	TELEPHONE	WEB
CAB	Astrobiology Centre	Research Inst. (I)	CAM/Physics, Mathematics, Robotics and Computing Science and Technology	Ctra. de Ajalvir, Km. 4 - 28850	Torrejón de Ardoz / Madrid	91 520 64 33	http://www.cab.inta-csic.es
CAR	Centre for Automation and Robotics	Research Inst. (I)	CAM/Physics, Mathematics, Robotics and Computing Science and Technology	Ctra. de Campo Real Km 0,200 La Poveda - 28500	Arganda del Rey / Madrid	91 871 19 00	http://www.car.upm-csic.es
CBGP	Plant Biotechnology and Genomics Centre	Research Inst. (I)	CAL/Agricultural Sciences	Parque Científico y Tecnológico, UPM Campus de Montegancedo, Ctra, M-40, Km 38 - 28233	Pozuelo de Alarcón / Madrid	91 0679100 ext. 79100	https://www.cbgp.upm.es/index.php/es/
CBM	Severo Ochoa Molecular Biology Centre	Research Inst. (I)	CAL/Biology and Biomedicine	C/ Nicolás Cabrera, 1 Campus Cantoblanco UAM - 28049	Madrid	91 196 44 01	http://www.cbm.csic.es
CENIM	National Metallurgical Research Centre	Research Inst. (O)	CAM/Materials S&T	Avda. Gregorio del Amo Num.8 - 28040	Madrid	91 553 89 00	http://www.cenim.csic.es/
CIAL	Food Science Research Institute	Research Inst. (I)	CAL/Food S&T	C/ Nicolás Cabrera, 9. Campus de Cantoblanco - 28049	Madrid	91 001 79 00	http://www.cial.uam-csic.es/
CIB	Margarita Salas Biological Research Centre	Research Inst. (O)	CAL/Biology and Biomedicine	C/ Ramiro de Maeztu, 9 - 28040	Madrid	91 837 31 12	http://www.cib.csic.es/
CINC	Cajal International Neuroscience Centre	Research Inst. (O)	CAL/Biology and Biomedicine	-	Alcala de Henares / Madrid		https://www.cinc.csic.es/es/
CISA	Animal Health Research Centre	Research Inst. (O)	CAL/Agricultural Sciences	Carretera Algete-El Casar de Talamanca, Km. 8,1 - 28130	Valdeolmos / Madrid	91 620 23 00	https://www.inia.es/Pages/Home.aspx
CNB	National Biotechnology Centre	Research Inst. (O)	CAL/Biology and Biomedicine	C/ Darwin, 3. Campus Cantoblanco UAM - 28049	Madrid	91 585 45 00	http://www.cnb.csic.es/
IC	Cajal Institute	Research Inst. (O)	CAL/Biology and Biomedicine	Avda. Doctor Arce, 37 - 28002	Madrid	91 585 47 49/50	http://www.cajal.csic.es/
ICA	Institute of Agricultural Sciences	Research Inst. (O)	CAL/Agricultural Sciences	C/ Serrano, 115 Bis - 28006	Madrid	91 745 25 00	http://www.ica.csic.es/
ICIFOR	Institute of Forestry Sciences	Research Inst. (O)	CAL/Agricultural Sciences	Ctra. De la Coruña, Km 7,5. 28040	Madrid	91 347 67 80	
ICMAT	Institute of Mathematical Sciences	Research Inst. (I)	CAM/Physics, Mathematics, Robotics and Computing Science and Technology	C/ Nicolás Cabrera, 13-15. Campus Cantoblanco UAM - 28049	Madrid	91 29 99 704	http://www.icmat.es
ICMM	Materials Science Institute of Madrid	Research Inst. (O)	CAM/Materials S&T	C/ Sor Juana Inés de la Cruz,3 Campus Cantoblanco UAM - 28049	Madrid	91 334 90 00	http://www.icmm.csic.es/
ICP	Institute of Catalysis and Petrochemistry	Research Inst. (O)	CAM/Chemical S&T	C/ Marie Curie, 2 Campus de Cantoblanco - 28049	Madrid	91 585 48 00	https://icp.csic.es
ICTAN	Institute of Food Science and Technology and Nutrition	Research Inst. (O)	CAL/Food S&T	C/ José Antonio Novais, 10 - 28040	Madrid	91 549 23 00	http://www.ictan.csic.es
ICTP	Institute of Polymer Science and Technology	Research Inst. (O)	CAM/Materials S&T	C/ Juan de la Cierva, 3 - 28006	Madrid	91 562 29 00	http://www.ictp.csic.es/
ICV	Institute of Ceramics and Glass	Research Inst. (O)	CAM/Materials S&T	C/ Kelsen,5. Campus de Cantoblanco - 28049	Madrid	91 735 58 40	http://www.icv.csic.es/
IEGD	Institute of Economics, Geography and Demography	Research Inst. (O)	CAS/Social Sciences	C/ Albasanz, 26-28. 3ª Modulo F - 28037	Madrid	91 602 23 00	http://www.iegd.csic.es/
IEM	Institute for the Structure of Matter	Research Inst. (O)	CAM/Physics, Mathematics, Robotics and Computing Science and Technology	C/ Serrano, 113bis, 119, 121 y 123 - 28006	Madrid	91 561 68 00	http://www.iem.csic.es
IEO	Spanish Institute of Oceanography	National Centre (O)	CAL/Earth and Environment	C/ Del Corazón de María, 8 - 28002	Madrid	913421100	http://www.ieo.es/
IETCC	Eduardo Torroja Institute of Construction Sciences	Research Inst. (O)	CAM/MaTErials S&T	C/ Serrano Galvache, 4 - 28033	Madrid	91 302 04 40	http://www.ietcc.csic.es/
IFF	Institute of Fundamental Physics	Research Inst. (O)	CAM/Physics, Mathematics, Robotics and Computing Science and Technology	C/ Serrano, 113bis y 123 - 28006	Madrid	91 561 68 00/590 16 19	http://www.iff.csic.es/
IFS	Institute of Philosophy	Research Inst. (O)	CAS/Humanities	C/ Albasanz, 26-28. 3ª Modulo C - 28037	Madrid	91 602 23 00	http://www.ifs.csic.es/

COMUNIDAD DE MADRID (CONT.)

ACRONYMS	NAME	KIND	AREA/SUB-AREA	ADDRESS	MUNICIP./ PROVINCE	TELEPHONE	WEB
IFT	Institute of Theoretical Physics	Research Inst. (I)	CAM/Physics, Mathematics, Robotics and Computing Science and Technology	C/ Nicolás Cabrera, 13-15. Campus Cantoblanco UAM - 28049	Madrid	91 299 98 00/02	http://www.ift.uam-csic.es
IGEO	Institute of Geosciences	Research Inst. (I)	CAL/Earth and Environment	C/ Severo Ochoa 7, 4ª Planta - 28040	Madrid	91 394 48 13	http://www.igeo.ucm-csic.es/
IGME	Geological and Mining Institute of Spain	National Centre (O)	CAL/Earth and Environment	C/ Rios Rosas, 23 - 28003	Madrid	913495700	http://www.igme.es/
IH	Institute of History	Research Inst. (O)	CAS/Humanities	C/ Albasanz, 26-28 - 2ª Planta - 28037	Madrid	91 602 23 00	http://www.ih.csic.es/
IIBM	Sols-Morreale Biomedical Research Institute	Research Inst. (I)	CAL/Biology and Biomedicine	C/ Arturo Duperier, 4 - 28029	Madrid	91 585 44 00/43 95/94	http://www.iib.csic.es
ILC	Institute for Languages and Cultures of the Mediterranean and the Near East	Research Inst. (O)	CAS/Humanities	C/ Albasanz, 26-28 - 1ª Planta - 28037	Madrid	91 602 23 00	http://www.ilc.csic.es/
ILLA	Institute of Language, Literature and Anthropology	Research Inst. (O)	CAS/Humanities	C/ Albasanz, 26-28 - 1ª Planta - 28037	Madrid	91 602 23 00	www.illa.csic.es
IMN-CNM	Institute of Micro and Nanotechnology	Research Inst. (O)	CAM/Physics, Mathematics, Robotics and Computing Science and Technology	C/ Isaac Newton, 8 - 28760	Tres Cantos / Madrid	91 806 07 00	http://www.imm-cnm.csic.es
INIA	National Institute of Agricultural and Food Research and Technology	National Centre (O)	CAL/Agricultural Sciences	Crta. de La Coruña, Km 7,5 - 28040	Madrid	913473900	http://www.inia.es/
IO	Daza de Valdes Optics Institute	Research Inst. (O)	CAM/Physics, Mathematics, Robotics and Computing Science and Technology	C/ Serrano, 121 - 28006	Madrid	91 561 68 00	http://www.io.csic.es
IPP	Institute of Public Goods and Policies	Research Inst. (O)	CAS/Social Sciences	C/ Albasanz, 26-28, 3ª Modulo D - 28037	Madrid	91 602 23 00	http://www.ipp.csic.es
IQF	Institute of Physical Chemistry Blas Cabrera	Research Inst. (O)	CAM/Chemical S&T	C/ Serrano, 119 - 28006	Madrid	91 561 94 00 / 91 585 52 47/49	http://www.iqfr.csic.es/
IQM	Institute of Medicinal Chemistry	Research Inst. (O)	CAM/Chemical S&T	C/ Juan de la Cierva, 3 - 28006	Madrid	91 562 29 00	http://www.iqm.csic.es/
IQOG	Institute of General Organic Chemistry	Research Inst. (O)	CAM/Chemical S&T	C/ Juan de la Cierva, 3 - 28006	Madrid	91 562 29 00	http://www.iqog.csic.es
ITEFI	Leonardo Torres Quevedo Institute of Physical and Information Technologies	Research Inst. (O)	CAM/Physics, Mathematics, Robotics and Computing Science and Technology	C/ Serrano, 144 - 28006	Madrid	91 561 88 06	http://www.itefi.csic.es/es
MNCN	National Museum of Natural Sciences	Research Inst. (O)	CAL/Earth and Environment	C/ José Gutierrez Abascal, 2 - 28006	Madrid	91 411 13 28	http://www.mncn.csic.es/
RJB	Royal Botanical Garden	Research Inst. (O)	CAL/Earth and Environment	Plaza de Murillo, 2 - 28014	Madrid	91 420 30 17	http://www.rjb.csic.es/
CCHS	Centre for Human and Social Sciences	SIC (O)		C/ Albasanz, 26-28 Planta baja - 28037	Madrid	91 602 23 00	http://www.cchs.csic.es/
CENQUIOR	Lora Tamayo Organic Chemistry Centre	SIC (O)		C/ Juan de la Cierva, 3 - 28006	Madrid	91 562 29 00	http://www.cenquior.csic.es/
CFMAC	Miguel A. Catalan Physics Centre	SIC (O)		C/ Serrano, 121 - 28006	Madrid	91 561 68 00	http://www.cfmac.csic.es/
CFTMAT	Centre Ffor Theoretical Physics And Mathematics	SIC (I)		C/ Nicolas Cabrera 13-15 - Campus Cantoblanco UAM - 28049	Madrid	91 299 96 50	https://www.ift.uam-csic.es/
CI2A	Alcala Interdisciplinary Research Centre	SIC (O)		Avda. de León, 1 - 28805	Alcala de Henares / Madrid		www.ci2a.csic.es
CRF	Centre for Plant Genetic Resources and Sustainable Agriculture	STU (O)	CAL/Agricultural Sciences	Autovia A-II, Km 36 Finca la Canaleja - 28800	Alcala de Henares / Madrid	91 881 92 61	https://www.inia.es/
DI	CSIC Institutional Delegation in Madrid	Delegation		C/ Serrano, 115 Bis - 28006	Madrid	91 568 16 87 / 55 / 59	delegacion.madrid.csic.es

REGIÓN DE MURCIA

RESEARCH INSTITUTES

1 OWN

1 OCEANOGRAPHIC CENTRE

1 TERRITORIAL UNIT

ACRONYMS	NAME	KIND	AREA/SUB-AREA	ADDRESS	MUNICIP./ PROVINCE	TELEPHONE	WEB
CEBAS	Centre for Edaphology and Applied Biology of the Segura Region	Research Inst. (O)	CAL/Agricultural Sciences	Campus Universitario de Espinardo - 30100	Murcia	968 39 62 00	http://www.cebas.csic.es/
IEO-COMU	Murcia Oceanographic Centre	Oceanograph.C (O)	CAL/Earth and Environment	Varadero, 1. Lo Pagan - 30740	San Pedro Del Pinatar / Murcia	968 179 410	http://www.ieo.es/murcia
IGME-UT	Murcia Territorial Unit	Territorial U. (O)	CAL/Earth and Environment	"Avda. Miguel de Cervantes, '45 – 5º A 'Edificio Expo Murcia - 30009"	Murcia	968 245 012	https://www.igme.es/unidad-territorial/murcia/

COMUNIDAD FORAL DE NAVARRA

RESEARCH INSTITUTES

1 JOINT

ACRONYMS	NAME	KIND	AREA/SUB-AREA	ADDRESS	MUNICIP./ PROVINCE	TELEPHONE	WEB
IDAB	Institute of Agrobiotechnology	Research Inst. (J)	CAL/Agricultural Sciences	Avda De Pamplona, 123 - 31192	Mutilva/Navarra	948 16 80 00	http://idab.es/

PAÍS VASCO

RESEARCH INSTITUTES

2 JOINT

ACRONYMS	NAME	KIND	AREA/SUB-AREA	ADDRESS	MUNICIP./ PROVINCE	TELEPHONE	WEB
CFM	Materials Physics Centre	Research Inst. (J)	CAM/Materials S&T	Pº Manuel de Lardizabal, 5 - 20018	Donostia-San Sebastián/ Guipuzcoa	943 01 87 86	http://cfm.ehu.es/
IBF	Biophysics Institute	Research Inst. (J)	CAL/Biology and Biomedicine	Parque Científico de la UPV/EHU, Barrio de Sarriena S/N - 48940	Leioa/Vizcaya	94 601 26 25	http://biofisika.org

LA RIOJA

RESEARCH INSTITUTES 1 JOINT

ACRONYMS	NAME	KIND	AREA/SUB-AREA	ADDRESS	MUNICIP./PROVINCE	TELEPHONE	WEB
ICVV	Institute of Vine and Wine Science	Research Inst. (I)	CAL/Food S&T	Apdo. Postal Nº 1.042. 26080 Logroño. Finca la Grajera. Ctra. de Burgos Km. 6 (LO-20, Salida 13) - 26007	Logroño/La Rioja	941 89 49 80	http://www.icvv.es

ROMA

RESEARCH INSTITUTES 1 OWN

ACRONYMS	NAME	KIND	AREA/SUB-AREA	ADDRESS	MUNICIP./PROVINCE	TELEPHONE	WEB
EEHAR	Spanish School of History and Archaeology	Research Inst. (O)	CAS/Humanities	Via di Santa Eufemia, 13 - 00187	Roma/Italia	+39 06 83 88 39 00	http://www.eehar.csic.es

BRUSELAS

DELEGATION

ACRONYMS	NAME	KIND	AREA/SUB-AREA	ADDRESS	MUNICIP./PROVINCE	TELEPHONE	WEB
DI	CSIC Institutional Delegation in the EU	Delegation		Rue du Trône, 62 - 1050	Bruselas/Bélgica	+32 2 289 2562 / 2565	d-bruselas.csic.es

CURRENT NATIONAL SCIENTIFIC ACTIVITY 2024*

CURRENT PROJECTS AND ACTIONS IN 2024							
	EXTERNAL			+	INTERNAL		
	No. PROJECTS / ACTIONS	TOTAL FUNDING (€)	ANNUITY 2024 (€)		No. PROJECTS / ACTIONS	TOTAL FUNDING (€)	ANNUITY 2024 (€)
SOCIETY	158	14,248,302.08	3,585,570.94		138	8,068,602.34	2,326,710.31
LIFE	2,483	557,837,199.32	132,234,534.38		995	127,863,392.76	21,994,764.78
MATTER	1,214	322,872,509.54	111,448,774.45		652	118,673,690.90	13,955,613.34
NO SPECIFIC AREA	4	669,117.20	582,117.20		43	55,841,866.31	5,494,544.13
TOTAL	3,859	895,627,128.14	247,850,996.97		1,828	310,447,552.31	43,771,632.56

* Data that includes the number of projects and actions approved and completed in the year.

PROJECTS AND ACTIONS APPROVED IN 2024							
	EXTERNAL			+	INTERNAL		
	No. PROJECTS / ACTIONS	TOTAL FUNDING (€)	ANNUITY 2024 (€)		No. PROJECTS / ACTIONS	TOTAL FUNDING (€)	ANNUITY 2024 (€)
SOCIETY	52	6,998,661.17	2,943,987.76		65	2,278,859.73	1,222,738.82
LIFE	666	156,376,857.13	79,167,036.80		534	20,946,626.26	12,623,427.13
MATTER	338	144,196,604.12	93,104,383.10		307	13,030,456.56	7,273,118.14
NO SPECIFIC AREA	3	662,967.20	575,967.20		15	3,503,820.32	1,746,115.39
TOTAL	1,059	308,235,089.62	175,791,374.86		921	39,759,762.87	22,865,399.48

PROJECTS AND ACTIONS COMPLETED IN 2024							
	EXTERNAL			+	INTERNAL		
	No. PROJECTS / ACTIONS	TOTAL FUNDING (€)	ANNUITY 2024 (€)		No. PROJECTS / ACTIONS	TOTAL FUNDING (€)	ANNUITY 2024 (€)
SOCIETY	40	2,226,916.10	41,243.80		35	2,648,000.26	444,225.11
LIFE	377	67,334,502.84	4,924,175.22		395	37,932,831.91	5,970,809.27
MATTER	146	18,971,233.81	1,476,665.86		228	33,186,289.79	3,087,502.25
NO SPECIFIC AREA	3	382,117.20	382,117.20		2	503,090.57	89,260.00
TOTAL	566	88,914,769.95	6,824,202.08		660	74,270,212.53	9,591,796.63

Source: BDC: the Core Area assigned corresponds to that of the project.

CURRENT PROJECTS, ACCORDING TO CORE AREA			
	EXTERNAL FUNDING		
	No. PROJECTS	TOTAL FUNDING (€)	ANNUITY 2024 (€)
SOCIETY	152	14,128,802.08	3,562,070.94
LIFE	2,452	555,870,999.89	131,682,294.76
MATTER	1206	322,702,259.54	111,431,424.45
NO SPECIFIC AREA	3	414,117.20	327,117.20
TOTAL	3,813	893,116,178.71	247,002,907.35

CURRENT PROJECTS, ACCORDING TO R&D PROGRAMMES			
	EXTERNAL FUNDING		
	No. PROJECTS	TOTAL FUNDING (€)	ANNUITY 2024 (€)
NATIONAL PLAN	2,961	640,795,183.90	123,379,511.63
CCAA	563	101,965,652.24	24,569,790.08
FIS	23	4,714,621.50	1,517,369.36
OTHER	266	145,640,721.07	97,536,236.28
TOTAL	3,813	893,116,178.71	247,002,907.35

CURRENT ACTIONS, ACCORDING TO CORE AREA			
	EXTERNAL FUNDING		
	No. SPECIAL ACTIONS	TOTAL FUNDING (€)	ANNUITY 2024 (€)
SOCIETY	6	119,500.00	23,500.00
LIFE	31	1,966,199.43	552,239.62
MATTER	8	170,250.00	17,350.00
NO SPECIFIC AREA	1	255,000.00	255,000.00
TOTAL	46	2,510,949.43	848,089.62

Source: BDC: the Core Area assigned corresponds to that of the project.

CURRENT INTERNATIONAL SCIENTIFIC ACTIVITY 2024

CURRENT* PROJECTS IN 2024						
	EU FRAMEWORK PROGRAMME		EU NON-FRAMEWORK PROGRAMME		INTERNATIONAL	
	No. PROJECTS	TOTAL FUNDING (€)	No. PROJECTS	TOTAL FUNDING (€)	No. PROJECTS	TOTAL FUNDING (€)
SOCIETY	40	29,857,488.71	7	797,640.23	15	952,695.50
LIFE	376	199,866,912.25	113	38,500,823.73	196	32,400,468.47
MATTER	318	163,926,726.17	58	18,055,115.93	90	18,261,473.73
NO SPECIFIC AREA	-	-	2	64,616.00	1	300,000.00
TOTAL	734	393,651,127.13	180	57,418,195.89 €	302	51,914,637.70

* Data that includes the number of projects started and completed in the year.

PROJECTS INITIATED IN 2024						
	EU FRAMEWORK PROGRAMME		EU NON-FRAMEWORK PROGRAMME		INTERNATIONAL	
	No. PROJECTS	TOTAL FUNDING (€)	No. PROJECTS	TOTAL FUNDING (€)	No. PROJECTS	TOTAL FUNDING (€)
SOCIETY	14	7,886,740.31	3	576,122.07	9	432,876.51
LIFE	123	55,814,262.64	48	12,764,344.88	51	10,704,153.84
MATTER	78	36,478,396.20	22	7,853,868.18	37	6,147,776.30
NO SPECIFIC AREA	-	-	1	25,420.00	-	-
TOTAL	215	100,179,399.15	74	21,219,755.13 €	97	17,284,806.65

PROJECTS COMPLETED IN 2024						
	EU FRAMEWORK PROGRAMME		EU NON-FRAMEWORK PROGRAMME		INTERNATIONAL	
	No. PROJECTS	TOTAL FUNDING (€)	No. PROJECTS	TOTAL FUNDING (€)	No. PROJECTS	TOTAL FUNDING (€)
SOCIETY	7	1,918,579.85	2	58,152.40	2	29,048.16
LIFE	61	22,817,866.62	24	5,606,632.32	44	3,793,931.39
MATTER	63	29,443,591.76	9	2,907,182.11	18	1,437,590.91
NO SPECIFIC AREA	-	-	1	39,196.00	1	300,000.00
TOTAL	131	54,180,038.23	36	8,611,162.83	65	5,560,570.46

CURRENT PROJECTS IN 2024 BY PROGRAMME UNDER EU R&I FRAMEWORK PROGRAMMES, OTHER EU AND INTERNATIONAL PROGRAMMES

		EU R&I FRAMEWORK PROGRAMME			OTHER EU AND INTERNATIONAL PROGRAMMES		
		H2020	HORIZON EUROPE	TOTAL FRAMEWORK PROGRAMMES	EU NON-FRAMEWORK PROGRAMME*	INTERNATIONALS	TOTAL OPEI
CURRENT*	No. Projects	227	507	734	180	302	482
	TOTAL FUNDING (€)	146,873,275.91	246,777,851.22	393,651,127.13	57,418,195.89	51,914,637.70	109,332,833.59
SIGNED	No. Projects	-	215	215	74	97	171
	TOTAL FUNDING (€)	-	100,179,399.15	100,179,399.15	21,219,755.13	17,284,806.65	38,504,561.78
COMPLETED	No. Projects	100	31	131	36	65	101
	TOTAL FUNDING (€)	49,820,433.44	4,359,604.79	54,180,038.23	8,611,162.83	5,560,570.46	14,171,733.29

* Data that includes the number of projects signed and completed in the year.

		EU NON-FRAMEWORK PROGRAMME*				
		LIFE 2014-2020	INTERREG V	RFCS	OTHER	TOTAL
CURRENT*	No. Projects	29	25	8	118	180
	TOTAL FUNDING (€)	11,294,825.12	4,541,764.39	2,225,762.81	39,355,843.57	57,418,195.89
SIGNED	No. Projects	8	23	1	41	74
	TOTAL FUNDING (€)	2,530,030.84	4,176,115.54	345,555.33	8,470,935.82	21,219,755.13
COMPLETED	No. Projects	9	0	4	23	36
	TOTAL FUNDING (€)	3,674,602.04	0.00	1,221,490.17	3,715,070.62	8,611,162.83

CURRENT INTERNATIONAL AGREEMENTS

COUNTRY-ENTITY WITH WHICH THE CSIC HAS AGREEMENTS IN FORCE

GERMANY	22	USA	24	NEW ZEALAND	1
ANGOLA	3	ETHIOPIA	1	NETHERLANDS	6
ALGERIA	2	PHILIPPINES	2	PANAMA	2
ARGENTINA	14	FINLAND	6	PERU	7
AUSTRALIA	2	FRANCE	32	POLAND	8
AUSTRIA	5	GHANA	1	PORTUGAL	8
BELGIUM	25	GUINEA EQUATORIAL	3	UNITED KINGDOM	12
BENIN	1	HONDURAS	3	DEMOCRATIC REP. OF THE CONGO	1
BOLIVIA	1	HUNGARY	1	CZECH REPUBLIC	3
BOSNIA-HERZEGOVINA	1	INDIA	6	DOMINICAN REPUBLIC	2
BRAZIL	27	INDONESIA	1	ROMANIA	5
BULGARIA	1	IRAN	1	SERBIA	2
CANADA	3	IRELAND	2	SOUTH AFRICA	1
CHILE	20	ISRAEL	1	SWEDEN	12
CHINA	22	ITALY	40	SWITZERLAND	5
COLOMBIA	25	JAPAN	6	THAILAND	1
KOREA, REPUBLIC OF	2	KENYA	3	TAIWAN	1
COSTA RICA	2	MALAYSIA	2	TUNISIA	2
CUBA	4	MALTA	1	TURKEY	4
DENMARK	4	MOROCCO	8	UKRAINE	5
ECUADOR	5	MAURITANIA	1	URUGUAY	5
EGYPT	1	MEXICO	18	UZBEKISTAN	2
UNITED ARAB EMIRATES	1	MONACO	1	VENEZUELA	2
SLOVAKIA	1	MOZAMBIQUE	2		
SPAIN	67	NIGERIA	1		
				TOTAL	525

TRAINING OF RESEARCH STAFF

	THESIS			FINAL DEGREE PROJECT (TFG)			MASTER'S FINAL PROJECT (TFM)		
	M	W	TOTAL	M	W	TOTAL	M	W	TOTAL
	DOCTORAL STUDENTS			STUDENTS					
SOCIETY	34	23	57	5	5	10	12	26	38
LIFE	240	254	494	81	116	197	153	223	376
MATTER	255	112	367	58	50	108	149	114	263
TOTAL	529	389	918	144	171	315	314	363	677
	RESEARCH STAFF MANAGING								
SOCIETY	29	36	65	1	8	9	19	17	36
LIFE	344	363	707	102	149	251	247	249	496
MATTER	304	234	538	76	50	126	222	154	376
TOTAL*	677	633	1,310	179	207	386	488	420	908

*There may be research staff who have directed more than one thesis and theses that have been co-directed by more than one researcher.

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	M	W	TOTAL
SOCIETY	25	33	58
LIFE	106	192	298
MATTER	124	92	216

*Includes all the modalities "ICU, Severo Ochoa, María de Maeztu".

STAFF

STAFF DISTRIBUTION BY CORE AREA AND FUNCTIONAL GROUPING															
	RESEARCHER			RESEARCHER IN TRAINING			TECHNICIAN			MANAGEMENT/ADMIN./ SERVICES			TOTAL		
	M	W	TOTAL	M	W	TOTAL	M	W	TOTAL	M	W	TOTAL	M	W	TOTAL
SOCIETY	244	197	441	32	39	71	92	121	213	33	51	84	401	408	809
LIFE	1,671	1,228	2,899	453	671	1,124	1,914	2,997	4,911	376	437	813	4,414	5,333	9,747
MATTER	1,194	649	1,843	408	217	625	1,066	860	1,926	114	163	277	2,782	1,889	4,671
NO SPECIFIC AREA	3	8	11	1		1							4	8	12
CENTRAL SERVICES*	-	-	-	-	-	-	146	236	382	217	269	486	363	505	868
TOTAL	3,112	2,082	5,194	894	927	1,821	3,218	4,214	7,432	740	920	1,660	7,964	8,143	16,107

The area assigned to research staff and trainee researchers is the staff area. The rest are assigned to the area of the ICU to which they are attached.

*Includes delegations/REBIS.

STAFF DISTRIBUTION BY GEOGRAPHICAL LOCATION AND FUNCTIONAL GROUPING

	RESEARCHER			RESEARCHER IN TRAINING			TECHNICIAN			MANAGEMENT/ADMIN./ SERVICES			TOTAL		
	M	W	TOTAL	M	W	TOTAL	M	W	TOTAL	M	W	TOTAL	M	W	TOTAL
ANDALUCIA	500	292	792	120	123	243	577	648	1,225	137	136	273	1,334	1,199	2,533
ARAGON	125	85	210	45	28	73	120	142	262	12	32	44	302	287	589
CANARIAS	38	22	60	6	9	15	36	46	82	11	11	22	91	88	179
CANTABRIA	48	29	77	13	8	21	51	67	118	12	9	21	124	113	237
CASTILLA Y LEON	49	34	83	10	29	39	54	90	144	16	22	38	129	175	304
CASTILLA-LA MANCHA	13	6	19	2	1	3	28	26	54	4	2	6	47	35	82
CATALUÑA	501	336	837	153	176	329	431	503	934	64	78	142	1,149	1,093	2,242
COMUNIDAD DE MADRID	1,234	832	2,066	341	342	683	1,277	1,765	3,042	354	497	851	3,206	3,436	6,642
C. FORAL DE NAVARRA	7	4	11	3	3	6	3	16	19	3		3	16	23	39
COMUNITAT VALENCIANA	283	179	462	136	136	272	276	352	628	40	49	89	735	716	1,451
EXTREMADURA	8	3	11	1	2	3	1	6	7			0	10	11	21
GALICIA	97	88	185	7	19	26	127	258	385	36	39	75	267	404	671
ILLES BALEARS	60	48	108	18	14	32	44	62	106	5	10	15	127	134	261
LA RIOJA	8	10	18	2	3	5	10	14	24	2	2	4	22	29	51
PAIS VASCO	25	9	34	6	2	8	11	4	15	4	1	5	46	16	62
PRINCIPADO DE ASTURIAS	56	57	113	18	13	31	71	84	155	20	15	35	165	169	334
REGIÓN DE MURCIA	57	44	101	13	19	32	101	129	230	18	16	34	189	208	397
ROMA	3	4	7			0		2	2	2	1	3	5	7	12
TOTAL	3,112	2,082	5,194	894	927	1,821	3,218	4,214	7,432	740	920	1,660	7,964	8,143	16,107

Source: GESPER.

