

EXECUTIVE SUMMARY

Scientific Report

2024 – 2025

Centro de Investigación del Cáncer • Salamanca
25 years of cancer research



MINISTERIO
DE CIENCIA, INNOVACIÓN
Y UNIVERSIDADES



CSIC
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS



UNIVERSIDAD
DE SALAMANCA

FICUS

Fundación para la
Investigación del Cáncer
de la Universidad de Salamanca

Welcome

A word from the Director

DEAR VISITORS

Welcome to the Centro de Investigación del Cáncer (CIC) in Salamanca.

We are delighted to have you with us and hope that during your visit we can convey the energy, commitment and shared sense of purpose that guide our work.

Our goal is to understand cancer better and to translate scientific knowledge into new ways of preventing, diagnosing and treating the disease. To achieve this, we bring together fundamental and translational research in a collaborative environment. We work to turn our findings into new therapeutic opportunities and improved diagnostic services for patients. We are also committed to training new generations of professionals specialising in cancer and inspiring future scientific careers in this field.

This report provides an overview of our work and the results achieved during 2024–2025. The year 2025 was particularly significant for us, as we celebrated 25 years since the CIC was established with a series of scientific and institutional events.

Thank you for visiting us. We hope you enjoy learning more about the CIC, its people and our work.

Xosé R. Bustelo

Director · Centro de Investigación del Cáncer



2024 – 2025 at a glance

The two-year period in numbers

25

years of cancer research

founded 2000 · 25th anniversary 2025

394

publications

74% Q1 · 80% Open Access

€16.4M

in new competitive funding

incl. ERC, NIH & national programs

€31.5M

active grant portfolio

108 active projects

334

people on staff

68% women & 32% men

25

research groups

across 2 programs & 11 lines

43

Ph.D. theses defended

11 with international mention

3 & 8

**patents & commercial
agreements**

About the CIC

A research center of excellence against cancer

A little bit of history

The Centro de Investigación del Cáncer was founded in 2000 by the University of Salamanca (USAL) and the Spanish National Research Council (CSIC) – its two core institutions – with the ad hoc support of the Cancer Research Foundation of the USAL (FICUS).

Its mandate was to produce internationally competitive cancer research, to train the next generation of scientists, and to provide diagnostic services for cancer patients.

The first director of the Center was Dr. Eugenio Santos, who came from the NIH to build the first academic cancer research center in Spain at the time.



OUR MISSION:

To make scientific discoveries that enable us to defeat cancer through the development of better diagnostic and therapeutic tools.



OUR VISION:

To transform the hope and quality of life of cancer patients through frontier research, innovation, the provision of health-related services, and the training of the next generation of oncology professionals.

A research center with a unique seven-fold accreditation

- 1 Research Center of Excellence of Castilla y León (Castilla y León Education Ministry)
- 2 AECC Cancer Center (Scientific Foundation of the Spanish Society against Cancer, FC-AECC)
- 3 ASPIRA-MaX Seal of Excellence (CSIC)
- 4 Biosanitary Center (Castilla y León Health Ministry)
- 5 University Institute (Quality Assurance Agency for the University System in Castilla y León, ACSUCyL)
- 6 UCC+I Unit (Spanish Foundation for Science and Technology, FECyT)
- 7 Human Resources Strategy for Researchers (HRS4R, European Union)

Research organization

From fundamental discovery to clinical impact

2

research programs

11

research lines

25

research groups



Research at the CIC spans the full continuum from fundamental discovery to clinical impact. Our groups tackle the most pressing questions in oncology from oncogenic signaling and chromosome biology to precision oncology, epitranscriptomics or bioinformatics driven analyses.

2 research programs

- 1 Molecular Mechanisms of Cancer Program
- 2 Translational and Clinical Research in Cancer Program

11 research lines

- | | |
|---|---|
| 1 Early signaling processes intrinsic to the tumor cell | 7 Breast tumors |
| 2 Mechanotransduction | 8 Hepatobiliary tumors |
| 3 Signaling pathways in tumor – stroma interaction | 9 Hereditary cancer |
| 4 Regulation of chromosome segregation and dynamics | 10 Bioinformatics and artificial intelligence |
| 5 Cancer epitranscriptomics | 11 Mechanisms of therapy resistance |
| 6 Hematological tumors | |

Research organization

From fundamental discovery to clinical impact

6

core facilities

4

diagnostic services

4

technical support
services

+ management & administration support services



All our units have both
ISO 9001 and **ISO 45001**
certifications.

Core Facilities

- 1 Advanced Cellular Analyses
- 2 Bioinformatics
- 3 Genomics
- 4 Mouse Model Experimentation Unit
- 5 Pathology
- 6 Proteomics

Diagnostic Services

- 1 Cellular Diagnostic Service
- 2 Cytogenetic Diagnostic Service
- 3 Molecular Diagnostics Service
- 4 Hereditary Cancer and Genetic Counseling

Technical Support Services

- 1 Central Store Room
- 2 Infrastructure Maintenance
- 3 IT Support
- 4 Preparation of Laboratory Material

Scientific output

Publications & impact, 2024 - 2025



2024



184
articles



2,255
citations



71%
Q1



83%
open access

2025



210
articles



1,025
citations



76%
Q1



78%
open access

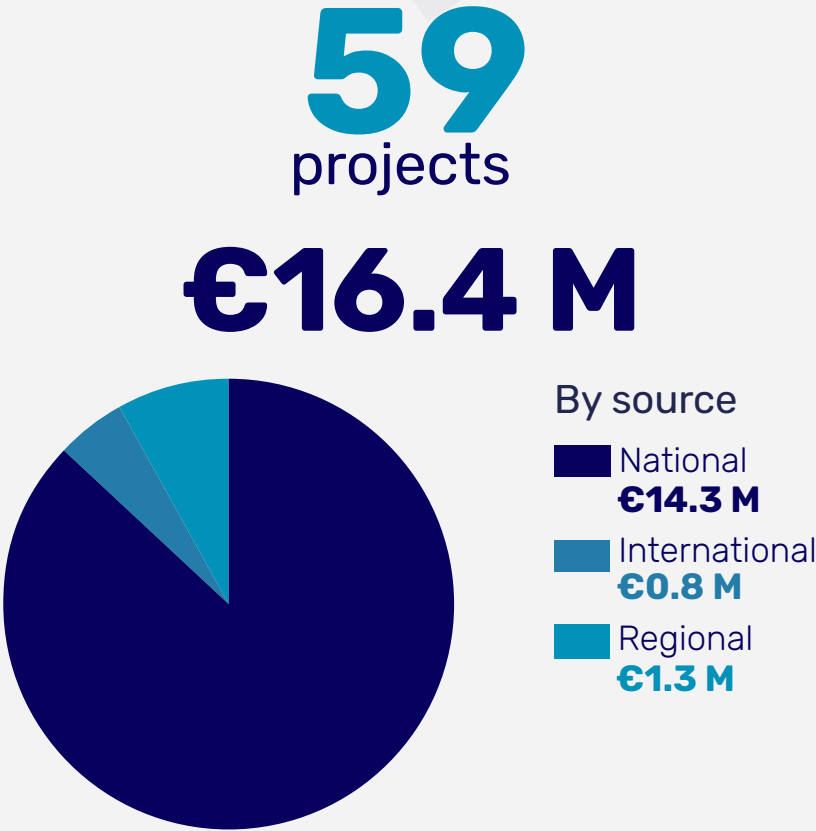


6 CIC researchers ranked as the World's Top 2% most-cited scientists by Stanford University

Competitive funding

New awards & active grant portfolio 2024 - 2025

New competitive funding achieved in this period



Active research grant portfolio



70% managed at the CIC via FICUS, CSIC, USAL.

FICUS	CSIC	USAL	OTHER
10.4 M€ 23 projects	8.6 M€ 34 projects	3 M€ 15 projects	9.5 M€ 36 projects

People & Talent

The CIC's greatest asset is its people



227
women 68%

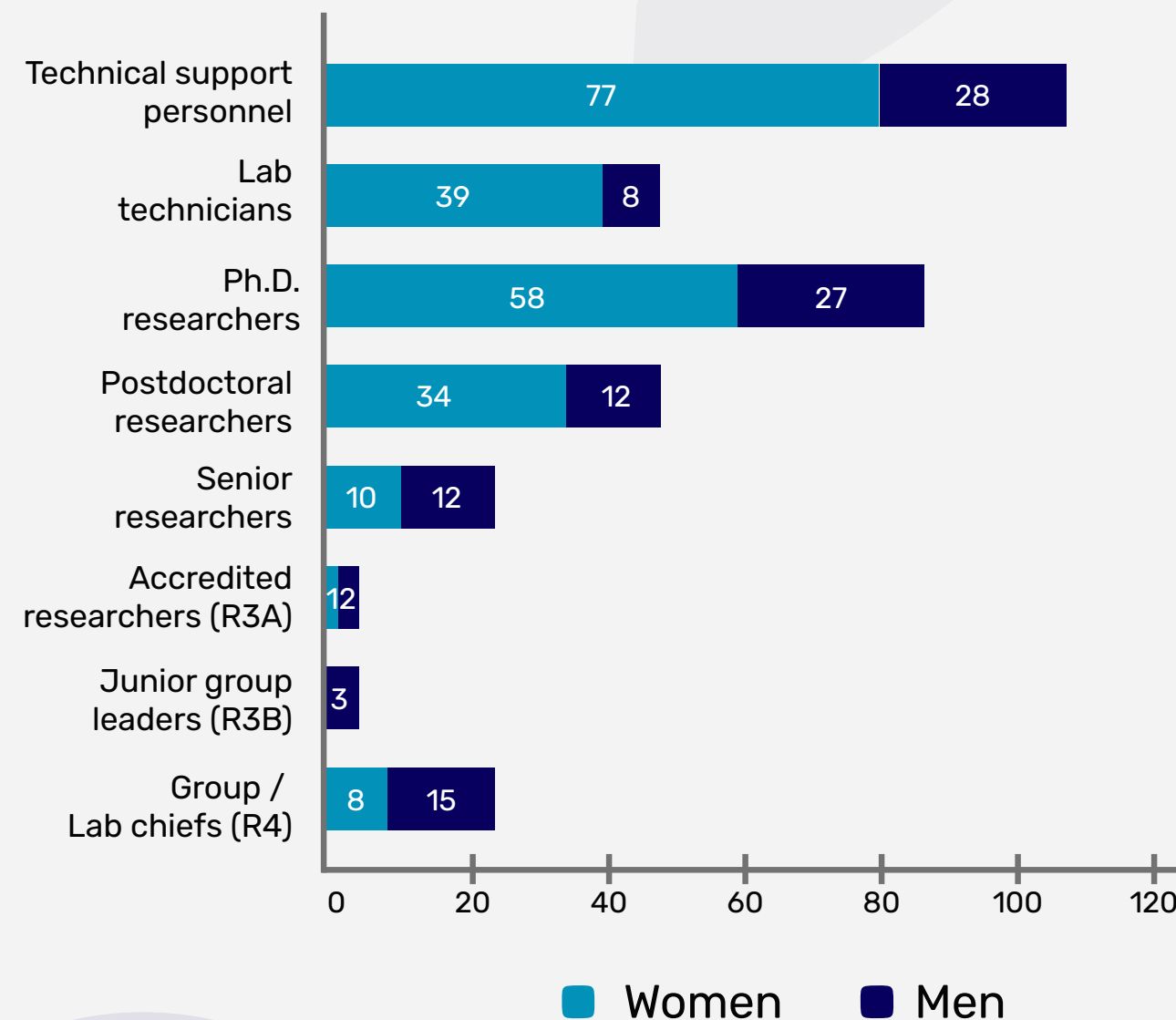
107
men 32%

35 master's students

22 undergraduate trainees

19 visiting scientists

Staff by category and gender



New recruitments and appointees

We are looking forward to attract new talent and professionals

Dr. José Alberto López-Domínguez ————— 2024

Recruited as Ramón y Cajal Fellow, University of Salamanca
Coming from the Institute of Research in Biomedicine (IRB, Barcelona, Spain).
Expertise: cellular ageing, senescence, and its intersection with cancer

Dr. L. Francisco Lorenzo-Martín ————— 2025

Recruited as Ramón y Cajal Fellow, University of Salamanca
Coming from École Polytechnique Fédérale de Lausanne (Lausanne, Switzerland)
Expertise: organoid biology, tissue engineering, and cancer-on-chip models

Dr. Mónica Álvarez-Fernández ————— 2025

Recruited as CSIC Tenured Scientist
Coming from the Instituto Universitario de Oncología del Principado de Asturias (IUOPA, Oviedo, Spain)
Expert in cell cycle regulation and therapeutic resistance in head and neck squamous cell carcinomas

Antonio Mata ————— 2024

Recruited as FICUS General Manager

Innovation

Translating discoveries for patients and society

3

patents registered

> 1.3M€

In 8 commercial agreements

5

industry partners

317

clinical trials



New & progressed patents (2024 – 2025)

- Trimethoxystyryl derivatives for paclitaxel-resistant cancer
(**EP24382305 • PCT/EP2025/057648**)
- In-vitro identification of human mesenchymal stem/stromal cells
(**granted EP4433069A1**)
- Novel therapeutic approaches in oncology
(**EP25382595.4, with CancerAppy S.L.**)

Industry partners



Training & education

Building the next generation of professionals in cancer



43

Ph.D. theses
11 with international
mention

35

master's theses

#4

**top 4 position in biomedical
masters in Spain**
El Mundo ranking

2

Pan-European masters
Coimbra group & European
Campus of City Universities

+13

advanced courses

77

scientific seminars
27% international



Our Center was re-accredited in 2024 as “University Institute” by the Quality Assurance Agency for the University System in Castilla y León (ACSUCyL)



Our master recognized as “master-AECC” in 2024 by the Scientific Foundation of the Spanish Association against Cancer

New training programs and activities:

- Non-academic skills: scientific writing, leadership, project management, career orientation
- CIC Mentoring Programme for early-career researchers
- 1st & 2nd CIC Ph.D. Days (October 2024 & November 2025)
- Research placement at the CIC awarded to the winner of the National Biology Olympiad

Communication & outreach

Engaging science, reaching out society

76

press releases

60

guided visits

3,500

students hosted

12

outreach events

20

school talks by female
researchers in schools

4

“El Conocimiento Cura”
outreach talks

3

national radio
programs

2

prime-time
TV reports

5+

TV and press
interviews

2

full-page press
features

11

scientific events
at CIC

11

external scientific
activities coorganized

Social media community



LinkedIn

8,427

X (Twitter)

4,702

Examples of our contributions in 2024 - 2025

10 selected publications where CIC is corresponding institution

J Clin Oncol2024 Treatment of high-risk smoldering myeloma Mateos MV, Martínez-López J, ... et al. This trial asked whether treating presymptomatic high-risk myeloma early and aggressively could prevent the disease from developing. One in three patients showed no detectable disease four years later – suggesting a curative strategy may be possible. doi: 10.1200/JCO.23.02771	Nat Commun2024 Genome integrity during DNA replication Zamarreño J, Muñoz S, ... Sacristán MP, Bueno A Every time a cell divides, it must copy its DNA accurately. CIC researchers identified a new role in this process for the enzyme called Ubp10. This finding added a new piece in the understanding of all the regulatory layers that cells have to make sure the genetic information is passed onto new generations with fidelity and accuracy. doi: 10.1038/s41467-024-52542-9	PNAS2024 RNF212B E3 ligase is essential for crossover designation and maturation during meiosis Condezo YB, Sainz-Urruela R, ... Pendas AM, Llano E For a healthy pregnancy, eggs and sperm must form with the right number of chromosomes. CIC researchers found that a protein called RNF212B is essential for this process – and that without it, chromosomes separate incorrectly, causing infertility and conditions like Down syndrome. doi: 10.1073/pnas.2320995121	Cell Commun Sig.2024 RAS proteins and developmental disease Fuentes-Mateos R, ... Santos E RASopathies are rare developmental disorders caused by overactivation of a key cellular pathway. CIC researchers discovered a new way this can happen when two proteins are lost simultaneously, a third overcompensates – shedding new light on how these disorders arise. doi: 10.1186/s12964-024-01717-4	Signal Transduct.2024 Cholangiocarcinoma and tumor microenvironment Amengual J, González-Sánchez E, ... Fabregat I, Vaquero J CIC researchers discovered that blocking two enzymes – NOX1 and NOX4 – can slow tumor growth in this rare and aggressive liver cancer, offering a new and more targeted treatment avenue for a disease that urgently needs better options. doi: 10.1038/s41392-025-02347-z	J Hematol Oncol2024 Bone marrow recovery after chemotherapy Herranz Ó, Berrocal P, ... Porras A, Guerrero C After intensive chemotherapy, the body struggles to rebuild blood cell production. CIC researchers found that a protein called C3G helps speed up this recovery, pointing to new strategies to help patients bounce back faster after treatment. doi: 10.1186/s13045-025-01687-1
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Examples of our contributions in 2024 - 2025

10 selected publications where CIC is corresponding institution

Blood

2024

Ultrasensitive diagnosis of mast cell diseases

Navarro-Navarro P, ...Jara-Acevedo

CIC researchers developed a new test far more sensitive than existing ones for detecting a key marker of mast cell disease. With it, one in five patients previously told they did not have a clonal disease turned out to have one – changing how they should be treated.

doi: [10.1182/blood.2025029507](https://doi.org/10.1182/blood.2025029507)

Nucleic Acids Res

2024

Hormonal therapy resistance in breast cancer

Wang S, Santacana-Font G, ...López-Aviles S, Hurtado A

Hormonal therapies work well for many breast cancer patients – until they stop working. CIC researchers uncovered a molecular switch that allows tumor cells to bypass hormonal control, opening new ways to predict and overcome treatment resistance in HER2-positive breast cancer.

doi: [10.1093/nar/gkaf1086](https://doi.org/10.1093/nar/gkaf1086)

J Exp Clin Cancer Res

2024

Novel therapeutic target in pancreatic cancer

Romero-Pérez I, Montero JC, ...Capellá G, Pandiella A

Pancreatic cancer is one of the hardest cancers to treat. CIC researchers designed a new type of drug that delivers a toxic payload directly to pancreatic tumor cells – and showed it can stop tumor growth and induce regression in experimental models.

doi: [10.1186/s13046-025-03421-8](https://doi.org/10.1186/s13046-025-03421-8)

EMBO Mol Med

2024

Capicua as a natural barrier to lung tumor development driven by Kras/Trp53

Ballesteros-González I, ...Barbacid

CIC researchers discovered that a protein called Capicua normally acts as a brake on lung tumor development – and that the KRAS mutation that drives many lung cancers works partly by disabling this brake. Restoring it slowed tumor growth and improved sensitivity to existing drugs.

doi: [10.1038/s44321-025-00326-z](https://doi.org/10.1038/s44321-025-00326-z)

Examples of contributions in collaboration with others

10 selected publications in the 2024 – 2025 period in which CIC researchers were included as main co-authors

N Engl J Med2025 Dual bispecific antibody immunotherapy in multiple myeloma Cohen YC, ... Ocio EM, Mateos MV For myeloma patients who have already tried several treatments, options are limited. This international study tested a combination of two drugs that each activate the immune system to attack tumor cells via different targets, achieving high response rates even in the hardest-to-treat patients. doi: 10.1056/NEJMoa2406536	N Engl J Med2024 New standard of care for relapsed multiple myeloma Hungria V, ... Mateos MV When myeloma comes back after initial treatment, finding an effective second-line therapy is critical. This large international trial showed that a new three-drug combination outperformed the current standard of care, achieving deeper and more durable responses. doi: 10.1056/NEJMoa2405090	Mol Cancer2024 RRAS2 overexpression as a driver of postpartum triple-negative breast cancer Cifuentes C, Oeste CL, ... Bustelo XR, Alarcón B Women have a temporarily increased risk of aggressive breast cancer after pregnancy – a phenomenon poorly understood until now. CIC researchers identified a protein overproduced in most of these tumors that appears to drive cancer development in the postpartum context, pointing to a new biomarker and therapeutic target. doi: 10.1186/s12943-024-02054-3	Nat Genetics2024 A comprehensive genomic atlas of multiple myeloma subtypes Skerget S, ... Gutierrez NC, ... Keats Multiple myeloma is not one disease – it covers many molecular subtypes that behave differently. This international study generated the most detailed genetic map of myeloma to date, identifying new high-risk subtypes and revealing that the disease can change its profile over time. doi: 10.1038/s41588-024-01853-0	J Clin Oncol2024 Blood-based residual disease monitoring in myeloma Lasa M, ... Orfao A, San-Miguel J, Paiva B Checking whether myeloma has been eliminated after treatment normally requires a bone marrow biopsy. CIC researchers showed that a simple blood test can provide the same information just as accurately – making disease monitoring much more accessible and comfortable for patients. doi: 10.1200/JCO.24.00635	Nature2024 A new generation of pan-RAS inhibitors for cancer therapy Holderfield M, ... Santamaria D, Smith JAM RAS mutations drive many of the most common cancers, yet most have been impossible to target until recently. This study describes a new drug that blocks multiple RAS variants simultaneously, including ones that resist current treatments, potentially benefiting a much broader range of patients. doi: 10.1038/s41586-024-07205-6
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Examples of contributions in collaboration with others

10 selected publications in the 2024 – 2025 period in which CIC researchers were included as main co-authors

J Hematol Oncol 2025

R-RAS2 drives metabolism and metastasis in triple-negative

Cifuentes C, ... Bustelo X, Alarcón B

Triple-negative breast cancer is the most aggressive subtype and the hardest to treat. CIC researchers uncovered how a protein called R-RAS2 fuels tumor spread by altering how cancer cells consume energy and invade surrounding tissue – identifying a potential new target.

doi: [10.1186/s13045-025-01693-3](https://doi.org/10.1186/s13045-025-01693-3)

Signal Transduct. 2025

CDK7 as a therapeutic target in head and neck cancer

Otero-Rosales M, ... García-Escudero R,

Head and neck cancers are aggressive and often diagnosed late, with few targeted options. CIC researchers identified a protein called CDK7 as a key vulnerability in these tumors, and showed that drugs blocking it have strong anti-tumor activity in patient-derived models.

doi: [10.1038/s41392-025-02452-z](https://doi.org/10.1038/s41392-025-02452-z)

Nature 2025

Cell cycle duration as a universal determinant of cancer susceptibility

Chen D, ... Santamaria D, Bremner R

Why do some cells become cancerous while others with the same mutation do not? This landmark study found a surprisingly simple answer: cells that divide faster are more vulnerable to becoming cancerous, regardless of tumor type – a finding that reframes how we think about cancer risk.

doi: [10.1038/s41586-025-08935-x](https://doi.org/10.1038/s41586-025-08935-x)

Blood 2025

Molecular basis of a lifethreatening neonatal blood disorder

Oosterhoff JJ, ... de Pereda JM, ... Margadant C

In a rare but serious condition, a mother's immune system can attack her baby's platelets before birth, sometimes causing life-threatening bleeding. This study, with participation of the CIC, challenged a widely held theory about why some cases are more severe. These results have implications for how the condition is diagnosed and managed.

doi: [10.1182/blood.2025029618](https://doi.org/10.1182/blood.2025029618)

Awards and recognitions

Recognitions of our scientists and Center in the 2024 – 2025 period

AWARDS TO CIC PIs

	Dr. María Victoria Mateos	• “Sanitarias” Award, Redacción Médica (2024) • Argonauta Award, Pharmamar Foundation (2025) • Gold Medal of the City of Salamanca (2025) • Waldenström Award, International Myeloma Society (2025)
	Prof. Alberto Orfao	• Research Excellence Award, European Hematology Association (2025)
	Dr. L. Francisco Lorenzo Martín	• ERC Starting Grant NEXT-CRC (2024) • 6th FER0-ASEICA Young Talent in Cancer Award (2024)
	Dr. María P. Sacristán	• Maria de Maeztu Research Award, University of Salamanca (2024)

CIC “DIZ-PINTADO” ONCOLOGY AWARDS

	Dr. Aleix Prats (2024)	• Hospital Clinic, Barcelona, Spain
	Dr. Marta Alonso (2025)	• CIMA-University of Navarra, Pamplona, Spain

ACCREDITATIONS RECEIVED BY CIC

-  Research Center of Excellence of Castilla y Leon (Castilla y León Education Ministry, 2024)
-  AECC Cancer Center (Scientific Foundation of the Spanish Society against Cancer, 2024)
-  ASPIRA-MaX Seal of Excellence (CSIC, 2024)
-  Biosanitary Center (Castilla y León Health Ministry, 2024)
-  University Institute (Quality Assurance Agency for the University System in Castilla y León, 2024)
-  UCC+I Unit (Spanish Foundation for Science and Technology, 2024, 2025)
-  Our master within the top-4 of bioscience masters in Spain (2024, 2025)

AWARDS GIVEN TO THE CIC



Academia Award,
Asociación Empresa
Familiar de Castilla y
León (2025)



SER Únicos Award,
Cadena Ser Salamanca
(2025)

Some milestones in the 2024 – 2025

Some activities of the CIC worth remembering in this period,
where we celebrated our 25th anniversary

- JAN 2024** - New scientific Direction
- OCT 2024** - Strategic Plan 2024–2029 Evaluation of PIs by ESAB
- JAN 2025** - Launch of the CIC 25th Anniversary Logo
- FEB–APR 2025**
 - 1st CIC Retreat (March)
 - "El Conocimiento Cura" Seminar Series (20 Feb & 10 April)
 - "Pioneers in Cancer" Event (18 March)
- JUN 2025**
 - 25th Anniversary Institutional Ceremony (2 Jun)
 - Commemorative brochure & video
 - CIBEREHD School (4 & 5 Jun)
 - BioPhySAL 2025 Course

- SEP 2025**
 - HM Queen Letizia visits CIC (23 Sept)
 - International Cancer Research Day
 - "El Conocimiento Cura" Seminar Series (25 Sept)
- OCT 2025**
 - International Meeting on RAS Oncogene Therapies (8–10 Oct)
 - Nobel Laureate - E. Charpentier Lecture (23 Oct)
- NOV 2025**
 - "New Frontiers in Cancer Research" Meeting, F. Ramón Areces (11 Nov)
 - "El Conocimiento Cura" Seminar Series (13 Nov)
- DEC 2025**
 - Tribute ceremony for staff with 25 years of continuous work at the CIC (19 Dec)

A quick look at our achievements during these 25 years

Main numbers for the period 2000 – 2024

2,100+
publications

139,000
citations

76%
published in Q1

>160M€
total funding
PI grants + institutional

1,030
clinical trials

>60
research agreements

7
spin-offs created
4 still active

57
licensed patents

120
scientific events organized

429
Ph.D. students

283
master's students

25,000+
visitors



Working together to stop cancer

Thank you



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Y UNIVERSIDADES



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CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS



VNIVERSIDAD
DE SALAMANCA

FICUS

Fundación para la
Investigación del Cáncer
de la Universidad de Salamanca



Cofinanciado por
la Unión Europea



Fondos Europeos



Junta de
Castilla y León

MaX
MARCO DE
AUTOEVALUACIÓN DE LA
EXCELENCIA



fundación científica
asociación española
contra el cáncer
Centro acreditado 2024/2025

hr

HR EXCELLENCE IN RESEARCH