



SJD

Sant Joan de Déu
Institut de Recerca 

ANNUAL SCIENTIFIC REPORT 2025

SJD

Sant Joan de Déu
Institut de Recerca 

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Letter from the director

2025 Annual Report – IRSJD

Dear colleagues,

At the Sant Joan de Déu Research Institute (IRSJD), we see research as a commitment to patients and their families. Every project we lead, every partnership we build, and every discovery we make is driven by a single purpose: generating knowledge that transforms lives.

The year 2025 marked a major milestone in our journey, consolidating a period of growth, transformation, and international expansion. Ten years after the Institute's creation, we continue to strengthen our position as a leading centre for translational biomedical research. By bringing together scientific research and clinical practice, and through a strong commitment to innovation and health impact, we are advancing knowledge to address some of the most pressing challenges in maternal and fetal health, childhood, adolescence, and mental health.

This progress was recognised through the renewal of our CERCA accreditation with the highest rating, Excellent, as well as the renewal of the HR Excellence in Research (HR-S4R) award. These achievements acknowledge the Institute's continued progress in scientific excellence, transparency, knowledge transfer, and its commitment to international standards in talent management and research integrity.

Other major institutional milestones during the year included securing the Singulars project, with total funding of €12 million and an additional €6 million in co-funding, to develop the ExplorER building—a strategic research infrastructure designed to accelerate advances in rare diseases. We also strengthened our commitment to paediatric oncology through a strategic alliance with the Josep Carreras Foundation and the Josep Carreras Leukaemia Research Institute; formalised a strategic partnership with the Barcelona Supercomputing Center to expand our capabilities in big data, high-performance computing, and artificial intelligence applied to clinical research and rare diseases; and renewed AGAUR's support for several strategic networks led by the Institute, including i4KIDS (paediatrics), TECSAM Network (mental health), and XarTEC Salut (health technologies).

Competitive and Non-Competitive Research Projects

Throughout 2025, we further consolidated a robust and balanced funding model, resulting in an active portfolio of 592 research projects and the launch of 131 new initiatives—clear evidence of the Institute's scientific dynamism and operational strength.

Most of the new funding secured was obtained through competitive calls, particularly at the European, national, and regional levels, further reinforcing the IRSJD's position within the leading research funding programmes.

People and Research Structure

Our greatest asset continues to be the talent and commitment of the people who make up the IRSJD. Despite limited structural funding, 2025 marked an unprecedented milestone as our community surpassed 1,000 professionals for the first time. Bringing together researchers, specialised support professionals, and highly skilled clinical teams, we continue to move towards a research model that meets the highest European standards of excellence.

This growth has also been accompanied by a firm commitment to equity and talent development. Women now represent nearly 70% of our workforce and maintain balanced representation in scientific leadership positions, reinforcing an institutional culture built on equal opportunities and inclusion.

Research with Impact

In 2025, the Institute achieved outstanding scientific performance, both in terms of productivity and impact, publishing nearly 800 scientific papers, many of them in leading international journals.

Beyond scientific output, our impact is reflected in the close integration between the IRSJD and its university hospitals—Sant Joan de Déu Barcelona Children's Hospital and Sant Joan de Déu Health Park—which continues to be a key driver of translational research and innovation for patients. During 2025, the Institute maintained an extensive clinical research portfolio, with 415 active clinical trials and observational studies, while launching 88 new studies.

Looking ahead, the coming year will mark another important chapter in the Institute's evolution through the implementation of a new scientific structure based on a hybrid model that combines stable thematic research areas with challenge-driven programmes. Early results already indicate a greater capacity to attract talent, secure competitive funding, and increase the Institute's international visibility, laying the foundations for sustained growth and future leadership.

Our purpose remains unchanged: to generate knowledge that transforms lives and accelerates new opportunities for better care through research.

None of these achievements would have been possible without the talent, dedication, and collaborative spirit of our researchers, healthcare professionals, and support staff, nor without the trust placed in us by patients, families, partner institutions, and collaborators.

Thank you for being part of this journey and for helping us demonstrate, every day, that research creates hope.

Dr. Joan Comella Carnicé

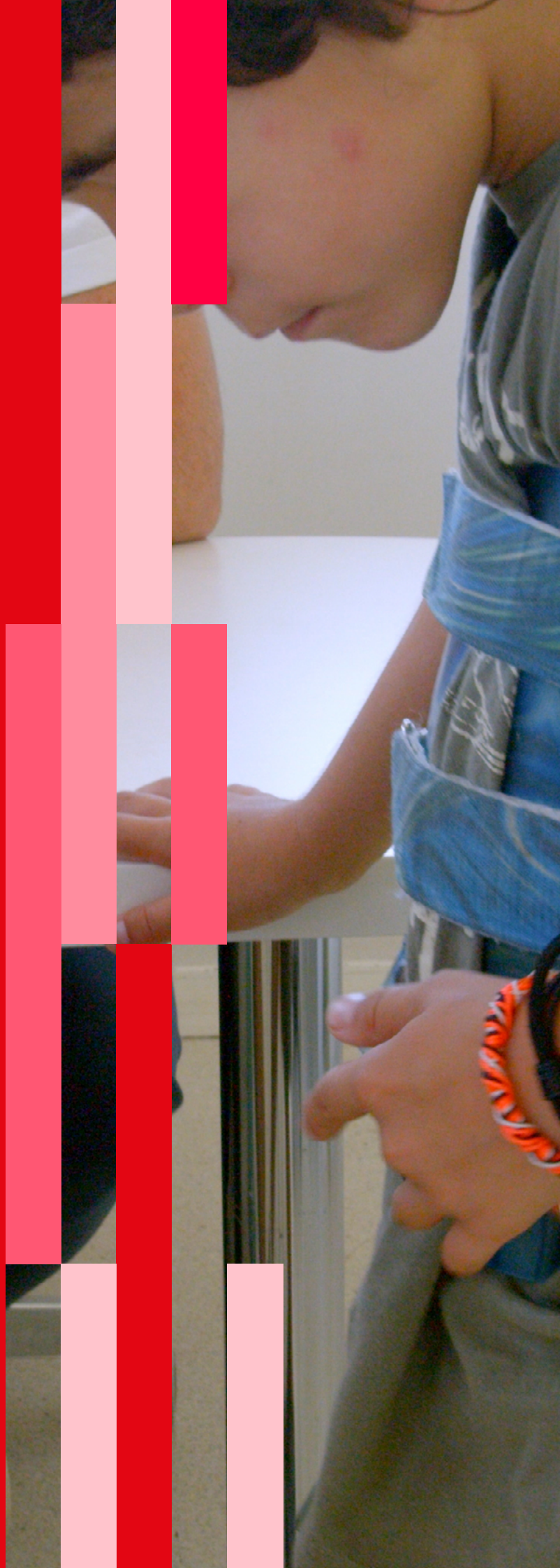
Director de l'Institut de Recerca Sant Joan de Déu



1.

Foreword

- Governance and structures
- Global numbers 2025
- Global numbers 2015-2025
- Recognition



Governance and structures

Governing council

- **Br. Jesús Pineda Sánchez** — President
- **Dr. Jordi Garcia Fernandez** — First Vice-President; Vice-Rector for Research, Universitat de Barcelona
- **Excm. i Mgfc. Dr. Joan Guàrdia Olmos** — First Vice-President; Rector of the University of Barcelona (Delegates vote to Dr. Jordi Garcia)
- **Dr. Jordi Berenguer** — Second Vice-President; Vice-rector for Transfer, Innovation and Entrepreneurship, Universitat Politècnica de Catalunya · BarcelonaTech
- **Dr. Manuel Del Castillo Rey** — Member; Managing Director, Hospital Sant Joan de Déu Barcelona (Delegates vote to Ms. Natàlia Pérez)
- **Fundació 'la Caixa' (Mr. Àngel Font)** — Member; Deputy Director General for Research and Scholarships
- **Ms. Marta Garcia Martínez** — Member; Finance Director, Parc Sanitari Sant Joan de Déu
- **Dr. Miquel Pons Serra** — Member; Medical Director, Hospital Sant Joan de Déu Barcelona
- **Dr. Sebastià Santaegugènia Gonzalez** — Member; Managing Director, Parc Sanitari Sant Joan de Déu
- **Ms. Natàlia Pérez Neira** — Secretary; Director of Economics and Finance, Hospital Sant Joan de Déu Barcelona

Scientific advisory board

- **Dr. Antonio L. Andreu** — Scientific Director, European Infrastructure for Translational Medicine (EATRIS); President, SAB
- **Dr. Ana Buj-Bello** — Head of Laboratory in Gene Therapy, Inserm, Genethon
- **Dr. Philippe Courtet** — Professor of Psychiatry, Université de Montpellier; Head of Emergency Care Psychiatry, University Hospital Montpellier
- **Dr. Marisol Montolio** — Scientific Director, Duchenne Parent Project, Spain
- **Dr. Carlos Rodríguez-Galindo** — Executive Vice-President, St. Jude Children's Research
- **Dr. Thomas Schulze** — Chairman and Director, Institute for Psychiatric Phenomics and Genomics, LMU Munich; Johns Hopkins University Department of Psychiatry
- **Dr. Maithe Tauber** — Hospital Paediatric Endocrinologist, Institut des Sciences du Cerveau, de la Cognition et du Comportement de Toulouse (ISC3T)
- **Dr. Montserrat Vendrell i Rius** — Partner, Alta Life Sciences

Internal scientific committee

- **Dr. Joan Comella Carnice** — President
- **Dr. Josep M Haro Abad** — First Vice President
- **Dr. Marta Camprubí Camprubí** — Second Vice President
- **Dr. Marçal Pastor Anglada** — Secretary and UB representative

Vocals — Coordinators of Research Programmes and Representatives of Universities

- **Dr. Alexandra Avgustinova** — Pediatric Cancer Program
- **Dr. Susanna Balcells Comas** — Precision Medicine in Rare Diseases Program
- **Dr. Alicia Casals Gelpí** — Health Technologies and Innovation Program
- **Dr. Francesca Crovetto** — Adaptive Response, Metabolism and Immunobiology Program
- **Dr. Josep M Font Llagunes** — Health Technologies and Innovation Program
- **Dr. Montserrat Gil Girbau** — Mental Health and Society Program
- **Dr. M^a Àngels Jurado Luque** — Neurosciences Program
- **Dr. Jaume Mora Graupera** — Pediatric Cancer Program
- **Dr. Gemma Marfany Nadal** — Precision Medicine in Rare Diseases Program
- **Dr. Susana Ochoa Güerre** — Scientific Base and Approach to Mental Disorders Program
- **Dr. Beatriz Olaya Guzman** — Mental Health and Society Program
- **Dr. Francesc Palau Martínez** — Precision Medicine in Rare Diseases Program
- **Dr. Maria Rubio Valera** — Mental Health and Society Program
- **Dr. Judith Usall Rodie** — Scientific Base and Approach to Mental Disorders Program
- **Dr. Esther Via Virgili** — Neurosciences Program

Representatives R1-R2:

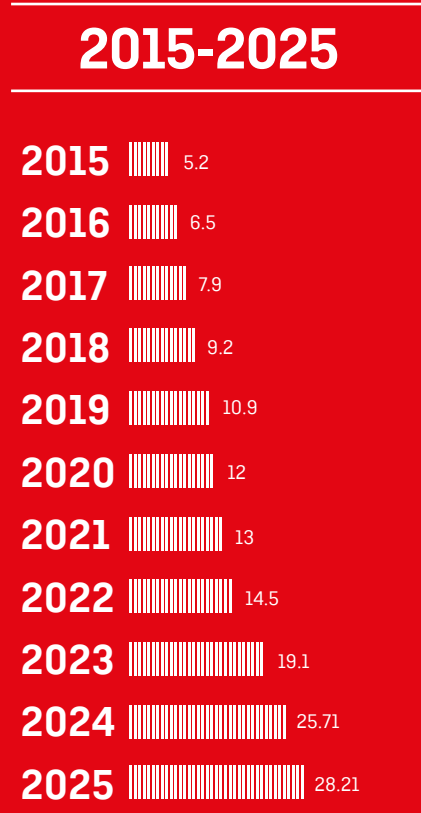
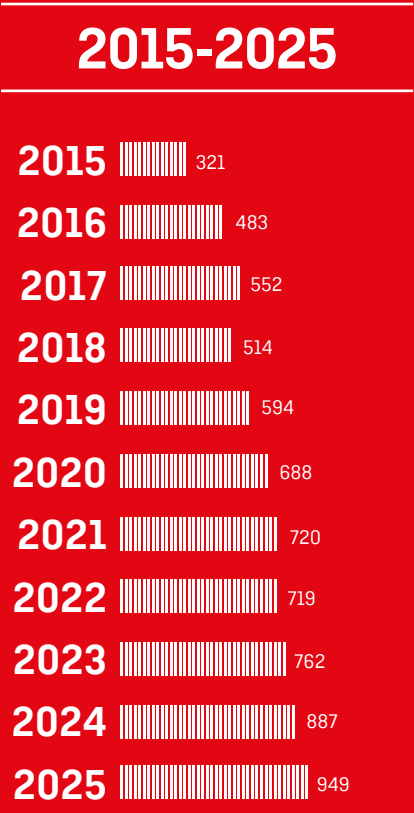
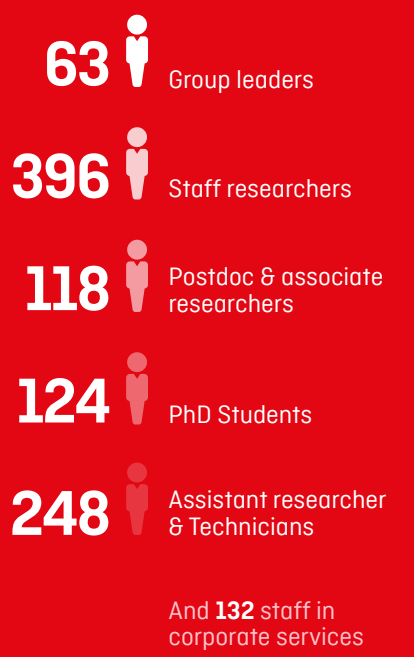
- **Dr. Lara Cantarero Abad** — R2, Campus Esplugues
- **Ms. María Cisneros Pérez** — R1, Campus Esplugues
- **Dr. Andrea Miranda Mendizabal** — R2, Campus Sant Boi
- **Ms. Marina Verdaguer Rodríguez** — R1, Campus Sant Boi



Global numbers 2025

949
RESEARCH
STAFF

28.21
MILIONS
BUDGET



592

PROJECTS

592

Active



134 Competitive
autonomic

212 Comp.
national

69 Comp.
international

11 Non Comp.
autonomic

138 Non Comp.
national

28 Non Comp.
international

131

New



29 Competitive
autonomic

52 Comp.
national

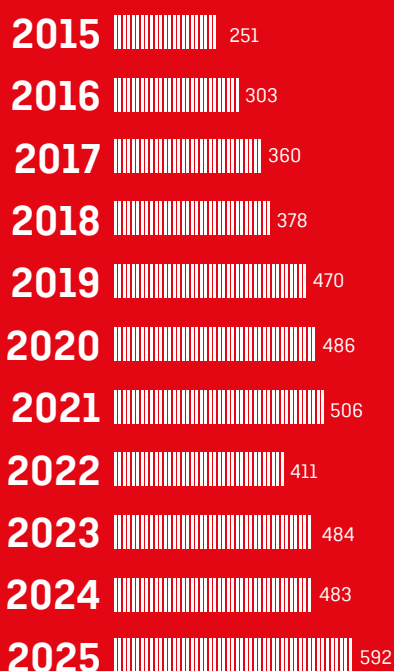
17 Comp.
international

2 Non Comp.
autonomic

25 Non Comp.
national

6 Non Comp.
international

2015-2025



415

CLINICAL TRIALS & OBSERVATIONAL STUDIES

415

Active



41

83

166

6

24

95

FASE I

FASE II

FASE III

FASE VI

OTHERS

Observational
studies

88

New



14

17

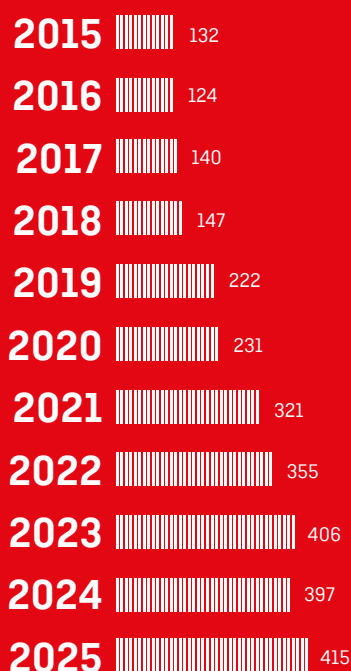
36

0

3

18

2015-2025



760

PUBLICATIONS

Publications (Original articles & reviews published in academic journals indexed in Clarivate's Journal Citation Reports 2024 SCIE, SSCI & Emerging)

4559

Impact
factor

6,0

Average
impact
factor

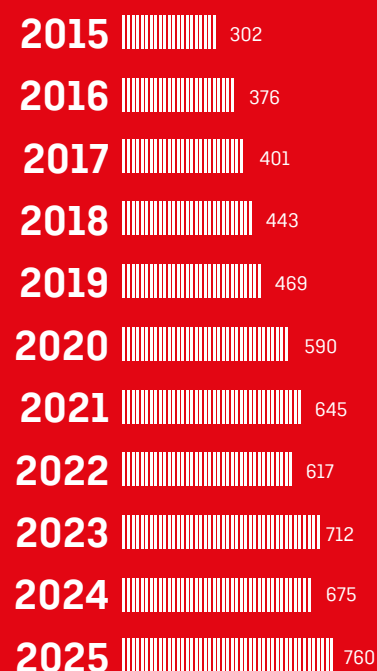
62%

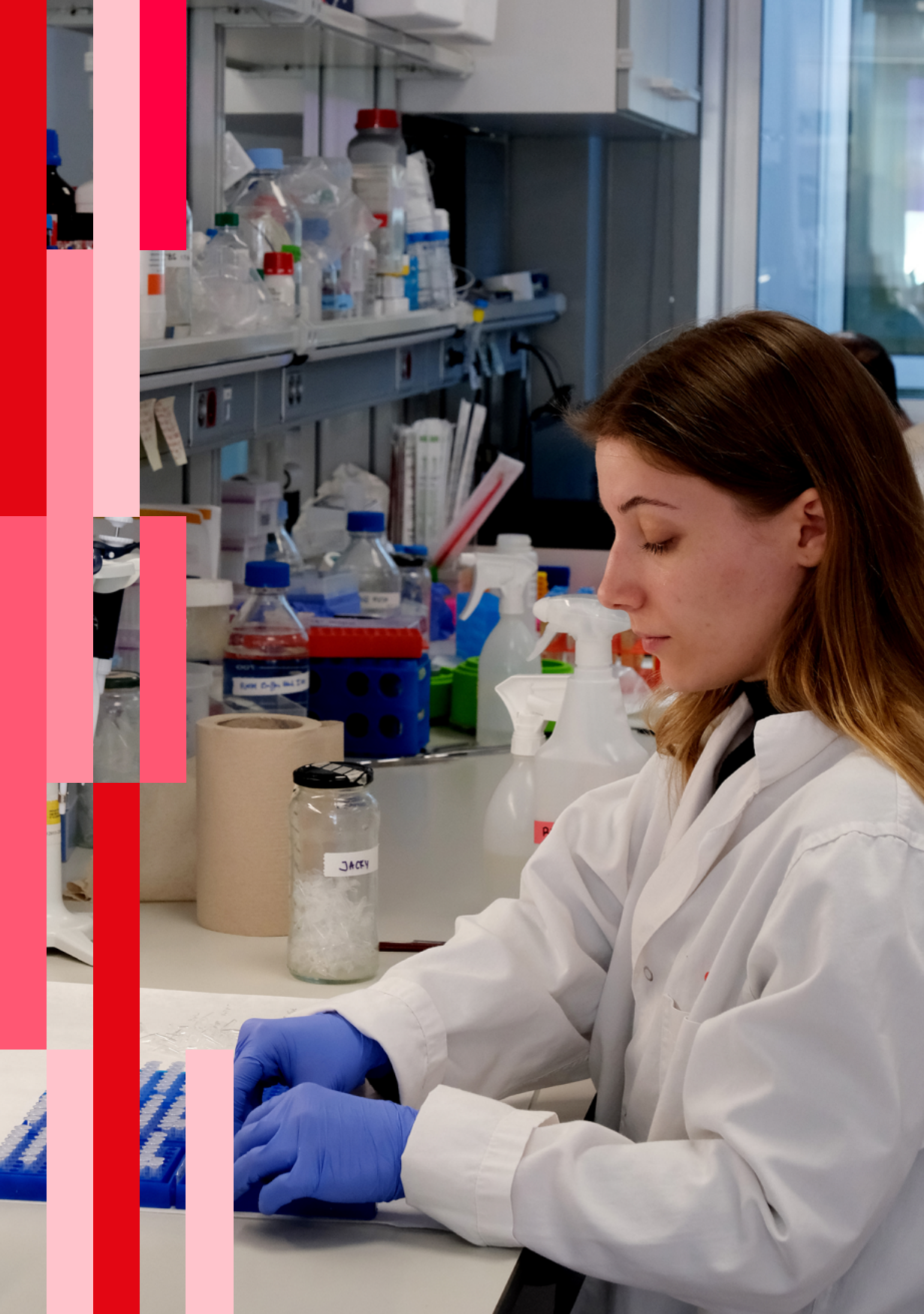
Publications
in JCR first
quartile
journals

39%

Publications
with main
contributing
authors

2015-2025





Recognition

CERCA

The Institut de Recerca Sant Joan de Déu (IRSJD) has been recognized by the board of trustees of the Institution for Research Centers in Catalonia (CERCA) as a CERCA centre in 2020, and it has successfully renewed its accreditation 2025.

This award involves the development of frontier research aimed at the scientific and economic impact and the improvement of the social and individual wellbeing.

IRSJD is a research center in biomedicine formed by groups from two university hospitals, Sant Joan de Déu Hospital and the Health Park Sant Joan de Déu, and three research institutes, the Institute of Biomedicine (IBUB) and the Institute of Neurosciences (UBNeuro), both from the UB, and thUPC's Research Centre in Biomedical Engineering.

The CERCA institute focuses its actions on the contribution to the international presence of research centres from Catalonia and to promote the cooperation and scientific exchange with the top centres and universities worldwide. Moreover, it promotes the adoption of joint policies in research management, scientific development and knowledge transfer. Also, it works to increase and ease knowledge transfer in the business sector and public, promoting the involvement of these agents in the field of research.

HRS4R Human Resources Strategy for Researchers

L'Institut de Recerca Sant Joan de Déu (IRSJD) has been reaccredited with the HR Excellence in Research Award in 2025 granted by the European Commission, after successfully passing an evaluation conducted by independent experts. This distinction recognizes institutions that promote good practices in research talent management and align their policies with the principles of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers.

The HR Excellence in Research Award will allow the Institute to continue using this distinction across all institutional materials and to maintain a prominent presence on the EURAXESS platform, a European reference point for research career opportunities.

This recognition is the result of the collective effort of teams, committees, and working groups that actively contributed to the process. The Institute thus reaffirms its commitment to a culture based on talent, scientific integrity, and continuous improvement.



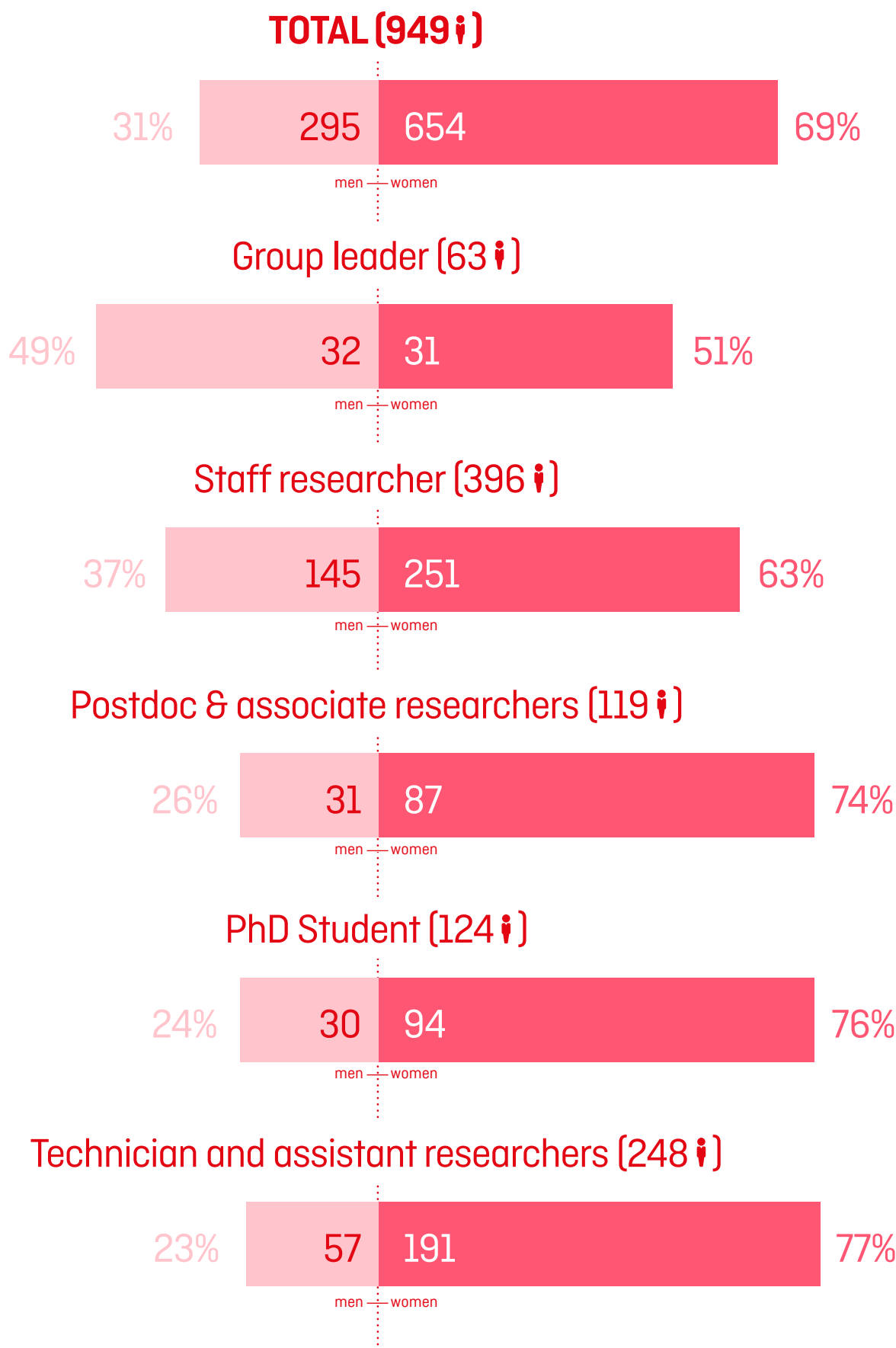
2.

Staff

▪ Research staff



Research staff



3.

Projects and clinical studies

- New projects
- Active projects
- Active clinical studies
- New clinical studies



Active projects

592 ACTIVE PROJECTS

415 competitive

177 non competitive

97 INTERNATIONAL

69 competitive

28 non competitive

350 NATIONAL

212 competitive

138 non competitive

145 AUTONOMIC

134 competitive

11 non competitive

New projects

131 NEW PROJECTS

98 competitive

33 non competitive

23 INTERNATIONAL

17 competitive

6 non competitive

77 NATIONAL

52 competitive

25 non competitive

31 AUTONOMIC

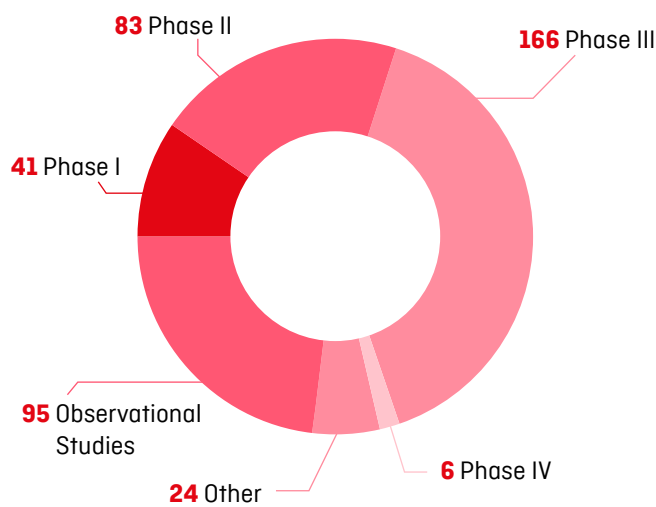
29 competitive

2 non competitive

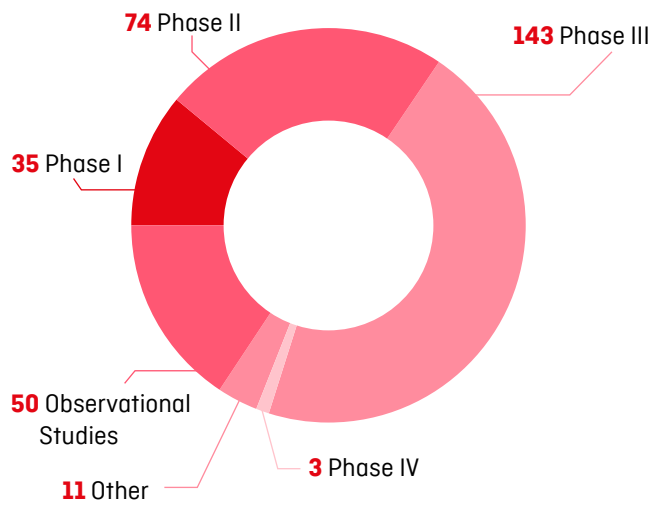


Active clinical studies

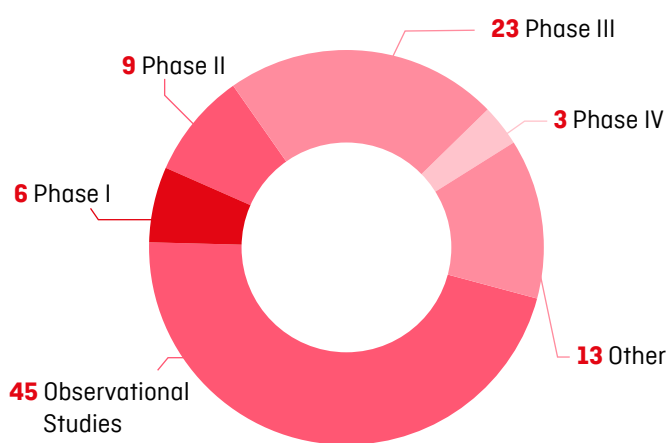
All clinical studies by type



Only commercial clinical studies



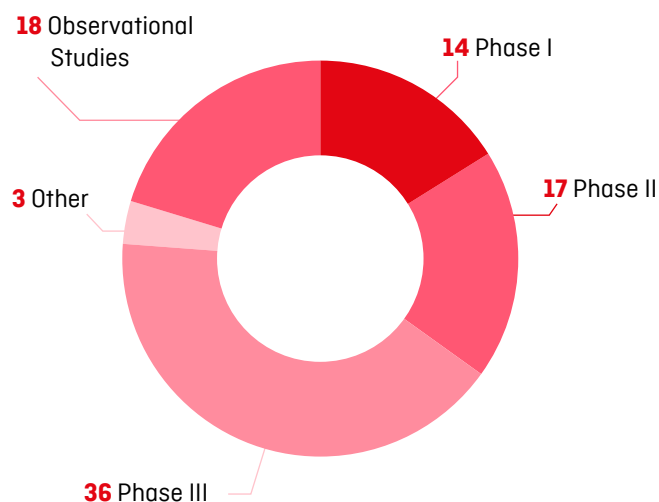
Only academic clinical studies



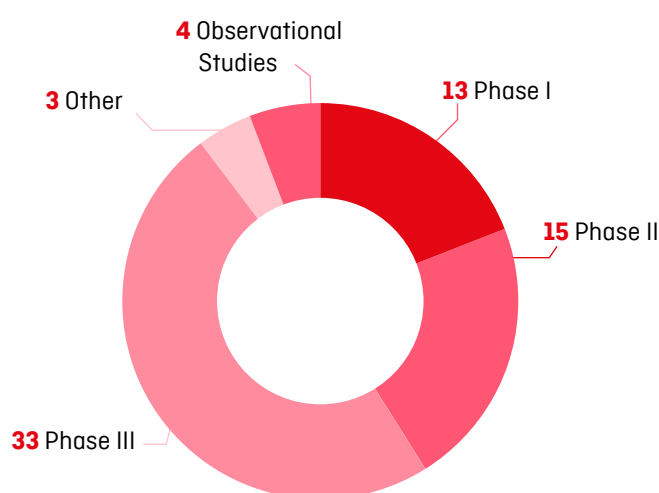
Total active PER SERVICE	CT	Others	OS
ALLERGY AND CLINICAL IMMUNOLOGY	14	0	9
ANESTHESIA	0	1	2
CARDIOLOGY	7	1	0
CLINICAL HAEMATOLOGY	12	0	10
COMPLEX WOUND UNIT	0	0	1
DERMATOLOGY	32	0	6
EMERGENCY AND INTERNAL MEDICINE	1	0	0
EMERGENCY ROOM	1	1	0
ENDOCRINOLOGY	11	0	7
GASTROENTEROLOGY, HEPATOLOGY AND NUTRITION	12	1	6
GYNAECOLOGY AND OBSTETRICS	4	1	2
INFECTIOUS DISEASES	12	1	5
INTENSIVE CARE UNIT	3	0	0
INTERNAL MEDICINE	1	0	0
LABORATORY	0	0	1
NEONATOLOGY	3	2	1
NEPHROLOGY	13	0	4
NEUROLOGY	77	2	14
NEUROPHYSIOLOGY	0	2	0
NEUROSURGERY	0	1	0
NURSERING	0	2	0
ONCOLOGY	52	0	14
OPHTHALMOLOGY	2	1	1
ORTHOPAEDICS AND TRAUMATOLOGY	1	4	0
OTORHINOLARYNGOLOGY	2	0	0
PEDIATRIC	0	1	0
PHARMACY	0	0	3
PNEUMOLOGY	6	0	0
PSYCHIATRY AND PSYCHOLOGY	4	1	2
REHABILITATION AND PHYSICAL MEDICINE	1	1	0
RHEUMATOLOGY	23	0	7
SURGERY	2	0	0
TRAUMATOLOGY	0	1	0
TOTAL	296	24	95

New clinical studies

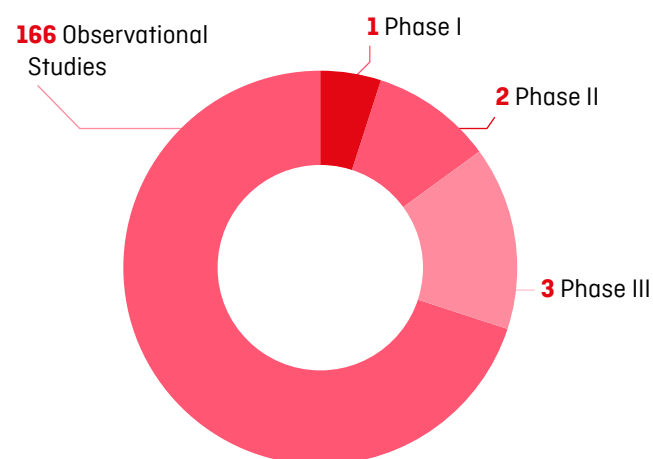
All clinical studies by type



Only commercial clinical studies



Only academic clinical studies



Total new PER SERVICE	CT	Others	OS
ALLERGY AND CLINICAL IMMUNOLOGY	4	0	3
ANESTHESIA	0	0	0
CARDIOLOGY	2	1	0
CLINICAL HAEMATOLOGY	6	0	2
COMPLEX WOUND UNIT	0	0	0
DERMATOLOGY	8	0	3
EMERGENCY AND INTERNAL MEDICINE	0	0	0
EMERGENCY ROOM	0	0	0
ENDOCRINOLOGY	3	0	0
GASTROENTEROLOGY, HEPATOLOGY AND NUTRITION	2	0	1
GYNAECOLOGY AND OBSTETRICS	0	1	0
INFECTIOUS DISEASES	3	0	2
INTENSIVE CARE UNIT	0	0	0
INTERNAL MEDICINE	0	0	0
LABORATORY	0	0	0
NEONATOLOGY	1	0	1
NEPHROLOGY	3	0	0
NEUROLOGY	16	0	2
NEUROPHYSIOLOGY	0	0	0
NEUROSURGERY	0	0	0
NURSING	0	0	0
ONCOLOGY	9	0	3
OPHTHALMOLOGY	0	0	0
ORTHOPAEDICS AND TRAUMATOLOGY	2	0	0
OTORHINOLARYNGOLOGY	1	0	0
PEDIATRIC	0	0	0
PHARMACY	1	0	1
PNEUMOLOGY	1	0	0
PSYCHIATRY AND PSYCHOLOGY	0	0	0
REHABILITATION AND PHYSICAL MEDICINE	0	0	0
RHEUMATOLOGY	5	0	0
SURGERY	0	1	0
TRAUMATOLOGY	0	0	0
TOTAL	67	3	18

4.

Scientific production and results

- Scientific publications
- High influence journals
- Clinical guidelines, consensus documents & recommendations
- Patents utility models and spin-offs
- Doctoral theses



Scientific publications

(Original articles & reviews)

Number	Impact factor	Average IF	% Q1	%D1	% Leadership
760	4559	6,0	62 %	27 %	39 %
% D1 in leadership	% Female leadership	Normalized Impact (2021-2025)	Highly Cited Papers 10% (2021-2025)	% Open Access	% International collaboration
19 %	52 %	2,38	22,5 %	79 %	55 %

All publications by type

	Number	Impact Factor	Aerage IF	%Q1	%D1	%Leadership
Original articles	728	4434	6,1	62 %	27 %	39 %
Review	32	125	3,9	53 %	25 %	28 %
Scientific Letters	16	76	4,7	63 %	38 %	63 %
Editorial material (editorials and letters to the editor)	23	86	3,8	39 %	9 %	65 %
Total*	799	4721	5,9	61 %	26 %	40 %

Methodology and Definitions

- Except when stated otherwise, indicators take into account original articles & reviews published in academic journals indexed in Clarivate’s Journal Citation Reports 2024 (SCIE, SSCI & Emerging)
- Only publications with at least one IRSJD author (no collaborator)
- No ahead of print publications are taken into account
- Leadership indicators take into account first, last and/or corresponding author
- Open Access takes into account green, gold and hybrid route publications, not bronze, according to the Unpaywall database
- Normalized impact and HCP10% indicators take into account articles and reviews from 2021 to 2025, and are calculated using Clarivate’s ESI (Essential Science indicators) baseline citation rates and baseline percentiles from its 14/05/2026 update.
- Citations to calculate the CROWN and HCP10% indicators were downloaded from Clarivate WoS (Web of Science) Core Collection via Fundanet, on 21/05/2026. Citation count is not fractional.
- Normalized impact shows the relative number of citations to publications, compared to the global average of citations to publications of the same type, year of publication and thematic area, being 1 the baseline or world average.
- HCP10% (Highly Cited Papers 10%) shows the publications included in 10% of the world’s most cited publications of the same type, year of publication and subject area, being 10% the expected value [higher is better].

High influence journals

Number of original articles and reviews in first decil journals: 202

Journal	Total articles and reviews	Journal's impact Factor (JCR 2024)
Lancet	2	88,5
World Psychiatry	1	65,8
Ann Oncol	1	65,4
Signal Transduct Target Ther	1	52,7
Nat Med	2	50,0
Nature	1	48,5
Lancet Neurol	1	45,5
J Clin Oncol	1	43,4
J Hematol Oncol	1	40,4
Lancet Oncol	1	35,9
Cancer Discov	1	33,3
Nat. Photonics	1	32,9
Lancet Infect Dis	1	31,0
Nat Genet	4	29,0
Nat Immunol	1	27,6
Adv. Mater.	1	26,8
Lancet Public Health	1	25,2
Lancet Digit Health	1	24,1
Blood	3	23,1
Lancet Planet Health	2	21,6
JAMA Neurol.	1	21,4
Eur. Resp. J.	1	21,2
Ann Rheum Dis	1	20,6
Bioact. Mater.	1	20,3
Nat Neurosci	1	20,0
Trends Pharmacol Sci	1	19,9
JAMA Pediatr	1	18,0
Lancet Glob Health	2	18,0
JAMA Psychiatry	1	17,1
Cancer Res	1	16,6
Mol Cell	1	16,6
Nat Commun	10	15,7

High influence journals

Journal	Total articles and reviews	Journal's impact Factor (JCR 2024)
Lancet Child Adolesc Health	1	15,5
Lancet Health. Longev.	1	14,6
Trends Mol Med	1	13,8
J Clin Invest	2	13,6
Exp Hematol Oncol	1	13,5
Leukemia	3	13,4
Neuro Oncol	1	13,4
Chem. Eng. J.	2	13,2
Nucleic Acids Res	1	13,1
Lancet HIV	1	13,0
Lancet Reg Health Eur	1	13,0
Sci. Adv.	1	12,5
Clin. Gastroenterol. Hepatol.	1	12,2
Small	1	12,1
Allergy	2	12,0
J Infect	1	11,9
J Am Acad Dermatol	1	11,8
Med	1	11,8
Brain	2	11,7
Blood Cancer J	1	11,6
Genome Med.	1	11,2
Curr. Obes. Rep.	1	11,0
JAMA Dermatol	1	11,0
Cell Rep Med	1	10,6
J Immunother Cancer	1	10,6
J. R. Soc. Med.	1	10,3
Clin. Cancer Res.	1	10,2
Mol Psychiatry	1	10,1
EClinicalMedicine	1	10,0
Circ Arrhythm Electrophysiol	1	9,8
Environ Health Perspect	1	9,8
Environ Int	4	9,7
Biomater. Res.	1	9,6
J Am Acad Child Adolesc Psychiatry	1	9,5
Acta Neuropathol	1	9,3
Biol Psychiatry	1	9,0

High influence journals

Journal	Total articles and reviews	Journal's impact Factor (JCR 2024)
Neurology	1	9,0
Stroke	1	8,9
Am J Clin Dermatol	1	8,8
Appl. Surf. Sci. Adv.	1	8,7
Int. J. Biol. Macromol.	2	8,5
Am J Obstet Gynecol	3	8,4
BMC Med	3	8,3
EMBO J	1	8,3
Free Radic Biol Med	1	8,2
NPJ Parkinsons Dis	1	8,2
Am. J. Gastroenterol.	1	8,1
Lancet Reg. Health-W. Pac.	1	8,1
Eng. Appl. Artif. Intell.	1	8,0
Ann Neurol	2	7,7
Environ Res	1	7,7
JACC Clin Electrophysiol	1	7,7
Brain Behav. Immun.	1	7,6
Br. J. Psychiatry	3	7,6
Mov Disord	2	7,6
Biomed Pharmacother	2	7,5
Emerg Microbes Infect	1	7,5
Europace	1	7,5
Chin. Med. J.	1	7,3
Clin. Infect. Dis.	1	7,3
Oncogene	1	7,3
Gen. Psychiat.	1	7,0
J Child Psychol Psychiatry	2	7,0
ACS Polym. Au	1	6,9
Am J Clin Nutr	1	6,9
Eur. J. Anaesth.	1	6,8
BMJ Qual. Saf.	1	6,7
Eur Neuropsychopharmacol	4	6,7
Eur Psychiatry	5	6,7
J Investig Allergol Clin Immunol	1	6,7
Emerg. Infect. Dis	2	6,6
Epilepsia	4	6,6

High influence journals

Journal	Total articles and reviews	Journal's impact Factor (JCR 2024)
Comput Biol Med	3	6,3
Emergencias	2	6,3
Ultrasound Obstet Gynecol	4	6,3
Genet Med	1	6,2
J. Eur. Ceram. Soc.	3	6,2
Transl Psychiatry	2	6,2
Epidemiol. Psychiatr. Sci.	2	6,1
Hum. Reprod.	1	6,1
J. Med. Internet Res.	1	6,0
Colloid Surf. B-Biointerfaces	1	5,6
Pharmaceutics	1	5,5
Psychol Med	2	5,5
Radiographics	1	5,5
J Neuroeng Rehabil	1	5,2
Commun. Biol.	1	5,1
Child Adolesc Ment Health	2	5,0
Soc Sci Med	1	5,0
Ann Phys Rehabil Med	2	4,6
Bone Joint J	1	4,6
Neuroimage	1	4,5
Pediatr Allergy Immunol	1	4,5
Pediatr Crit Care Med	2	4,5
World Journal of Pediatrics	1	4,5
Dev Med Child Neurol	3	4,3
Eur J Psychotraumatol	1	4,2
Account. Res.	1	4,0
Behav Res Methods	1	3,9
Chemometrics Intell. Lab. Syst.	1	3,8
Hum. Soc. Sci. Commun.	1	3,6
J Pediatr	1	3,5
Comput. Phys. Commun.	1	3,4
Phys. Therapy	1	3,3
Patient Educ Couns	1	3,1

High influence journals

Original articles and reviews D1 with IRSJD main contribution: 56

Reference	Journal	Journal's impact Factor (JCR 2024)
Sentís I, Melero JL, Cebrià A, Grzelak M, Soto M, Michel A et al. Spatiotemporal T-cell tracking for personalized T-cell receptor T-cell therapy designs in childhood cancer. <i>Ann Oncol</i> . 2025;36(9):1096-1106. IF:65,400. [Q1].	Ann Oncol	65,4
Zugasti I, Espinosa L, Fidyt K, Mulens V, Diaz M, Juan M et al. CAR-T cell therapy for cancer: current challenges and future directions. <i>Signal Transduct Target Ther</i> . 2025;10(1):210-210. IF:52,700. [Q1].	Signal Transduct Target Ther	52,7
Tirado N, Fidyt K, Mansilla MJ, Garcia A, Martínez A, Vinyoles M et al. CAR-T cells targeting CCR9 and CD1a for the treatment of T cell acute lymphoblastic leukemia. <i>J Hematol Oncol</i> . 2025;18(1):69-69. IF:40,400. [Q1].	J Hematol Oncol	40,4
C, Perosanz X, Ressler AK, Ivars M, Rodriguez J, Rovira C et al. Somatic Uniparental Disomy of PTEN in Endothelial Cells Causes Vascular Malformations in Patients with PTEN Hamartoma Tumor Syndrome. <i>Cancer Discov</i> . 2025;15(7):1350-1362. IF:33,300. [Q1].	Cancer Discov	33,3
Wang X, Guillem J, Kumar S, Lee DS, Cabrerizo D, Werther R et al. De Novo Design of Integrin α5β1 Modulating Proteins to Enhance Biomaterial Properties. <i>Adv. Mater</i> . 2025;37(34)IF:26,800. [Q1].	Adv. Mater.	26,8
Palomer FX, Wang JR, Escalona C, Wu S, Wahli W, Vazquez M. Targeting AMPK as a potential treatment for hepatic fibrosis in MASLD. <i>Trends Pharmacol Sci</i> . 2025;46(6):551-566. IF:19,900. [Q1].	Trends Pharmacol Sci	19,9
Figuerola E, Rios C, Blanco E, Sanchez M, Táboas P, Fernandez G et al. KDM6 Demethylases Contribute to EWSR1::FLI1-Driven Oncogenic Reprogramming in Ewing Sarcoma. <i>Cancer Res</i> . 2025;85(22):4485-4503. IF:16,600. [Q1].	Cancer Res	16,6
Prada E, Táboas P, Andrades E, Gomez S, Mateo S, Cebrià A et al. PRKG1 hinders myogenic differentiation and predicts response to AKT inhibitor ipatasertib in Rhabdomyosarcoma. <i>Nat Commun</i> . 2025;16(1):9816-9816. IF:15,700. [Q1].	Nat Commun	15,7
Hernandez MI, Cuervas I, Prada E, Pulecio J, Gimeno R, Andrades E et al. EWS::FLI1 expression in human embryonic mesenchymal stem cells leads to transcriptional reprogramming, defective DNA damage repair and Ewing sarcoma. <i>Nat Commun</i> . 2025;16(1):9427-9427. IF:15,700. [Q1].	Nat Commun	15,7
Mora J, Chan GCF, Morgenstern DA, Amoroso L, Nysom K, Faber J et al. The anti-GD2 monoclonal antibody naxitamab plus GM-CSF for relapsed or refractory high-risk neuroblastoma: a phase 2 clinical trial. <i>Nat Commun</i> . 2025;16(1):1636-1636. IF:15,700. [Q1].	Nat Commun	15,7
García C, de Zegher F, Ibañez L, clinical investigators of the spiomet4health C. Adolescent polycystic ovary syndrome: an endocrine-metabolic mode in response to ectopic fat. <i>Trends Mol Med</i> . 2025;31(5):492-493. IF:13,800. [Q1].	Trends Mol Med	13,8
Godoy E, Serrano NL, Jiménez A, Villaronga M, Marqués Pérez RM, Varela R et al. Elesclomol-copper therapy improves neurodevelopment in two children with Menkes disease. <i>J Clin Invest</i> . 2025;135(19)IF:13,600. [Q1].	J Clin Invest	13,6
Viteri A, Espanol M, Ginebra MP, García JM. Tailoring drug release from skin-like chitosan-agarose biopolymer hydrogels containing Fe3O4 nanoparticles using magnetic fields. <i>Chem. Eng. J</i> . 2025;517IF:13,200. [Q1].	Chem. Eng. J.	13,2
Mestres A, Quesada T, Blasco A, Gavalda A, Godoy FJ, Cereijo R et al. Chaperone-mediated autophagy controls brown adipose tissue thermogenic activity. <i>Sci. Adv</i> . 2025;11(44)IF:12,500. [Q1].	Sci. Adv.	12,5
Dietl B, Henares D, Cuchí E, Blanco M, Rajadell M, Brotons P et al. Differential nasopharyngeal microbiota patterns: A comparative study of pneumococcal pneumonia, COVID-19, and healthy adults. <i>J Infect</i> . 2025;91(3):106589-106589. IF:11,900. [Q1].	J Infect	11,9

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Tizzano E, Lindner G, Chilcott E, Finkel RS, Yáñez RJ. In utero therapy for spinal muscular atrophy: closer to clinical translation. Brain. 2025;148(9):3043-3056. IF:11,700. (Q1).	Brain	11,7
Villarroya F, Peyrou M, Giral M. Adipose Tissue, at the Core of the Action of Incretin and Glucagon-Based Anti-Obesity Drugs. Curr. Obes. Rep. 2025;14(1):67-67. IF:11,000. (Q1).	Curr. Obes. Rep.	11,0
Colmenero M, Del Boz J, Grau M, Ruiz R, Descalzo MÁ, García I et al. Interobserver and Intraobserver Agreement on the Treatment of Infantile Hemangiomas. JAMA Dermatol. 2025;161(2):203-207. IF:11,000. (Q1).	JAMA Dermatol	11,0
Monistrol A, Diaz S, Félez M, Haro JM, Medland SE, Mitchell BL. Genetic analyses point to alterations in immune-related pathways underpinning the association between psychiatric disorders and COVID-19. Mol Psychiatry. 2025;30(1):29-36. IF:10,100. (Q1).	Mol Psychiatry	10,1
Garcia A, Sevin C, Ribeiro J, Yazbeck E, Rosewich H, Jimenez S et al. Safety and efficacy of leriglitazone in childhood cerebral adrenoleukodystrophy (NE-XUS): an interim analysis of an open-label, phase 2/3 trial. EClinicalMedicine. 2025;84:103265-103265. IF:10,000. (Q1).	EClinicalMedicine	10,0
Gómez SG, Boix G, Orrit J, Bonet R, Caro J, Muñoz J et al. Synergistic Dual Ag/Cu Ion Implantation to Enhance Antimicrobial Defense on Boston Keratoprosthesis. Biomater. Res. 2025;29:147-147. IF:9,600. (Q1).	Biomater. Res.	9,6
Alcaide E, Mola M, Escaramís G, Lazcano U, Fernández I, Reig J et al. Rare Variant Association Analysis Uncovers Involvement of VNN2 in Stroke Outcome. Stroke. 2025;56(9):2571-2578. IF:8,900. (Q1).	Stroke	8,9
Viteri A, Laugé J, Lutz L, Ginebra MP, García JM. In situ synthesis of Fe(3)O(4) nanocatalyst in chitosan-agarose hydrogel membranes for the sustainable and efficient degradation of organic compounds. Int. J. Biol. Macromol. 2025;319(Pt 2):145380-145380. IF:8,500. (Q1).	Int. J. Biol. Macromol.	8,5
Cobo T, Aldecoa V, Ferrero SI, Balcells J, Contreras AL, Valenzuela A et al. Preterm prelabor rupture of membranes: the use of amniocentesis to detect intraamniotic infection reduces maternal and neonatal duration of antibiotic exposure. Am J Obstet Gynecol. 2025;233(5):4771-4771. IF:8,400. (Q1).	Am J Obstet Gynecol	8,4
Gonzalez MA, Peguero A, Meler E, Camprubí M, Rovira C, Gómez MD et al. Treatment of early-onset fetal growth restriction with low molecular weight heparin does not prolong gestation: a randomized clinical trial. Am J Obstet Gynecol. 2025;232(6):5521-5521. IF:8,400. (Q1).	Am J Obstet Gynecol	8,4
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Sikha OK, Ballester MG, Benítez R. Unveiling learning trends in convolutional neural networks with dynamic mode decomposition. Eng. Appl. Artif. Intell. 2025;144IF:8,000. (Q1).	Eng. Appl. Artif. Intell.	8,0
Estévez B, Sarv S, Bonello N, Carrera L, Orteiz CI, Exposito JM et al. Biallelic Variants in the DARS2 Gene as a Novel Cause of Axonal Charcot-Marie-Tooth Disease. Ann Neurol. 2025;98(6):1335-1351. IF:7,700. (Q1).	Ann Neurol	7,7
Ferrés S, Serrat M, Auer W, Royuela E, Almirall M, Lizama A et al. Immune-inflammatory effects of the multicomponent intervention FIBROWALK in outdoor and online formats for patients with fibromyalgia. Brain Behav. Immun. 2025;125:184-197. IF:7,600. (Q1).	Brain Behav. Immun.	7,6

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Tor J, Baeza I, Alvarez J, Rodríguez M, Muñoz D, Sintes A et al. Sex differences and implications in outcome in children and adolescents at clinical high risk for psychosis. J Child Psychol Psychiatry. 2025;66(10):1461-1472. IF:7,000. [Q1].	J Child Psychol Psychiatry	7,0
Selma M, Crispi F, Castro S, Casas I, Larroya M, Genero M et al. Effects of Mediterranean diet or Mindfulness-Based Stress Reduction during pregnancy on maternal gut and vaginal microbiota: a subanalysis of the Improving Mothers for a better Prenatal Care Trial BarCeloNa (IMPACT BCN) trial. Am J Clin Nutr. 2025;122(4):1121-1133. IF:6,900. [Q1].	Am J Clin Nutr	6,9
Haro PA, Colombi S, Casanovas J, Resina L, Sans J, Engel E et al. Engineering Poly(lactic Acid)-Based Scaffolds for Abundant, Sustained, and Prolonged Lactate Release. ACS Polym. Au. 2025;5(3):247-260. IF:6,900. [Q1].	ACS Polym. Au	6,9
Castañó JR, Barceló A, Royuela E, Sanabria JP, García V, Neblett R et al. Effectiveness of peri-operative psychological interventions for the reduction of postsurgical pain intensity, depression, anxiety and pain catastrophising. Eur. J. Anaesth. 2025;42(7):609-625. IF:6,800. [Q1].	Eur. J. Anaesth.	6,8
Félez M, Giné I, Monistrol A, Melchior M, Hecker I, Mittendorfer E et al. Identifying psychiatric morbidity and comorbidity patterns associated with COVID-19 mortality. A register-based cohort study from Catalonia. Eur Psychiatry. 2025;68(1) IF:6,700. [Q1].	Eur Psychiatry	6,7
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Aina P, Baquero F, Mendez A, del Rosal T, Rodríguez P, Toro C et al. A 28-Year Multi-Center Cohort Study of Nontuberculous Mycobacterial Lymphadenitis in Children, Spain. Emerg. Infect. Dis. 2025;31(3)IF:6,600. [Q1].	Emerg. Infect. Dis	6,6
Aina P, Baquero F, Méndez A, Del Rosal T, Rodríguez P, Toro C et al. A 28-Year Multi-center Cohort Study of Nontuberculous Mycobacterial Lymphadenitis in Children, Spain. Emerg. Infect. Dis. 2025;31(3):536-546. IF:6,600. [Q1].	Emerg. Infect. Dis	6,6
Frías M, Badosa MC, Jimenez C, Porta JM, Roldan M. The artificial intelligence challenge in rare disease diagnosis: A case study on collagen VI muscular dystrophy. Comput Biol Med. 2025;196(Pt A):110610-110610. IF:6,300. [Q1].	Ultrasound Obstet Gynecol	6,3
Miranda J, Benítez L, Macías S, Paules C, Gomez A, Basso A et al. Maternal stress and fetoplacental cortisol regulation in small-for-gestational-age newborns. Ultrasound Obstet Gynecol. 2025;65(6):738-748. IF:6,300. [Q1].	Comput Biol Med	6,3
Bernaus S, Romagosa J, Mata C, Stephan C, Benítez R, Valls A et al. Novel classification of brain vascular tortuosity measures: A systematic review. Comput Biol Med. 2025;190:109990-109990. IF:6,300. [Q1].	Ultrasound Obstet Gynecol	6,3
Youssef L, Crispi F, Paolucci S, Miranda J, Lobmaier S, Crovetto F et al. Angiogenic factors alone or in combination with ultrasound Doppler criteria for risk classification among late-onset small fetuses with or without pre-eclampsia. Ultrasound Obstet Gynecol. 2025;65(3):317-324. IF:6,300. [Q1].	Comput Biol Med	6,3

High influence journals

Reference	Journal	Journal's impact Factor (JCR 2024)
Raveenthini M, Lavanya R, Benítez R. Interpretable diagnostic system for multio- cular diseases based on hybrid meta-heuristic feature selection. Comput Biol Med. 2025;184:109486-109486. IF:6,300. [Q1].	J. Eur. Ceram. Soc.	6,3
García N, Ginebra MP, Jiménez E, Mas C. Chemical etching-induced nanorough- ness enhances cell response and antibacterial activity on zirconia. J. Eur. Ceram. Soc. 2025;45(7)IF:6,200. [Q1].	Hum. Reprod.	6,2
Xunclà M, Sánchez MÁ, Rey N, Serrano M, Martínez PA, Trobo L et al. Case Report: Androgenetic/biparental chimera with two biparental cell lines leading to pla- cental mesenchymal dysplasia: a possible novel mechanism of formation. Hum. Reprod. 2025;40(5):962-970. IF:6,100. [Q1].	J. Med. Internet Res.	6,1
Monreal A, Castro A, Pérez MÁ, Gili M, Mayoral F, Hurtado MM et al. Efficacy of a Blended Low-Intensity Internet-Delivered Psychological Program in Patients With Multimorbidity in Primary Care: Randomized Controlled Trial. J. Med. Internet Res. 2025;27IF:6,000. [Q1].	Colloid Surf. B-Biointerfaces	6,0
Colombi S, Alemán C, García JM. Free-standing, flexible and conformable bilayered polymeric nanomembranes modified with gold nanomaterials as electronic skin sensors. Colloid Surf. B-Biointerfaces. 2025;250:114558-114558. IF:5,600. [Q1].	J Neuroeng Rehabil	5,6
Favata A, Gallart R, van L, Exposito JM, Medina J, Torras C et al. Imu-based ki- nematic analysis to enhance upper limb motor function assessment in neuromus- cular diseases. J Neuroeng Rehabil. 2025;22(1):63-63. IF:5,200. [Q1].	Ann Phys Rehabil Med	5,2
Jacob L, Castro J, Heslot C, Andelic N, Tenovuo O, CENTER (et al. Absence from work in the 12 months following mild traumatic brain injury in Europe: a CENTER-TBI cohort study. Ann Phys Rehabil Med. 2025;68(8):102017-102017. IF:4,600. [Q1].	Ann Phys Rehabil Med	4,6
Bermudo A, Ariza M, Agudelo D, Camins N, Boldó M, Ferrer B et al. Effects of min- dfulness and exercise on cognition and emotion in adults with mild deficits in the chronic post-stroke phase: A randomized controlled trial. Ann Phys Rehabil Med. 2025;68(7):102008-102008. IF:4,600. [Q1].	Neuroimage	4,6
Blanco ÁD, Costa J, Carrillo AP, Dalmazzo D, Ramirez R, San Miguel I. Error monitoring and correction in violin performance: An EEG study. Neuroimage. 2025;318:121365-121365. IF:4,500. [Q1].	Dev Med Child Neurol	4,5
Alarcon A, Carreras N, Muehlbacher T, Casas D, Arena R, Roca P et al. Foetal disrupti- ve brain injuries: Diagnosing the underlying pathogenetic mechanisms with cranial ultrasonography. Dev Med Child Neurol. 2025;67(11):1383-1408. IF:4,300. [Q1].	Dev Med Child Neurol	4,3
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Naranjo D, Martí D, Alemán C, García JM, Torras J. Intelligent cross-linking in polymer simulations: SuSi's approach to complex 3D networks. Comput. Phys. Commun. 2025;316:109767IF:3,400. [Q1].	Phys. Therapy	3,4
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Clinical guidelines, consensus documents & recommendations

Reference	Journal
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Wirnitzer KC, Motevalli M, Tanous DR, Drenowatz C, Moser M, Cramer H et al. Toward a roadmap for addressing today's health dilemma-The 101-statement consensus report. <i>Front. Nutr.</i> 2025;12:1676080-1676080. IF:5,100. [Q1].	Front. Nutr.
Jeys L, Botello E, Boyle RA, Ebeid W, Houdek MT, Kurisunkal VJ et al. A modified Delphi consensus on periprosthetic infection in orthopaedic oncology : a report from the Birmingham Orthopaedic Oncology Meeting (B00M). <i>Bone Joint J</i> . 2025;107-B(12):1352-1359. IF:4,600. [Q1].	Bone Joint J
Martínez MA, Bellido V, Cardona R, Castaño L, Conget I, Fernández A et al. Executive summary. Screening, staging and follow-up of type 1 diabetes in preclinical stages: Consensus of the scientific societies SED, SEEN and SEEP. <i>Endocrinol Diabetes Nutr (Engl Ed)</i> . 2025;72(9):501639-501639. IF:1,800. [Q3].	Endocrinol Diabetes Nutr (Engl Ed)
Baselga E, Bernabeu J, Betlloch I, Campos M, Carrasco Á, Del Boz J et al. Update of the Spanish Consensus Document on Infantile Hemangioma. <i>Actas Dermosifiliogr</i> . 2025;116(8):837-848. IF:2,800. [Q2].	Actas Dermosifiliogr
Wine E, Aloï M, Van S, Bronsky J, Martín J, Gasparetto M et al. Management of paediatric ulcerative colitis, part 1: Ambulatory care-An updated evidence-based consensus guideline from the European Society of Paediatric Gastroenterology, Hepatology and Nutrition and the European Crohn's and Colitis Organisation. <i>J Pediatr Gastroenterol Nutr</i> . 2025;81(3):765-815. IF:2,700. [Q1].	J Pediatr Gastroenterol Nutr
Baselga E, Bernabeu J, Mas IB, Domínguez MC, Sanz AC, del Boz J et al. [Translated article] Update of the Spanish Consensus Document on Infantile Hemangioma. <i>Actas Dermosifiliogr</i> . 2025;116(8):837-848. IF:2,800. [Q2].	Actas Dermosifiliogr
Karagianni MD, Schijns O, Brotis A, Tasiou A, Auer C, Blauwblomme T et al. Anterior temporal lobectomy and selective AmygdaloHippocampectomy complications across Europe: review, meta-analysis, and Delphi consensus. <i>Brain Spine</i> . 2025;5:104304-104304. IF:2,500. [Q2].	Brain Spine
Assa A, Aloï M, Van S, Bronsky J, Martín J, Gasparetto M et al. Management of paediatric ulcerative colitis, part 2: Acute severe colitis-An updated evidence-based consensus guideline from the European Society of Paediatric Gastroenterology, Hepatology and Nutrition and the European Crohn's and Colitis Organization. <i>J Pediatr Gastroenterol Nutr</i> . 2025;81(3):816-851. IF:2,700. [Q1].	J Pediatr Gastroenterol Nutr
Ten JA, van den Bosch GE, Allegaert K, Bhatt A, Brindley N, Byrne D et al. Pain management in preterm infants with necrotizing enterocolitis: an international expert consensus statement. <i>Eur J Pediatr</i> . 2025;184(6):342-342. IF:2,600. [Q1].	Eur J Pediatr
Berruero R, Soto I, Bastida JM, Calvo JM, de Cos C, Haya S et al. Patient-Centred Management of Well-Controlled Haemophilia: Obtaining Opinions and Definitions Through a Delphi Consensus. <i>J Clin Med</i> . 2025;14(10)IF:2,900. [Q1].	J Clin Med

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Foeldvari I, Solebo A, Petrushkin H, Angeles ST, Bangsgaard R, Calzada J et al. Monitoring of Juvenile Idiopathic Arthritis-Associated Uveitis in Long-Term Disease Remission: Consensus-Based Recommendations From the Multinational Interdisciplinary Working Group for Uveitis in Childhood. <i>Arthritis Care Res (Hoboken)</i> . 2025;77(9):1106-1111. IF:3,300. [Q2].	Arthritis Care Res (Hoboken)
Behr ER, Winkel BG, Ensam B, Alfie A, Arbelo E, Berry C et al. The diagnostic role of pharmacological provocation testing in cardiac electrophysiology: a clinical consensus statement of the European Heart Rhythm Association and the European Association of Percutaneous Cardiovascular Interventions (EAPCI) of the ESC, the ESC Working Group on Cardiovascular Pharmacotherapy, the Association of European Paediatric and Congenital Cardiology (AEPC), the Paediatric & Congenital Electrophysiology Society (PACES), the Heart Rhythm Society (HRS), the Asia Pacific Heart Rhythm Society (APHRS), and the Latin American Heart Rhythm Society (LAHRS). <i>Europace</i> . 2025;27(4)IF:7,500. [Q1].	Europace
Cardoso P, Santos TV, Ramon M, Pais S, De Sousa AL. Impact of Bariatric and Metabolic Surgery on Sarcopenia-Related Parameters According to the EWGSOP2 Consensus Criteria in Persons Living with Obesity. <i>Obes Surg</i> . 2025;35(5):1900-1910. IF:3,100. [Q1].	Obes Surg
Fitski M, Böklerink GMJ, Davidoff AM, Murphy AJ, Abdelhafeez AH, Krauel L et al. Nephron-Sparing Surgery for Patients With Wilms Tumor, a Surgical Delphi Study Consensus Statement. <i>Pediatr Blood Cancer</i> . 2025;72(6)IF:2,300. [Q2].	Pediatr Blood Cancer
Neth O, Alsina L, Rivière JG, López E, Seoane ME, González LI et al. Spanish Consensus on the Diagnosis and Management of Patients With Activated PI3K Delta Syndrome (APDS). <i>J Investig Allergol Clin Immunol</i> . 2025;35(2):87-102. IF:6,700. [Q1].	J Investig Allergol Clin Immunol
Mesa M, Candela FJC, Martínez A, Rivas C, Cabrera HL, Tortajada M et al. A Delphi consensus on diagnosis, management, and treatment with allergen immunotherapy of polysensitized children in Spain: CAPP study, Part 1. <i>Allergol Immunopathol (Madr)</i> . 2025;53(2):124-140. IF:2,100. [Q3].	Allergol Immunopathol (Madr)
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Tauschman M, Cardona R, DeSalvo DJ, Hood K, Laptev DN, Lindholm A et al. International Society for Pediatric and Adolescent Diabetes Clinical Practice Consensus Guidelines 2024 Diabetes Technologies: Glucose Monitoring. <i>Horm Res Paediatr</i> . 2025;97(6):615-635. IF:2,700. [Q1].	Horm Res Paediatr
Turner D, Russell RK, Wine E, Martín J, de Ridder L, Shouval D et al. Response to FDA draft guidance on pediatric IBD drug approval trials: A consensus statement from the IBD Porto Group. <i>J Pediatr Gastroenterol Nutr</i> . 2025;80(1):238-241. IF:2,700. [Q2].	J Pediatr Gastroenterol Nutr
Sigatullina M, Hübschmann OK, Kulhánek J, Pons R, Pearson TS, Jeltsch K et al. Consensus Guideline for the Diagnosis and Treatment of Tyrosine Hydroxylase (TH) Deficiency. <i>J Inherit Metab Dis</i> . 2025;48(6)IF:3,800. [Q2].	J Inherit Metab Dis

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Deschildre A, Alvaro M, Muraro A, Podesta M, de Silva D, Giovannini M et al. Towards a common approach for managing food allergy and serious allergic reactions (anaphylaxis) at school. GA[2]LEN and EFA consensus statement. Clin Transl Allergy. 2025;15(1)IF:4,000. [Q2].	Clin Transl Allergy
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van A, MacDonald A, Ahring K, Bélanger A, Beblo S, Blau N et al. European guidelines on diagnosis and treatment of phenylketonuria: First revision. Mol Genet Metab. 2025;145(2):109125-109125. IF:3,500. [Q2].	Mol Genet Metab
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Santos AF, Riggioni C, Agache I, Akdis CA, Akdis M, Alvarez A et al. EAACI guidelines on the management of IgE-mediated food allergy. Allergy. 2025;80(1):14-36. IF:12,000. [Q1].	Allergy
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D'Hondt A, Shelmerdine S, Aertsen M, Cassart M, Miller E, Klein W et al. Fetal and neonatal postmortem magnetic resonance imaging clinical protocol: recommendations from the European society of paediatric radiology postmortem task force. <i>Pediatr Radiol</i> . 2025;55(10):2047-2053. IF:2,300. [Q2].	<i>Pediatr Radiol</i>
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Hernández J, Martínez F, Acebes X, Alerany C, Anton J, Calvo G et al. Identification of strengths and weaknesses of the healthcare system for persons living with rare diseases in Catalonia (Spain), and recommendations to improve its comprehensive attention: the "acERca las enfermedades raras" project. <i>Orphanet J Rare Dis</i> . 2025;20(1):42-42. IF:3,500. [Q2].	<i>Orphanet J Rare Dis</i>
Kameri E, Jepsen VH, Stachura P, Rüchel N, Bhave R, Benitez L et al. A gut instinct for childhood leukemia prevention: microbiome-targeting recommendations aimed at parents and caregivers. <i>Front Public Health</i> . 2025;12:1445113-1445113. IF:3,400. [Q1].	<i>Front Public Health</i>
Israni M, Alderson E, Mahlaoui N, Obici L, Rossi L, Lachmann H et al. Recommendations for Transitioning Young People with Primary Immunodeficiency Disorders and Autoinflammatory Diseases to Adult Care. <i>J Clin Immunol</i> . 2025;45(1):57-57. IF:5,700. [Q1].	<i>J Clin Immunol</i>
Holubova V, Barone R, Grunewald S, Tesarova M, Hansíková H, Augustínová J et al. Clinical severity and cardiac phenotype in phosphomannomutase 2-congenital disorders of glycosylation : Insights into genetics and management recommendations. <i>J Inherit Metab Dis</i> . 2025;48(1)IF:3,800. [Q2].	<i>J Inherit Metab Dis</i>
van JFM, Dima AL, Wettermark B, Potocnjak I, Agh T, ENABLE C. Leveraging digital medication adherence technologies to enhance sustainability of European health systems: ENABLE's key recommendations. <i>Lancet Reg Health Eur</i> . 2025;48IF:13,000. [Q1].	<i>Lancet Reg Health Eur</i>
Baykova E, Raya I, Lombardía C, Gonzalvo B, Andreu I, Losada D et al. Assessing TDAApp: An AI-based clinical decision support system for ADHD treatment recommendations. <i>Front Psychiatry</i> . 2025;16IF:3,200. [Q2].	<i>Front Psychiatry</i>
Augustin M, Luger T, Pincelli C, Reich A, Baselga E, Wahn U. A practical algorithm for the treatment of mild-to-moderate atopic dermatitis (AD) in pediatric patients in Europe: expert recommendations. <i>J. Dermatol. Treat</i> . 2025;36(1)IF:3,900. [Q1].	<i>J. Dermatol. Treat</i>

Doctoral theses

Thesis author	Title	University	Thesis directors	Date of lecture	Research group
Serra Arumí, Clara	Resiliència i suport social percebut en persones amb un primer episodi psicòtic	UNIVERSIDAD DE BARCELONA	Usall i Rodié, Judith	14/01/2025	Etiopatogenia y tratamiento de los trastornos mentales graves (MERITT)
Pino Ramirez, Rosa María	Caracterización epidemiológica, clínica e inmunológica del síndrome inflamatorio multisistémico pediátrico asociado a la infección por SAR-CoV-2	UNIVERSIDAD DE BARCELONA	Fortuny Guasch, Clàudia;Antón López, Jordi	15/01/2025	Enfermedades infecciosas y microbioma;Estudio de enfermedades por disfunción inmune en pediatría (GEMDIP)
Puertollano Rodríguez, Marta	Early Developmental Trajectories in the Encoding of Speech Sound Features: The Influence of Sex and Bilingualism	UNIVERSIDAD DE BARCELONA	Escera Micó, Carles	24/01/2025	Neurociencia cognitiva
Bonet- Martin N	Novel experimental strategies to characterize the genomic architecture of monogenic autoinflammatory diseases: from characterization of aberrant mRNA transcripts to elucidation of the role of post-zygotic variants in disease pathogenesis	UNIVERSIDAD POMPEU FABRA	Casals López, Ferran;[Arostegui Gorospe, Juan Ignacio]	10/02/2025	Genética molecular humana I
Zivanic, Milica	Cold plasma-treated hydrogels for multimodal cancer therapy	UNIVERSIDAD POLITÉCNICA DE CATALUNYA	Canal Barnils, Cristina	04/04/2025	Tecnologías médicas. Biomateriales e ingeniería de tejidos
Resa Parés, Clàudia	Development of a brain-penetrant formulation of SN-38 using shuttle peptides for the treatment of pediatric high-grade gliomas	UNIVERSIDAD DE BARCELONA	Montero Carcaboso, Angel	25/04/2025	Tratamiento del cáncer pediátrico
Cordero Al-day, Luzmira Cecilia	Efecto de las vesículas de membrana de cepas probióticas y comensales de Escherichia coli en la infección por rotavirus en células de epitelio intestinal	UNIVERSIDAD DE BARCELONA	Baldomà Llavínés, Laura;Badia Palacin, Josefa	30/04/2025	Microbiota intestinal
Martínez-Ruiz S	Extracellular vesicles from microbiota-derived Escherichia coli strains as a postbiotic strategy to enhance intestinal maturation and modulate gut-liver and gut-brain communication axis	UNIVERSIDAD DE BARCELONA	Baldomà Llavínés, Laura;Badia Palacin, Josefa	01/05/2025	Microbiota intestinal

Doctoral theses

Thesis author	Title	University	Thesis directors	Date of lecture	Research group
Musokhranova Matveeva, Uliana	Mitochondria as a therapeutic target for neurodevelopmental disorders	UNIVERSIDAD DE BARCELONA	De Oyarzabal Sanz, Alfonso Luis	16/05/2025	Neurometabolismo pediátrico: mecanismos de comunicación neuronal y terapias personalizadas
Rostami A	Exploring the role of PPARB/d and GADD45A in fibrosis and inflammation during cardiac disease	UNIVERSIDAD DE BARCELONA	Vázquez Carrera, Manuel; Palomer Tarridas, F. Xavier	03/06/2025	Dianas farmacológicas en inflamación y enfermedades metabólicas
Ortiz Jiménez, Eva Mª	La conciencia emocional y su relación con síntomas y factores protectores en niños y niñas expuestos a violencia interparental	UNIVERSIDAD DE BARCELONA	Ochoa Güerre, Susana	13/06/2025	Etiopatogenia y tratamiento de los trastornos mentales graves (MERITT)
Ferrés Puigdevall, Sonia	Efectos inmuno-inflamatorios de la terapia multi-componente FIBROWALK en formato online o al aire libre en fibromialgia: un ensayo controlado aleatorizado (The On&Out project)	UNIVERSIDAD AUTÓNOMA DE BARCELONA	Luciano Devis, Juan Vicente; Feliu Soler, Albert; (Serrat Lopez, Mayte)	18/06/2025	Investigación Psicológica en Fibromialgia y Dolor Crónico (Grupo AGORA)
Martínez Barrios, Estefanía	Genetic diagnosis of inherited arrhythmogenic syndromes and sudden cardiac death in pediatrics	UNIVERSIDAD DE GIRONA	Sarquella Brugada, Georgia	08/07/2025	Enfermedades cardiovasculares en el desarrollo
Táboas Ouatón, Pablo	PRC1.1 Role in Rhabdomyosarcoma Tumorigenesis	UNIVERSIDAD DE BARCELONA	Sánchez Molina, Sara; Mora Graupera, Jaume	18/07/2025	Sarcomas y Neuroblastoma
Traver Edo, Desiré	Análisis de las necesidades a través de las experiencias de mujeres encarceladas desde una mirada del cuidado de la salud y bienestar mental	UNIVERSIDAD AUTÓNOMA DE BARCELONA	Escuder Romeva, Gemma	18/09/2025	Etiopatogenia y tratamiento de los trastornos mentales graves (MERITT)
Peláez Martínez, María Trinidad	Eficàcia del Protocol Unificat per al Tractament Transdiagnòstic dels Trastorns Emocionals comòrbids en persones amb estats mentals d'alt risc per a psicosis	UNIVERSIDAD DE ZARAGOZA	Ochoa Güerre, Susana; (Osma López, Jorge Javier)	22/09/2025	Etiopatogenia y tratamiento de los trastornos mentales graves (MERITT)
Favata, Alessandra	Clinical application of a wearable system for assessing upper limb motor function in children with Duchenne muscular dystrophy and spinal muscular atrophy	UNIVERSIDAD POLITÉCNICA DE CATALUNYA	Font Llagunes, Josep Maria; Pàmies Vilà, Rosa	02/10/2025	Tecnologías médicas. Biomecánica

Doctoral theses

Thesis author	Title	University	Thesis directors	Date of lecture	Research group
Garía de Al-béniz López de Aberasturi, Nerea	Engineering zirconia surfaces with cell instructive and antibacterial properties	UNIVERSIDAD POLITÉCNICA DE CATALUNYA	Mas Moruno, Carles	13/10/2025	Tecnologías médicas. Biomateriales e ingeniería de tejidos
Fresno Ca-ñada, Carlos	Estudio de la función visual en pacientes con neurofibromatosis tipo 1 con y son glioma de vía óptica	UNIVERSIDAD POLITÉCNICA DE CATALUNYA	[Prat Bartomeu, Joan]	25/10/2025	Oftalmología Pediátrica
Marcó Gar-cia, Silvia	Incapacitación legal en personas con trastorno mental grave: Elaboración de un modelo predictivo	UNIVERSIDAD DE BARCELONA	Huerta Ramos, Maria Elena	27/10/2025	Etiopatogenia y tratamiento de los trastornos mentales graves (MERITT)
Dominguez Sánchez, Olga	Inmunomodulación con productos horneados con leche en niños menores de 6 años con alergia a proteínas de leche de vaca	UNIVERSIDAD DE BARCELONA	Alsina Manrique de Lara, Laia; Pascual Capdevila, Rosalia	08/11/2025	Estudio de enfermedades por disfunción inmune en pediatría [GEMDIP]; Ambiente y complicaciones en el embarazo
Acevedo Gómez, Daniel	Caracterización de las alteraciones inmunológicas, específicamente en células Treg, implicadas en la desregulación inmune en pacientes pediátricos con errores innatos de inmunidad, hacia terapias dirigidas	UNIVERSIDAD AUTÓNOMA DE BARCELONA	Alsina Manrique de Lara, Laia	14/11/2025	Estudio de enfermedades por disfunción inmune en pediatría [GEMDIP]
Vicente Gar-ces, Clara	Ús de noves metodologies per la caracterització molecular completa i la millora del seguiment de la malaltia mínima residual en pacients amb leucemia aguda pediàtrica	UNIVERSIDAD DE BARCELONA	Vega García, Nerea; Camós Guijosa, Mireia	11/12/2025	Leucemia y hemopatías pediátricas
Blasco- Ro-set A	ACBP i Metrnl, nous factors implicats en l'obesitat i en les adaptacions cardíques durant la gestació	UNIVERSIDAD DE BARCELONA	Villarroya Gombau, Francesc; Planavila Porta, Anna	12/12/2025	Biología molecular y regulación génica del tejido adiposo y sus patologías
Pedemonte-Parramón G	Evaluation and follow-up of quadriceps muscle groups before and after a total knee replacement using localized bioimpedance.	UNIVERSIDAD POLITÉCNICA DE CATALUNYA	Nescolarde Selva, Lexa	15/12/2025	Tecnologías médicas. Instrumentación y eSalud

Doctoral theses

Thesis author	Title	University	Thesis directors	Date of lecture	Research group
Balcells Esponera, Carla	Estudi de la composició hormonal de la llet materna i anàlisi dels marcadors de maduració intestinal després del naixement prematur. Estudio de la composición hormonal de la leche y análisis de los marcadores de maduración intestinal después del nacimiento prematuro	UNIVERSIDAD DE BARCELONA	Iglesias Platas, Isabel	15/12/2025	Grupo de Investigación en Neonatología (GReN)
Bonet Papell, Gloria	Hospitalització a domicili: cost-efectivitat i inclusió de nous processos clínics	UNIVERSIDAD POLITÉCNICA DE CATALUNYA	Nescolarde Selva, Lexa	17/12/2025	Tecnologías médicas. Instrumentación y eSalud



Patents, utility models
and spin-offs

2025

NEW PATENT FAMILIES

Num. of applications	5
Num. of granted	12
Num. of licenses	2

NEW UTILITY MODEL FAMILIES

Num. of applications	0
Num. of granted	0
Num. of licenses	0

NEW SPIN-OFF2

Up to 2025

PATENT FAMILIES

Num. of applications	51
Num. of granted	0
Num. of licenses	23

NATIONAL PATENTS

Num. of applications	410
Num. of granted	286
Num. of licenses	0

UTILITY MODEL FAMILIES

Num. of applications	7
Num. of granted	6
Num. of licenses	1

ACTIVE SPIN-OFFS
& START-UPS8



BIOMARKERS OF CEREBELLAR ATROPHY

Date: 15/05/2025

Country: EP

Number: EP25382489

Inventors: Serrano Gimaré Mercedes; Hernando Davalillo Cristina

Propietors: Hospital Sant Joan de Déu; Flomics Biotech, S.L.; Fundació Centre de Regulació Genòmica

SYNTHETIC AMNIOTIC FLUID AND SYSTEM FOR FETAL MATURATION

Date: 22/10/2025

Country: EP

Number: EP25383143

Inventors: Gratacós Solsona, Eduard; Eixarch Roca, Elisenda; Bonet Carné, Elisenda; Illa Armengol, Míriam; Villaronga Flaqué, Miquel

Propietors: Hospital Sant Joan de Déu; Hospital Clínic de Barcelona; Fundació de Recerca Clínic Barcelona-Institut d'Investigacions Biomèdiques August Pi i Sunyer; Universitat de Barcelona

EXTRACORPOREAL CIRCULATION SYSTEM CONFIGURED FOR A FETAL LIQUID INCUBATOR

Date: 22/10/2025

Country: EP

Number: EP25383144

Inventors: Gratacós Solsona, Eduard; Eixarch Roca, Elisenda; Bonet Carné, Elisenda; De Roo Puente, Yolanda; Gállego Asín, Marc

Propietors: Hospital Sant Joan de Déu; Fundació Privada per a la Recerca i Docència Sant Joan de Déu; Hospital Clínic de Barcelona; Fundació de Recerca Clínic Barcelona-Institut d'Investigacions Biomèdiques August Pi i Sunyer; Universitat de Barcelona; Fetalife Technologies S.L.

PTGER3 AS A TARGET FOR THE TREATMENT EWING SARCOMA

Date: 11/11/2025

Country: EP

Number: EP25383237

Inventors: Montero Carcaboso, Ángel

Propietors: Hospital Sant Joan de Déu; Fundació Institut de Recerca contra la Leucèmia Josep Carreras; Onechain Immunotherapeutics S.L.; Universidad de Sevilla; Servicio Andaluz de Salud; Institució Catalana de Recerca i Estudis Avançats

MODULAR CONTAINMENT SYSTEM FOR PREMATURE BABIES

Date: 26/11/2025

Country: EP

Number: EP25383322

Inventors: Troyano Martos, María José

Propietors: Hospital Sant Joan de Déu; Eva Díaz Mecchia



CHAMBER SYSTEM FOR MAMMALIAN
FETAL DEVELOPMENT AND MATURATION

Date: 12/09/2025
Country: PCT
Number: PCT/EP2025/066457
Inventors: Gratacós Solsona, Eduardo; Eixarch Roca, Elisenda; Bonet Carné, Elisenda; Illa Armengol, Míriam; De Roo Puente, Yolanda Jacoba
Propietors: Sant Joan de Déu Hospital; Fundació de Recerca Clínic Barcelona-Institut d'Investigacions Biomèdiques August Pi i Sunyer; Universitat de Barcelona

DIGITAL EXPLORING A
BRAIN VASCULAR STRUCTURE

Date: 28/05/2025
Country: EP
Number: EP4560569
Inventors: Munuera Del Cerro, Jose Luis; Bernaus Tomé, Sandra; Mata Miquel, Christian; Stephan-Otto Attolini, Christian; Valls Esteve, Arnau; Macule Gonzalez, Raul; Cebrian Herrera, Natalia; Puig Quer, Gemma; Vila Oliva, Marc Manel
Propietors: Sant Joan de Déu Hospital [ES]

DIGITAL EXPLORING A
BRAIN VASCULAR STRUCTURE

Date: 28/05/2025
Country: PCT
Number: W02025114281
Inventors: Munuera Del Cerro, Jose Luis; Bernaus Tomé, Sandra; Mata Miquel, Christian; Stephan-Otto Attolini, Christian; Valls Esteve, Arnau; Macule Gonzalez, Raul; Cebrian Herrera, Natalia; Puig Quer, Gemma; Vila Oliva, Marc Manel
Propietors: Sant Joan de Déu Hospital [ES]

IFN-SIGNATURE AS A BIOMARKER FOR
HERPES SIMPLEX ENCEPHALITIS RELATED SYMPTOMS

Date: 02/01/2025
Country: EP
Number: EP23382663
Inventors: Armangué Salvador, Thaís; Dalmau, Josep
Propietors: Hospital Sant Joan de Déu; Fundació de Recerca Clínic Barcelona-Institut d'Investigacions Biomèdiques August Pi i Sunyer; Institució Catalana de Recerca i Estudis Avançats

IFN-SIGNATURE AS A BIOMARKER FOR
HERPES SIMPLEX ENCEPHALITIS RELATED SYMPTOMS

Date: 02/01/2025
Country: PCT
Number: W02025003350
Inventors: Armangué Salvador, Thaís; Dalmau, Josep
Propietors: Hospital Sant Joan de Déu; Fundació de Recerca Clínic Barcelona-Institut d'Investigacions Biomèdiques August Pi i Sunyer; Institució Catalana de Recerca i Estudis Avançats

PEPTIDIC CONJUGATES OF SN38 USEFUL
IN THE TREATMENT OF CANCER

Date: 17/03/2025
Country: PL
Number: PL4217007
Inventors: Montero Carcaboso, Ángel
Propietors: Fundació Institut de Recerca Biomèdica IRB Barcelona; Universitat de Barcelona; Sant Joan de Déu Hospital

PEPTIDIC CONJUGATES OF SN38 USEFUL
IN THE TREATMENT OF CANCER

Date: 17/03/2025
Country: ES
Number: ES3010582
Inventors: Montero Carcaboso, Ángel
Propietors: Fundació Institut de Recerca Biomèdica IRB Barcelona; Universitat de Barcelona; Sant Joan de Déu Hospital

OLIGONUCLEOTIDES FOR TREATING NEUROMUSCULAR DISEASES

Date: 02/01/2025

Country: PCT

Number: W02025003222

Inventors: Jiménez Mallebrera, Cecilia; López Márquez, Arístides

Propietors: Sant Joan de Déu Hospital; UCL Business Ltd

PEPTIDIC WATER-SOLUBLE DELIVERY SYSTEM OF ANTICANCER DRUGS

Date: 05/02/2025

Country: EP

Number: EP4499150

Inventors: Montero Carcaboso, Ángel; Dario Sosnik, Alejandro; Resa Parés, Clàudia; Teixidó Turá, Meritxell

Propietors: Sant Joan de Déu Hospital; Technion Res & Dev Foundation; Gate2Brain S.L.

PEPTIDIC WATER-SOLUBLE DELIVERY SYSTEM OF ANTICANCER DRUGS

Date: 05/02/2025

Country: CL

Number: CL2024002872

Inventors: Montero Carcaboso, Ángel; Dario Sosnik, Alejandro; Resa Parés, Clàudia; Teixidó Turá, Meritxell

Propietors: Sant Joan de Déu Hospital; Technion Res & Dev Foundation; Gate2Brain S.L.

PEPTIDIC WATER-SOLUBLE DELIVERY SYSTEM OF ANTICANCER DRUGS

Date: 05/02/2025

Country: JP

Number: JP2025512809

Inventors: Montero Carcaboso, Ángel; Dario Sosnik, Alejandro; Resa Parés, Clàudia; Teixidó Turá, Meritxell

Propietors: Sant Joan de Déu Hospital; Technion Res & Dev Foundation; Gate2Brain S.L.

SIMULADOR DE PULMÓN PASIVO

Date: 12/09/2025

Country: PCT

Number: W02025186059

Inventors: González Rojas, Hernán Alberto; Sánchez Egea, Antonio José; Pons Odena, Martí

Propietors: Universitat Politècnica de Catalunya; Sant Joan de Déu Hospital



Portfolio of spin-offs & start-ups

FETALIFE TECHNOLOGIES, SL

Fundador/co-fundadors: Eduard Gratacós; Elisenda Bonet; Elisenda Eixarch

Pàgina web: <https://www.fetalifetech.com/>

Descripció: Fetalife Technologies és una spin-off de l'Hospital Sant Joan de Déu, de l'Hospital Clínic de Barcelona i de la Universitat de Barcelona, fundada el gener de 2025. L'empresa està desenvolupant un sistema d'incubadora líquida, especialment dissenyat per a nadons prematurs ultraextrems, entre les 22 i les 26 setmanes de gestació.

DIGITAL EXPLORING A KRAUEL MEDICAL INNOVATIONS, SL

Fundador/co-fundadors: Lucas Krauel Giménez

Pàgina web: No disponible

Descripció: Krauel Medical Innovations, SL neix amb l'objectiu d'aportar solucions per a l'accés venós per a tots els pacients oncològics pediàtrics.



Number of ideas captured in 2025 that have generated innovation projects

HSJD

PhenoScan	Scanner to help diagnose rare diseases in patients during first visits
TrialGPT	Collaborative development of an AI agent to provide information to patients/families about clinical trials in rare diseases
TRACELL	Tool to ensure traceability of the manufacturing process for an advanced therapy
Pediatric Waterproof Wound Shield	Protective design for splints used with patients with skin lesions
MyMask	Patient-specific masks for newborns
ADAPTA	Development of innovative pharmaceutical forms for anesthetic premedication in children with ASD.
Enzo 2.0	Device to prevent involuntary dislodgement of the Port-a-Cath needle
Plataforma Genètica Arritmies	Database for accessing genetic information on patients with arrhythmias
ICON	Collaboration with CUICO to create an app for monitoring pediatric patients with congenital heart disease.
CARDIOGAME	Creation of a game (app) to learn about the cardiopulmonary system.
ABLE EXO PEDIÀTRIC	Development of the first pediatric exoskeleton with ABLE Human Motion
DreamLab: VR HUB	Centralized platform to manage all VR, AR and XR solutions at SJD
BioLiquid	Collaboration with Bioliquid to develop tools to improve maternal and fetal health
Racó d'espera màgics	Creation of a waiting area for patients and families in the Emergency Department
Sencilia	Collaboration with a company to develop a medical device for measuring medication doses in the ICU
Consentimientos Informados	Digital informed consent forms
Aplicatiu Hipernatrèmia	Digital app to facilitate sodium intake calculation in pediatric patients.
Gen4RFX	Development of an innovative gene therapy (GT) for the treatment of severe combined immunodeficiency with MHC class II deficiency.
Tailored adoptive CAR T-cell Immunotherapy for Ewing Sarcoma	Joint patent with IRJC for the development of a CAR-T therapy for Ewing sarcoma
TREX2	Evaluation of TREX2 as a therapeutic target for the treatment of ichthyosis
Introducció implant orbitari	Design of a support tool for orbital implant placement
Sensor per mesurar estrès de professional d'alt nivell	Set of sensors and software to measure stress in high-performance professionals
IMAI MedTech	Collaboration to adopt a cancer detection tool using 3D tissue analysis
PAL JOC 2	Evolution of the play pole to facilitate manufacturing
Espais inclusius Urgències	Planning of an inclusive Emergency Department space for patients with ASD
Pectus 3D	Development of an orthopedic brace for the treatment of Pectus Carinatum with inclusive design
The Wise Kids Power (WKSP)	Set of games to make pediatric oncology patients more participatory and communicative in research
Virtual Assistant per RCP	Serious game to support correct CPR performance
Dispensador de guants monodosi	Single-dose glove dispenser
AI Consultor de Tractament Internacional	Development of an AI consultant for treatments in international patients
Predose	Software to determine personalized medication doses for complex drugs

HSJD

Paediatric development of Capivasertib in the treatment of pediatric Rhabdomyosarcoma	Study of capivasertib for the treatment of rhabdomyosarcoma
ONCOMATRYX	Collaboration to validate the antitumor activity of three products from Oncomatryx
RondelO device	Collaboration with RondelO, a safety device for intravenous therapy that prevents medication mix-ups and reduces risks for healthcare staff.
Corify pediàtric	Adaptation of the Acorys system for pediatric patients
Polycoarct	Creation of adaptive polymeric stents for the treatment of pediatric aortic coarctation
Rapid meningitis diagnostic test	Development of an IVD for the early detection of meningitis.
Preventya	Preventya Salud is a B2B and B2B2C solution focused on preventing metabolic diseases through physical activity.
MiCuento	Development of a storybook to prepare patients for catheterization.
LeHealthyKit	Development of a toy kit to facilitate rehabilitation in patients with hemiparesis.
Epichild / Brain Focus	Development of a tool to detect the area of the brain where epilepsy originates in patients before interventions.

PSSJD

BEAT	App for improving mental health and wellbeing in the workplace
Relate-Y	Evidence-based training programme designed to provide educators and clinical professionals with practical tools to build stronger, trust-based relationships with adolescents
OperoAI	Development of AI-based software to predict perioperative hypotension
HemoCue® i clozapina	Use of PoC for more human-centred monitoring of clozapine treatment
Simulador d'accés abdominal laparoscòpic	Design for teaching laparoscopic techniques
Fèrula peu diabètic	Orthosis for diabetic foot
CompetenciA	Tool to enhance professional nursing skills and competencies
Urgencias que sienten y resuelven	Qualitative methodology for identifying challenges and co-creating and co-designing solutions in the emergency care setting
Aiden's World	Card game for autistic adults (ASD)



5.

Core
facilities



During 2025, the Core Facilities consolidated their technological capabilities, operational efficiency, and service portfolio, strengthening their role as key infrastructures supporting biomedical and translational research.

A major milestone was the acquisition of a new state-of-the-art imaging system, which significantly expanded advanced imaging capabilities by enabling high-resolution, high-sensitivity, and rapid data acquisition. This upgrade has facilitated the development of new applications and services for the research community.

Within the Pediatric Biobank, a dedicated cryogenic storage room was established through the acquisition and installation of three liquid nitrogen tanks. This infrastructure has enabled the centralization of biological sample storage, improving traceability, long-term preservation, and overall biobanking efficiency.

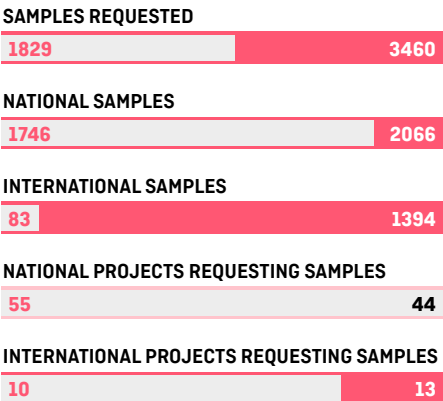
In the Animal Facility, official authorization was obtained for the use of Biosafety Level 1 (BSL-1) genetically modified organisms, representing an important advancement in the capacity to support a broader range of preclinical and translational research projects.

The institution hosts two biobanks integrated within the ISCIII National Platform for Biobanks and Biomodels (Plataforma Nacional de Biobancos y Biomodelos), promoting synergies and standardized practices across national research infrastructures.

The Pediatric Biobank supports high-quality biomedical research by providing access to well-characterized biological samples and associated clinical data from pediatric patients.

In 2025, the Biobank recorded a substantial increase in activity, with a total of 3,460 samples requested, representing an 89% increase compared to 2024. This growth was driven by both national and international demand.

A marked shift in the origin of requests was observed. National requests accounted for 60% of the total (2,066 samples), while international requests increased significantly to 40% (1,394 samples), compared to 2024. In parallel, the number of international research projects also increased by 30%, with users from 8 different countries accessing the biobank.



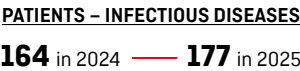
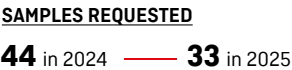
89% TOTAL INCREASE



The Neurological Tissues Biobank is dedicated to supporting research in mental health disorders through the collection, processing, storage, and distribution of high-quality biological samples.

During 2025, the Biobank managed 1,265 new plasma samples corresponding to 177 patients from the Infectious Diseases Collection and 137 patients from the Psychiatric Disorders Collection.

A decrease in sample requests was observed in 2025, reflecting annual variability in demand. In contrast, the number of patients included in the Infectious Diseases cohort increased slightly, indicating consolidation of this collection. The Psychiatric Disorders cohort was incorporated in 2025, reaching 137 patients and representing a significant expansion of the biobank portfolio.



In addition, the Biobank participated in the World Congress of Psychiatric Genetics, held in Mexico, facilitating interaction with the international scientific community and contributing to the strengthening of collaborative networks in psychiatric genetics.

The Confocal Microscopy and Cellular Imaging Unit provides an integrated and personalized service covering the full experimental workflow, from experimental design and sample preparation to advanced imaging, computational analysis, and interpretation, including AI-based approaches.

In 2025, an average of 30 users accessed the Unit's services. The computational infrastructure was strengthened through the acquisition of dedicated workstations for image analysis, machine learning, and deep learning applications.

Strategic collaborations were consolidated within Hospital Sant Joan de Déu and Universitat Politècnica de Catalunya (UPC), particularly with the Institut de Robòtica i Informàtica Industrial (IRI) and the Centre de Desenvolupament de Sensors, Instrumentació i Sistemes (CD6). The collaborative network was further expanded with Universitat Pompeu Fabra (UPF) in the field of Information and Communication Technologies (ICT).

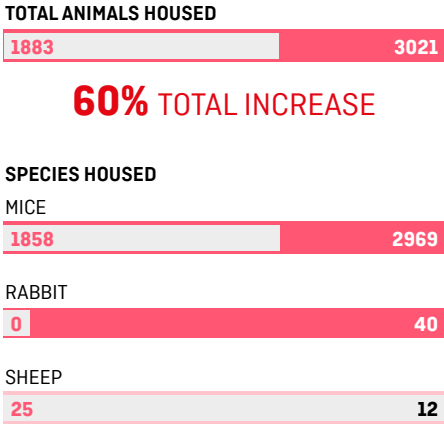
Since 2025, the Unit has also maintained an international collaboration with the Department of Biomedical Engineering at the Gdańsk University of Technology (Poland), supporting joint supervision of undergraduate, master's, and PhD students, with a focus on automated image analysis for rare disease diagnosis using confocal and super-resolution microscopy.

In 2025, the Unit participated in 13 research projects focused on diagnostic innovation integrating photonic microscopy, synchrotron technologies, and artificial intelligence.



The Animal Facility provides essential support for biomedical research through the housing, care, and ethical management of laboratory animals under controlled welfare conditions.

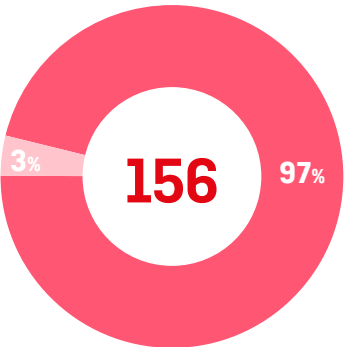
In 2025, activity increased significantly, with 3,021 animals housed compared to 1,883 in 2024, representing an increase of 60%. Mice represented the predominant species, accounting for most of the increase in activity. A new rabbit research project was initiated (40 animals), while the number of sheep decreased from 25 to 12.



The Methodological and Statistical Unit provides specialized support in study design, sample size calculation, data management, and advanced statistical analysis, ensuring methodological rigor and scientific validity.

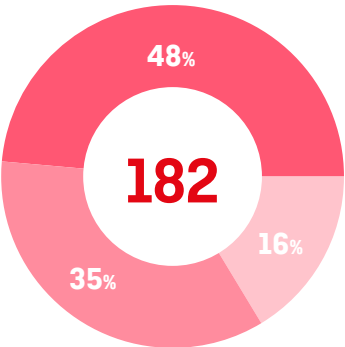
In 2025, the Unit supported 156 research projects, of which 97% were internal and 3% external collaborations. In addition, 182 service requests were processed: 48% related to database analysis, 35% to methodological consultations or project proposals, and 16% to other analytical activities.

A two-day training course was also delivered, contributing to the development of methodological competencies among research staff.



Total research projects

- Internal (HSJD, PSSJD)
- External



Total service requests

- Database analysis
- Consultory
- Others



6.

Training, communi- cation and participation

- Seminars
- Training programme
- Communication and public engagement



Seminars

Seminars

16

31/01/2025

DivendresCientífics | La infermera de pràctica avançada en la construcció del mapa de cures de la persona candidata a trasplantament renal

Guille Pedreira Robles, Nurse. Ikram Allaoui, Emergency Nurse at CUAP Hospitalet.

5/02/2025

NeuroConCiencia | SABERS: a new stereo DBS technique for deep brain stimulation targeting in a neuromodulation monitoring unit

Terry Sanger, Vice President, Chief Scientific Officer, CHOC Children's Hospital & Professor of Electrical Engineering and Computer Science, UCI Samueli School of Engineering.

28/02/2025

DivendresCientífics | Medicina gràfica. El poder del cómic en el mundo sanitario

Marina Peix Asensio, Specialist Nurse in Paediatrics. Montserrat Gutiérrez Juárez, Specialist Nurse in Paediatrics.

7/03/2025

Nano Rare Diseases Day

Joan Comella, Director of the Sant Joan de Déu Research Institute. Josep Samitier, Scientific Coordinator of NANOMED Spain and Director of IBEC.

28/03/2025

DivendresCientífics | Intel·ligència artificial i RCP. Nova era de la reanimació?

3/04/2025

I Jornada Recerca Infermera SJD

Elena Plaza Moreno, Teaching Nurse. Jordi Mitjà Costa, Nurse.

25/04/2025

DivendresCientífics | Influència de les cures professionals en la salut mental materna en casos de mort gestacional

Patricia Ramírez Rodríguez, PhD Candidate, Nurse. Lucía Peñarrubia Sanflorencio, PhD Candidate, Specialist Nurse in Paediatrics. Clara García Terol, Midwife. Lydia García López, Midwife.

20/05/2025

Jornada SPIOMET4HEALTH | Dia Mundial dels Assajos Clínics 2025

Joana Claverol, Directora de Recerca Clínica de la Fundació de Recerca SJD.

30/05/2025

DivendresCientífics | Construint el futur de les cures a través de la investigació

Pilar Lozano González, Nurse. Maribel Ferrer Orón, Specialist Nurse in Paediatrics.

27/06/2025

DivendresCientífics | Salut Ambiental Infantil: Evidència, Acció i Futur

Miguel Felipe Sánchez Sauco, PhD in Nursing. M^a Pilar Hornillos Sánchez, Specialist Nurse in Paediatrics.

8/07/2025

NeuroConCiencia | Teràpies personalitzades con ASOs: experiència acadèmica en ensayos N-of-1

Miguel Ángel Rubio Pérez, Neurologist.

26/09/2025

DivendresCientífics | Innovació en les cures neonatals: atenció domiciliària i qualitat de vida familiar

Alejandra Pérez Restrepo, Nurse. Ares Sentenach Carbó, Nurse in the Endocrinology Department.

31/10/2025

DivendresCientífics | Desafiaments dels serveis de salut i respostes des del coneixement en cures

Dr. José Miguel Morales Asencia, Nurse. Jordi Mitjà Costa, Nurse.

2/11/2025

De l'experiència a la innovació: l'impacte dels pacients en la formulació pediàtrica

Dr. Catherine Tuleu, Professor of Paediatric Pharmacy at the University College London School of Pharmacy.

5/11/2025

Share4Rare | Investigación colaborativa en salud mental en enfermedades raras

Begonya Nafria and Antonio Cabrera, Share4Rare-FSJD. Spanish Federation for Rare Diseases (FEDER).

28/11/2025

#DivendresCientífics | Del juego a la evidencia: ciencia, diseño e innovación en salud mental

Andrea Fontán Abeijón, Specialist Mental Health Nurse. Dr. Ramon Mir Abellán, Specialist Nurse in Paediatrics.

Training programme

Number courses	13
Attendees	905
Courses	13

COURSES

- March**
Development and Engagement Conversations
- May**
How to read a Paper using Common Sense and AI
- November**
Data Protection in Research Projects
- April / May**
Basic R Course
- June**
Maximize Your Productivity with Copilot
- September - November**
Leadership and Team Management
- June**
Scientific Writing Putting Why? Before How?
- March**
Oral Presentations: Beyond Slides
- October**
Mindfulness, Stress and the Brain
- October**
Mindfulness and Emotional Intelligence
- May**
Basic and Advanced Statistics
- November**
Patient Involvement in Research and Ethical/ Legal Aspects
- September**
Bridge Model of Relational Styles

Communication and public engagement

Participation in:

- International Day of Clinical Trials
- Agora de la Ciència
- Escolab
- Visita la recerca de La Marató
- Nano Rare Disease Day



Twitter followers

2.057



LinkedIn followers

29.440



Instagram followers

1.332

WEB

News published on the website

41

Websited number of visits to pages

105.000

Active users

88.000

Events

405.000



7.

Corporate
highlights
of the year



Featured corporate news



i4KIDS Project awarded with the National Research Prize

Friday, 21 March 2025

The Government of the Generalitat of Catalonia and the Catalan Foundation for Research and Innovation (FCRI) have awarded the paediatric innovation hub i4KIDS with the new National Prize for the Impulse of Knowledge Transfer. This recognition is part of the 2024 National Research Awards and is endowed with 10,000 euros, valuing the project's work to build a comprehensive collaborative ecosystem of valorisation and transfer in the paediatric sector and in the maternal field.

i4KIDS seeks to identify and support those innovation projects that stand out for their ability to generate change in society and in the care of children. Thus, the objective of the initiative is to promote and enhance scientific innovation also by betting on collaboration and joining forces between projects and countries.



The Institut de Recerca Sant Joan de Déu (IRSJD) obtains reaccreditation as a CERCA center with an excellent rating

Wednesday, 9 April 2025

The report of the CERCA Expert Committee highlights a clear progression of the Institute, compared to the previous evaluation. With the new distinction, the Institute is placed on the map of research centers of excellence in Catalonia. This seal of quality promotes competitiveness, transparency and the transfer of knowledge to society.



New alliance between the Institut de Recerca Sant Joan de Déu and the BSC to advance pediatric research

Friday, 30 May 2025

The Institut de Recerca Sant Joan de Déu (IRSJD) has formalized a strategic alliance with the Barcelona Supercomputing Center - Centro Nacional de Supercomputación (BSC-CNS), an agreement that aims to boost pediatric and biomedical research, especially in the field of rare diseases. This commitment represents a step forward in consolidating the institution as a reference center in biomedical data research and optimizing efficiency in the development of high-impact scientific projects.



The Josep Carreras Foundation and Sant Joan de Déu Create a Childhood Leukemia Research Program Worth Over 10 Million Euros

Thursday, 24 July 2025

The Josep Carreras Foundation (FJC), the Josep Carreras Leukemia Research Institute (IJC), and the Sant Joan de Déu Research Institute (IRSJD) have agreed to develop a joint research program on childhood leukemia valued at over 10 million euros. The FJC will fund the adaptation of spaces provided by the IRSJD and the purchase of equipment. It will also finance the creation of four IJC research teams that will be in these facilities.



The IRSJD reaffirms its commitment to its research team by renewing the HR Excellence in Research Award

Thursday, 30 October 2025

The Institut de Recerca Sant Joan de Déu (IRSJD) has been reaccredited with the HR Excellence in Research Award granted by the European Commission, after successfully passing an evaluation conducted by independent experts. This distinction recognizes institutions that promote good practices in research talent management and align their policies with the principles of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers.

The IRSJD reinforces its role as a reference center for innovation in mental, pediatric and maternal health thanks to the renewal of the TECSAM Network, the i4KIDS network and XarTEC Salut

Wednesday, 10 December 2025

The Institut de Recerca Sant Joan de Déu (IRSJD) faces a new stage of growth and consolidation of the innovation ecosystem with the renewal of support from the Agency for the Management of University and Research Grants (AGAUR) of the Generalitat de Catalunya for the period 2026-2028 to three key networks of its collaboration and knowledge transfer model: the TECSAM Network, i4KIDS and XarTEC Salut.



IRSJD obtains a €12M Singular grant to boost the ExplorER building for research into rare diseases

Friday, 19 December 2025

The Institut de Recerca Sant Joan de Déu (IRSJD) has received a €12 million Singular Institutional 2024 grant within the AGAUR Singulars 2025 call, promoted by the Department of Research and Universities of the Generalitat de Catalunya and the Agency for the Management of University and Research Grants (AGAUR), and co-financed by the European Regional Development Fund (ERDF). This call aims to promote Singular Institutional projects such as scientific and technological infrastructures of excellence, attract talent, promote knowledge transfer and strengthen research and innovation with social and scientific impact in Catalonia.



8.

Scientific
activity



1. Medicine and pediatric science area

1.1. Neuroscience

Applied research in neuromuscular diseases

Advancing Research for Children with Neuromuscular Disorders

Cecilia Jiménez Mallebrera, PhD



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Carlos Ignacio Ortiz Gonzalez
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POSTDOCTORAL RESEARCHER

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Lluís Enjuanes Ruiz
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Silvia Cerezo Corredero
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RESEARCH ASSISTANT

Alba Coll Font
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Laura Carrera García
Maria del Carmen Badasa Gallego
Maria de los Angeles Boti González
Marta Maria Badal i Montero
Priscila Sanchez Tarruella
Cristina Puig Ram
Rocío García Uzquiano

MANAGEMENT ASSISTANT

Ana Sulem Ballester Pérez

35 Projects

COMPETITIVE: 17
NON COMPETITIVE: 18

36 Clinical Trial & Observational Studies

35 Publications

Impact factor 244
average Impact Factor 7.0
Publications in 1st quartile.... 71%
Publications in 1st decile..... 31%
Leadership 31%

The Applied Research in Neuromuscular Diseases Group is part of the Neuromuscular Disorders Unit at Hospital Sant Joan de Déu (HSJD) and is recognized as both a national reference centre (CSUR) and a member of the European Reference Network for Neuromuscular Diseases (ERN-NMD).

Our mission is to improve the quality of life of children living with neuromuscular diseases through a compre-

hensive and multidisciplinary approach. We investigate the clinical, genetic, and molecular aspects of these disorders, as well as the mechanisms underlying their development. From our laboratory, and in collaboration with other centres, we develop specific and personalized therapies based on RNA technologies, gene editing, and other innovative therapeutic strategies.

Another essential part of our mission is to train healthcare professionals and researchers in the field of neuromuscular diseases, while also raising awareness and providing information about these conditions to patients, families, and society as a whole.

ACHIEVEMENTS 2025

This year has been marked by the appointment of Dr. Eduardo Tizzano as Head of Research in Spinal Muscular Atrophy and by the expansion of our research laboratory facilities, now located on the BASID campus.

In 2025, our group participated in 11 clinical trials and 30 research projects, including three newly awarded public grants supporting researcher recruitment and mobility. We also strengthened our role in major European initiatives focused on advanced therapies for rare diseases, particularly through our involvement in ERDERA, contributing to work packages on advanced therapy acceleration, n-of-1 therapies, and genetic diagnosis.

At the national level, we were awarded two competitive FIS projects: one focused on advancing nucleic acid-based therapies for collagen VI-related dystrophies, and another aimed at improving personalized care for patients with Spinal Muscular Atrophy identified through newborn screening in Spain (CribAME).

Notable achievements also include progress in biobanking, biomodel development, 3D printing technologies, brain tissue research with King's College London, and the evaluation of the ABLE Kids pediatric exoskeleton prototype.

FUTURE CHALLENGES

Achieving timely and accurate genetic diagnoses for all patients remains a key priority, alongside advancing newborn screening for treatable conditions and improving our understanding of genetic variability.

Within our advanced therapy program, we are focused on developing safe and effective delivery systems to translate RNA- and gene-editing strategies for COL6-related disorders into clinical applications. Encouraging preclinical results and collaborations with leading academic and industry partners will help accelerate this process.

We will also continue expanding our involvement in clinical trials of advanced therapies and small molecules to provide patients with access to innovative treatments.

These goals rely on a sustainable strategy to support, strengthen, and retain our multidisciplinary team, which is the foundation of our research activities.

SELECTED PUBLICATIONS

- Mendell JR, Muntoni F, McDonald CM, Mercuri EM, Ciafaloni E, Komaki H et al. AAV gene therapy for Duchenne muscular dystrophy: the EMBARK phase 3 randomized trial. *Nat. Med.* 2025;31(1):332-341. IF:50,000. [Q1].
- Foley AR, Bolduc V, Guirguis F, Donkervoort S, Hu Y, Orbach R et al. Characterization of severe COL6-related dystrophy due to the recurrent variant COL6A1 c.930+189C>T. *Brain.* 2025;148(9):3215-3227. IF:11,700. [Q1].
- Cavazza A, Molina FJ, Plaza A, Ronco V, Naseem A, Malensek S et al. Advanced delivery systems for gene editing: A comprehensive review from the GenE-Hum-Di COST Action Working Group. *Mol. Ther. Nucl. Acids.* 2025;36(1):102457. IF:6,100. [Q1].
- Estévez B, Matalonga L, Yubero D, Polavarapu K, Codina A, Ortiz CI et al. Phenotype-driven genomics enhance diagnosis in children with unresolved neuromuscular diseases. *Eur J Hum Genet.* 2025;33(2):239-247. IF:4,600. [Q1].

SELECTED PROJECTS

- ERDERA: European Rare Diseases Research Alliance. (PFE00131). European Commission (HORIZON-HLTH-2023-DISEASE-07-01). 2024-2031. IP: Cecilia Jiménez Mallebrera.
- Avanzando en las terapias basadas en ácidos nucleicos para distrofías relacionadas con el colágeno VI: Validación in vivo y desarrollo preclínico. (PFIS0430). Instituto de Salud Carlos III (ISCIII). 2026-2028. IP: Cecilia Jiménez Mallebrera; Aristides Lopez Marquez.
- Avanzando hacia las mejores prácticas y la medicina personalizada en pacientes con AME detectados por cribado neonatal en España: Proyecto CribAME. (PFIS0431). Instituto de Salud Carlos III (ISCIII). 2026-2028. IP: Eduardo Fidel Tizzano Ferrari; Andrés Nascimento Osorio.

SELECTED CLINICAL STUDIES

- A Randomized, Double-Blind, Placebo-Controlled, Multiple Ascending Dose Study Assessing Safety, Tolerability, Pharmacodynamics, Efficacy, and Pharmacokinetics of DYNE-251 Administered to Participants with Duchenne Muscular Dystrophy Amenable to Exon 51 Skipping. (DYNE251-DMD-201). Dyne Therapeutics. Phase I. 2022. IP: Andrés Nascimento Osorio.
- A 2-Part, Randomized, Double-Blind, Placebo-Controlled Study in Participants with Duchenne Muscular Dystrophy Amenable to Exon 44 Skipping (ELEVATE-44). (ENTR-601-44-201). Entrada Therapeutics, Inc. Phase I. 2025. IP: Andrés Nascimento Osorio.
- A 2-Part, Randomized, Double-Blind, Placebo-Controlled Study in Participants with Duchenne Muscular Dystrophy Amenable to Exon 45 Skipping (ELEVATE-45). (ENTR-601-45-201). Entrada Therapeutics, Inc. Phase I. 2025. IP: Andrés Nascimento Osorio.

Paediatric Neurometabolic Disorders: Neural Communication Mechanisms and Personalised Therapies

Advancing Research in Pediatric Neurometabolic and Synaptic Disorders

M. Àngels García Cazorla, PhD



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Paula Juliana Rodriguez Soler

21 Projects

COMPETITIVE: 9
NON COMPETITIVE: 12

25 Clinical Trial & Observational Studies

29 Publications

Impact factor 129
average Impact Factor 4,4
Publications in 1st quartile..... 41%
Publications in 1st decile..... 21%
Leadership 21%

We study rare genetic disorders affecting brain metabolism in childhood, including inborn errors of metabolism that disrupt biochemical pathways and cellular processes. These diseases can cause developmental delay, epilepsy, movement disorders, and neuropsychiatric symptoms, while many still lack effective treatments.

Our research focuses on synaptic metabolism in neurotransmitter disorders, energy-related diseases, and cell trafficking defects. We also investigate synaptopathies such as MECP2-, GRIN-, and SYNGAP1-related disorders through a multidisciplinary approach involving epileptologists and other specialists. Our goal is to better understand disease mechanisms and develop perso-

nalized therapies, including metabolic strategies, small molecules, and nanoparticle-based delivery systems.

We use patient-derived cells, iPSC models, animal models, and bioengineering platforms such as synapse-on-a-chip and blood-brain barrier-on-a-chip systems. Our team also promotes international education through the International Master of Neurometabolism and Cell Biology for Clinicians.

ACHIEVEMENTS 2025

Our group has advanced the understanding of rare disorders affecting neurotransmission and neurometabolism. Major achievements include new clinical guidelines and a pediatric rating scale for tyrosine hydroxylase deficiency, a cause of childhood parkinsonism, as well as contributions to the definition of cellular trafficking defects, a group encompassing hundreds of diseases.

We have also developed innovative bioengineering platforms such as "synapse-on-a-chip" and "blood-brain barrier-on-a-chip" models in collaboration with IBEC. These technologies allow the study of rare disease microcircuits and the testing of personalized therapies, particularly in Rett syndrome and tyrosine hydroxylase deficiency.

Our team has conducted around twenty clinical trials, including gene and metabolic therapies for rare neurological disorders. This work has been supported by 21 research projects and has resulted in 30 high-impact publications, while also fostering interdisciplinary collaboration between neuroscience, metabolism, and physics.

FUTURE CHALLENGES

In the near future, we aim to:

- Develop more robust methods and models to better characterize the biological functions that are likely to be modulated by the therapies we apply in vitro. Likewise, to implement methodologies that allow the inclusion of a larger number of patients while maintaining the same level of reliability and quality of results.
- Expand the range of drugs and metabolic strategies used in person-alized treatments.
- Validate nanotechnology-based models and apply them across dif-ferent pathologies.
- Extend metabolic modulation as a therapeutic strategy to a broad range of neurodevelopmental disorders, not necessarily of genetic origin.
- Strengthen local and international collaborative networks, particularly through the development of the joint lab with the Paris Brain Insti-tute for the study of brain metabolism as a continuum from child-hood to adulthood.
- Improve strategies for attracting talent and communi-cating our work to society, while continuing our inter-national leadership in education in neurometabolism.

SELECTED PUBLICATIONS

- Garcia A, Sevin C, Ribeiro J, Yazbeck E, Rosewich H, Jimenez S et al. Safety and efficacy of leriglitazone in childhood cerebral adrenoleukodystrophy (NEXUS): an interim analysis of an open-label, phase 2/3 trial. *EClinicalMedicine*. 2025;84:103265. IF:10,000. [Q1].
- Santos A, Julià NA, Rejano A, Marí R, Miguez F, Masana M et al. Spermidine Treatment Improves GRIN2B Loss-Of-Function, A Primary Disorder of Glutamatergic Neurotransmission. *J. Inherit. Metab. Dis*. 2025;48(2). IF:3,800. [Q2].
- Díaz Y, Gimeno H, Marí R, Illescas KS, Ramos JM, Darling A et al. Spermidine Recovers the Autophagy Defects Underlying the Pathophysiology of Cell Trafficking Disorders. *J. Inherit. Metab. Dis*. 2025;48(1). IF:3,800. [Q2].
- Sigatullina M, Hübschmann OK, Kulhánek J, Pons R, Pearson TS, Jeltsch K et al. Consensus Guideline for the Diagnosis and Treatment of Tyrosine Hydroxylase (TH) Deficiency. *J. Inherit. Metab. Dis*. 2025;48(6). IF:3,800. [Q2].

SELECTED PROJECTS

- NANORETT: delivery of mecp2 to the brain using nanocapsules for the treatment of Rett syndrome. [PCP00473]. Fundació Institut de Recerca "la Caixa" (CONVOCATÒRIA 2025-01 – CAIXA INNOVATION FUND). 2025-2026. IP: Alfonso Luis De Oyarzabal Sanz.
- Modelos experimentales de sinaptopatías aplicados a la medicina personalizada de trastornos genéticos raros de la comunicación neuronal neuropediátricos. [PFIS0406]. Instituto de Salud Carlos III (ISCIII). 2024-2027. IP: Mª Àngels García Cazorla; Alfonso Luis De Oyarzabal Sanz.
- Development of leriglitazone for Rett Syndrome and related disorders. [FPF00260]. Ministerio de Ciencia e Innovación [Proyectos Colaboración Público-Privado]. 2022-2025. IP: Mª Àngels García Cazorla; Alfonso Luis De Oyarzabal Sanz.

SELECTED CLINICAL STUDIES

- A Phase III study of JR-141 in Mucopolysaccharidosis type II (Hunter Syndrome) patients. [JR-141-GS31]. JCR Pharmaceuticals Co., Ltd. Phase III. 2022. IP: Leticia Diana Pias Peleteiro.
- Double-blind, randomized, placebo-controlled study of Leriglitazone in pediatric Rett Syndrome. [MT-2-04]. Minoryx Therapeutics S.L. Phase II. 2024. IP: Mª Àngels García Cazorla.
- A Phase I/II First-in-Human, Open-Label, Dose-Escalation Study to Evaluate the Safety and Efficacy of a Single Intravenous (IV) Administration of ECUR-506 in Males Less than 9 Months of Age with Genetically Confirmed Neonatal Onset Ornithine Transcarbamylase (OTC) Deficiency. [ECUR-506-OTC-101]. iECURE, Inc. Phase I/II. 2025. IP: Mª Àngels García Cazorla.

Neonatal Brain

Shaping lifelong outcomes through better perinatal brain care and research

Ana Alarcon Allen, MD, PhD
and Thais Agut Quijano, MD, PhD



RESEARCHER

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Melissa Andrea Fontalvo Acosta

9 Projects

COMPETITIVE: 5
NON COMPETITIVE: 4

1 Clinical Trial & Observational Studies

17 Publications

Impact factor 45
average Impact Factor 2,7
Publications in 1st quartile.... 53%
Publications in 1st decile..... 18%
Leadership 24%

The Neonatal Brain Group conducts excellence-driven, patient-oriented research focused on understanding, diagnosing, and treating fetal and neonatal brain injury. Our work aims to reduce the burden of neurological disorders that originate early in life and have long-term consequences for child development.

The group's main research lines include hypoxic-ischemic encephalopathy and neonatal arterial ischemic stroke, addressing their etiological and pathogenic mechanisms and the identification of diagnostic and prognostic biomarkers. In parallel, the group investigates brain maturation and the impact of acquired brain injury and dysmaturation on long-term neurodevelopmental outcomes in preterm infants. Another key line focuses on fetal and neonatal infections affecting the developing brain, with particular attention to congenital cytomegalovirus infection. Additionally, the group explores care practices and professional roles in managing newborns at neurological risk and supporting their families.

Through national and international collaborations, the group applies multidisciplinary approaches to enhance translational research and maximize clinical impact.

ACHIEVEMENTS 2025

Driven by clinical questions, during 2025 the group continued to advance patient-oriented research in neonatal neurology.

Scientific output included publications on automated neuroimaging-based assessment of preterm brain maturation, language development in preterm infants, neonatal stroke, hypoxic-ischemic encephalopathy, and AI in neuromonitoring. Through collaborations, the group advanced AI applications in neonatal neurology, including deep-learning models for non-invasive ultrasound-based diagnosis of meningitis and EEG-based assessment of preterm brain maturation.

The group maintained competitive funding, including projects funded by Instituto de Salud Carlos III and predoctoral fellowships. International engagement was strengthened through collaboration with the European Society for Paediatric Research, particularly its Brain Ultrasound Special Interest Group. Educational activities expanded through Fundación NeNe and by opening our national neuromonitoring course internationally. One member (NH) successfully defended her PhD.

In 2025, the group initiated joint strategic planning with the neonatal and pediatric critical care units, reinforcing an integrated research and clinical care framework.

FUTURE CHALLENGES

The group will continue to focus on advancing precision-based understanding of neonatal brain development and injury, within an increasingly integrated framework with the neonatal and pediatric critical care units.

A key research priority is preterm brain maturation trajectories and their relationship with long-term outcomes, using multimodal approaches (neuroimaging, electrophysiology) and incorporating AI, including the development of a brain maturation score for clinical use in neonatal units.

In congenital cytomegalovirus, we will continue ongoing work on neonatal screening (including parental perspectives on early diagnosis), biomarker discovery, and participation in international collaborations for clinical guidelines and multicenter studies.

Regarding other neonatal infections, we will continue with our project on biomarker-based risk stratification in critically ill pediatric and neonatal patients.

Nursing-led research will remain central, addressing patient- and family-centered care and optimizing outcomes through targeted interventions.

We will continue to promote early-career researchers, with eight PhD theses underway, while maintaining engagement in teaching.

SELECTED PUBLICATIONS

- Roca P, Fontalvo M, Aldecoa V, Alarcon A. Therapeutic hypothermia in preterm infants under 36 weeks: Case series on outcomes and brain MRI findings. Eur. J. Pediatr. 2025;184(1):113-113. IF:2,600. [Q1].
- Regalado M, Carreras N, Mata C, Oliver A, Lladó X, Agut T. Automatic Segmentation of Sylvian Fissure in Brain Ultrasound Images of Pre-Term Infants Using Deep Learning Models. Ultrasound Med. Biol. 2025;51(3):543-550. IF:2,600. [Q2].
- Alarcon A, Carreras N, Muehlbacher T, Casas D, Arena R, Roca P et al. Foetal disruptive brain injuries: Diagnosing the underlying pathogenetic mechanisms with cranial ultrasonography. Dev. Med. Child Neurol. 2025;67(11):1383-1408. IF:4,300. [Q1].
- François C, Rodríguez A, Cerda X, Agut T, Bosch L. Impact of late to moderate preterm birth on minimal pair word-learning. Child Dev. 2025;96(1):203-216. IF:3,800. [Q1].

SELECTED PROJECTS

- Ajuts "Post-FSE HSJD" (Starting) — Financament d'ajuts "Post-FSE HSJD" (Starting). [PCIH2402]. Hospital Sant Joan de Déu - Esplugues [HSJD]. 2024-2025. IP: Iolanda Jordán García; Ana Alarcon Allen.
- Evaluación de un nuevo test diagnóstico rápido para la cuantificación de biomarcadores pronósticos en el triaje del paciente crítico y la mejora de la supervivencia neonatal e infantil [ACROBAT-Critical]. [PFIS0382]. Instituto de Salud Carlos III [ISCIII]. 2024-2026. IP: Ana Alarcon Allen.
- Evaluation of a Novel Point-of-Care Risk Stratification Tool Using Prognostic Biomarkers to Improve Survival in Critically Ill Neonates. [PFNR0224]. Provincia San Juan de Dios de España. 2025-2028. IP: Ana Alarcon Allen.

SELECTED CLINICAL STUDIES

- Evaluation of a Novel Point-of-Care Risk Stratification Tool Using Prognostic Biomarkers to Improve Survival in Critically Ill Neonates. [PFNR0224]. Provincia San Juan de Dios de España. 2025-2028. IP: Ana Alarcon Allen.

Neuropsychology

From brain mechanisms to daily functioning in diverse developmental trajectories

Roser Pueyo Benito, PhD



RESEARCHER

Maria Angeles Jurado Luque
Maria Mataró Serrat
Xavier Caldú Ferrús

Predoctoral Researcher

Adrià Bermudo Gallaguet
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POSTDOCTORAL Researcher

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Jonatan Ottino González
Júlia Ballester Plané
Olga Laporta Hoyos
Samira Rostami
Serena Sabatini

11 Publications

Impact factor	36
average Impact Factor	3,3
Publications in 1st quartile.....	55%
Publications in 1st decile.....	18%
Leadership.....	45%

The Neuropsychology Research Group investigates cognitive, emotional, and behavioral functioning in clinical, at-risk, and healthy populations across the lifespan. Our research focuses on neurodevelopmental disorders (such as cerebral palsy and learning disabilities), acquired brain injury (including stroke and post-COVID conditions), and interindividual differences in cognitive functioning associated with vascular, metabolic, genetic, and lifestyle-related factors. We combine neuropsychological assessment, neuroimaging, biological markers, virtual reality and intervention studies to better understand brain-behavior relationships and their impact on daily functioning, participation, and quality of life. A key objective is to translate neuropsychological science into clinical practice through the development of assessment guidelines, evidence-based interventions, and meaningful functional outcomes, in close collaboration with multidisciplinary clinical teams.

ACHIEVEMENTS 2025

In 2025, the Neuropsychology Research Group generated high-impact research addressing brain-behavior relationships across diverse developmental trajectories. We published randomized controlled trials evaluating executive function interventions in children with cerebral palsy and multimodal rehabilitation approaches combining cognitive training, mindfulness, and physical exercise in individuals with chronic stroke. Several studies examined biological, psychological, and genetic mechanisms underlying cognitive performance, including inflammation, stress hormones, anxiety, sex differences, and genetic risk factors. Our work also advanced knowledge on post-COVID mental health, pediatric-onset Huntington's disease, cognitive functioning within the International Classification of Functioning, Disability and Health (ICF) framework, and functional outcomes across developmental and clinical conditions. These contributions strengthened national and international collaborations and reinforced the group's leadership in translational and clinically oriented neuropsychological research.

FUTURE CHALLENGES

Future challenges include advancing personalized and precision neuropsychology by integrating cognitive, biological, neuroimaging, and lifestyle-related data. The group aims to improve early identification of cognitive and emotional risk profiles and to enhance the long-term effectiveness of neuropsychological interventions. One key priority is the development and validation of assessment tools to support the identification and diagnosis of autism in populations with complex comorbidities, where symptom presentation is heterogeneous and difficult to disentangle. In parallel, the group seeks to develop cognitive screening

tools that support multidisciplinary decision-making and guide appropriate clinical referrals. Expanding longitudinal studies and intervention approaches that integrate cognitive, physical, and mind-body components will be essential. Ultimately, the group aims to contribute to evidence-based, person-centered neuropsychological care that improves health, autonomy, and quality of life across developmental stages, risk profiles and clinical conditions.

SELECTED PUBLICATIONS

- Lamonja N, Dacosta R, López J, Prades L, Soriano JJ, Clemente I et al. Sex and APOE e2 Interactive Effects on the Longitudinal Change in Cognition in a Population-Based Cohort of Older Adults with Vascular Risk Factors. *Int. J. Mol. Sci.* 2025;26(21). IF:4,900. [Q1].
- Bermudo A, Ariza M, Agudelo D, Camins N, Boldó M, Ferrer B et al. Effects of mindfulness and exercise on cognition and emotion in adults with mild deficits in the chronic post-stroke phase: A randomized controlled trial. *Ann. Phys. Rehabil. Med.* 2025;68(7):102008-102008. IF:4,600. [Q1].
- Blasco M, García M, Ballester J, Laporta O, Caldú X, Leiva D et al. Transferability of an executive function intervention in children with cerebral palsy: A randomized controlled trial. *Dev. Med. Child Neurol.* 2025;67(4):496-509. IF:4,300. [Q1].
- Prunell A, Jurado MA, Caldú X, Sender MJ, Sánchez C, Salas Gómez P et al. Cortisol, Anxiety, and TNFα Mediate the Relationship Between BMI and Executive Functions. *Stress Health.* 2025;41(4). IF:2,700. [Q2].

Cognitive Neuroscience

We drive advances in understanding human brain function in health and disease using cognitive electrophysiology (EEG) and neuroimaging, and develop novel pioneering approaches for brain function assessment beyond classical clinical testing.

Carles Escera Micó, PhD



RESEARCHER

Hans Supèr
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Jordi Costa Faidella
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Marc Via García
María Isabel Núñez Peña
María José Corral López

PREDOCTORAL RESEARCHER

Àlex Mondéjar Segovia

12 Publications

Impact factor	41
average Impact Factor	3,4
Publications in 1st quartile....	83%
Publications in 1st decile.....	25%
Leadership	58%

At the Cognitive Neuroscience group, we seek to unravel the neural mechanisms of cognitive function, spanning attention, auditory and speech perception, motor-sensory interactions, executive control, and emotional and musical processing. Our approach combines the recording of the human electroencephalogram (EEG) to analyze event-related brain potentials --like the Frequency-Following Response and Mismatch Responses-- and brain oscillations, with magnetoencephalography (MEG), functional magnetic resonance imaging (fMRI) and neurogenetic analysis. We characterize cognitive dysfunction in a broad spectrum of neurodevelopment and mental disorders and foster the development of novel pioneering approaches for brain function assessment beyond classical clinical testing. We are committed with knowledge and technology transfer to develop tools for predicting neurodevelopmental outcomes (language acquisition), and with the training of a new generation of cognitive neuroscience researchers as well as with outreach to the community.

ACHIEVEMENTS 2025

Capitalizing on the frequency-following response (FFR), an EEG potential in response to a speech sound, we have pushed the boundaries of understanding brain development underlying early language acquisition, and how these processes are impaired in conditions challenging fetal development (in collaboration with Dr. Lola Gómez-Roig). We pursue to optimize methodological protocol to record the FFR [Jacxsens et al., 2025] by identifying the optimal eliciting stimulus, and described the effects of environmental noise in encoding speech sounds in neonates [Mondéjar-Segovia et al., 2025]. We advance our understanding of music related behaviors, such as the entrainment of neural activity to the beat of music [Aparicio-Tarrés et al., 2025a], the role of music in altered states of consciousness [Aparicio-Tarrés et al., 2025b], and error monitoring and correction during violin performance [Blanco et al., 2025]. We collaborated with the Neuropsychology group investigating the benefits of mindfulness in post-stroke patients [Bermudo et al., 2025a; Bermudo et al., 2025b].

FUTURE CHALLENGES

We are taking a step further in our approach to understanding the neural mechanism of early language acquisition during the first year of life, in collaboration with collaboration with Dr. Lola Gómez-Roig, lead of the Foetal Environment and Obstetric Complications research group). Beyond investigation of the natural maturation of such mechanisms and their affections by environmental and pathological conditions, we are jumping now into a mechanistic approach. Our goal here is to investigate whether a prenatal and early postnatal systematic music exposure program can

boost the neural mechanisms of language acquisition, by enhancing the neural encoding of speech sounds (FFR), the emergence of phonetic categories [mismatch responses] and the acquisition of grammatical rules [entrainment of brain oscillations to statistical rules in the acoustic input]. Furthermore, we are starting a proof-of-concept study to validate whether such an intervention program can prevent language delay in late preterm babies.

SELECTED PUBLICATIONS

- Blanco ÁD, Costa J, Carrillo AP, Dalmazzo D, Ramirez R, San Miguel I. Error monitoring and correction in violin performance: An EEG study. Neuroimage. 2025;318:121365-121365. IF:4,500. [Q1].
- Aparicio R, López S, Díaz M, Escera C. The neurobiology of altered states of consciousness induced by drumming and other rhythmic sound patterns. Ann. N.Y. Acad. Sci. 2025;1550(1):55-70. IF:4,800. [Q1].
- Merchie A, Bonnet F, Escera C, Houy E, Gomot M. Unraveling neural adaptation to vocal and non-vocal sounds in autism. Clin. Neurophysiol. 2025;170:58-66. IF:3,600. [Q1].
- Jacxsens L, Gorina N, Mondéjar A, Arenillas S, Biot L, Cardon E et al. Toward the Optimal Stimulus to Elicit the Frequency-Following Response. Ear Hear. 2025. IF:2,800. [Q1].

Attention, Perception and Language Acquisition (APAL)

Understanding how language and cognition emerges: early speech perception and learning in different linguistic environments

Laura Bosch Galceran, PhD



RESEARCHER

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Marta Ramon Casas

PREDOCTORAL RESEARCHER

Elisa Marrodon Verdeguer
Ramil Coetana Lombardía

RESEARCH ASSISTANT

Naila Ortega Sotillo

1 Publications

Impact factor **4**
average Impact Factor **3,8**
Publications in 1st quartile... **100%**
Publications in 1st decile **0%**
Leadership **100%**

The APAL Research Group focuses on the study of early language acquisition in typically developing infants, with a particular emphasis on diverse linguistic environments, including monolingual and bilingual contexts. Our research investigates how infants perceive, process, and learn language from the first months of life, addressing key mechanisms underlying speech perception, word learning, and early cognitive development.

A core strength of the group lies in its expertise in eye-tracking methodologies, which allows us to precisely measure infants' visual attention and behavior in response to linguistic stimuli. These methods enable us to capture subtle aspects of early cognition and language processing that are otherwise difficult to observe.

The lab is based at the Numancia building of Hospital Sant Joan de Déu, and collaborates with clinical and basic research teams to better understand typical and variable developmental trajectories.

and its relationship with language acquisition, extending eye-tracking methodologies to more ecologically valid contexts.

In addition, building on our collaboration within the CARE C-ESDM clinical trial (TEA CARE, UnimTEA), we are preparing grant applications to ensure the continuity of this translational research line, while remaining open to new interdisciplinary and clinical collaborations.

SELECTED PUBLICATIONS

- François C, Rodríguez A, Cerda X, Agut T, Bosch L. Impact of late to moderate preterm birth on minimal pair word-learning. *Child Dev.* 2025;96(1):203-216. IF:3,800. (Q1).

ACHIEVEMENTS 2025

In 2025, we completed the goals of a competitive project funded by the Spanish MICINN, examining how bilingual experience influences infants' ability to associate visual (faces) and auditory (speech) information, as well as the role of musical familiarity (particularly singing) in modulating these associations.

The group made significant progress in understanding early language acquisition, particularly in speech perception, word learning, and audiovisual processing across diverse developmental trajectories. Research was extended to clinical populations, including children with sensorineural hearing loss, in collaboration with the Audiology and Cochlear Implant Unit.

We also explored environmental influences on early cognitive and language development using eye-tracking measures (in collaboration with ISGlobal).

Finally, we completed our contribution to the CARE C-ESDM clinical trial (TEA CARE program, UnimTEA), providing longitudinal eye-tracking data across intervention stages.

FUTURE CHALLENGES

Looking ahead to 2026, the group aims to further advance its research on early audiovisual processing in infancy by addressing key open questions on the integration of social and linguistic cues. In particular, we will investigate how bilingual experience and musical familiarity shape infants' ability to link visual (faces) and auditory (speech) information across development.

A major new challenge, supported by a newly funded MICINN project, will be to better understand the emergence of social attention in naturalistic environments

Research in Child and Adolescent Mental Health

Understanding, predicting, preventing, and innovating: research to improve care in child and adolescent mental health.

Montserrat Dolz Abadia, MD, PhD



RESEARCHER

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Emi Comas
Ester Compadron Rosanas
Ester Francsico
Esther Via Virgili
Eva Maria Ortiz
José Ángel Alda Díez
Jordina Tor Fabra
Josep Lluís Matalí Costa
Inmaculada Insa Pineda
Laia Mallà Cusi
Laia Villalta Macià
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M. Ángeles Mairena García de la Torre
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Maria Andreu
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We conduct translational research in child and adolescent mental health to improve the quality of life of children and adolescents, as well as that of their families. We work by considering the role of neurodevelopment throughout all stages of research, while also promoting innovation, knowledge transfer, and clinical impact as cross-cutting priorities.

We organize our activity around four main areas: 1) prevention, 2) prediction, 3) characterization, and 4) intervention and innovation. Our study population is primarily clinical and includes psychotic disorders, neurodevelopmental disorders, eating disorders, emotional and behavioral dysregulation, pathology related to exposure to traumatic situations, and psychopathology associated with medical illnesses.

ACHIEVEMENTS 2025

In 2025, we launched two newly funded projects: one using AI to predict psychopathology in children with cardiac diseases, and another testing virtual reality-based treatment for ARFID. We continued advancing ongoing projects, including EU-funded initiatives on cyberviolence and psychosocial and mental health standards in pediatric oncology; we also advanced precision tools, including a psychosis risk calculator, studied gene-environment interactions in early development, neuromodulation treatments in ADHD, the neurobiology and treatment of eating disorders, autism-focused digital interventions, real-time characterization of parent-child interactions, AI-supported parenting tools, and resilience and emotional well-being through a large-scale community-based school project.

Highlighted publications addressed sex and gender perspectives in psychosis, autism, and irritability, tested emotion regulation interventions in youth exposed to violence, or discussed pornography consumption as potentially traumatic in adolescents.

Finally, we strengthened internal research exchange through dedicated debate spaces and our 1st Child and Adolescent Mental Health Research Meeting.

FUTURE CHALLENGES

To address future challenges in child and adolescent mental health, our group focuses on combining scientific excellence, strategic development, and social impact. We aim to deepen knowledge of mental disorders and their risk factors while improving early prevention, and innovative, personalized interventions.

To accomplish these objectives, we plan to strengthen resources and consolidate a research team structure by increasing competitive and private funding, expanding clinical trials, and attracting talent. In addition, we have developed different strategies

to strengthen research within clinical professionals, by promoting group cohesion, protected research time for clinicians, internal training, stronger visibility, cross-disciplinary collaborations, and data-driven initiatives that support AI and digital innovation.

Finally, we are developing new strategies to involve patients and families in different stages of the research process, as well as new ways of communicating results to society, to increase community engagement.

SELECTED PUBLICATIONS

- Tor J, Baeza I, Alvarez J, Rodríguez M, Muñoz D, Sintes A et al. Sex differences and implications in outcome in children and adolescents at clinical high risk for psychosis. *J. Child Psychol. Psychiatry.* 2025;66(10):1461-1472. IF:7,000. [Q1].
- Mairena MA, Alcover C, Arias E, Díez M, Mezzatesta M, Elias N et al. Bridging research and practice: a pilot trial of an adapted social skills program for autism in public services. *Front Psychiatry.* 2025;16:1610221-1610221. IF:3,200. [Q2].
- Villalta L, Elias M, Llorens M, Vall H, Romero M, Valencia F. Implementation of the incredible years-ASLD® program in autism and preterm children with communication and/or socialization difficulties in Spain (FIRST STEPS): a feasibility study. *Child. Youth Serv. Rev.* 2025;177. IF:1,700. [Q1].
- Alvarez M, Fernández I, El Kasmy Y, Francisco E, Gallo S, Eva Ortiz Jiménez M° et al. Impact of pornography consumption on children and adolescents: a trauma-informed approach. *Front. Child Adolesc. Psychiatry.* 2025;4:1567649-1567649.

SELECTED PROJECTS

- IMPACT-EU: Improve Psychosocial care and social support for children/adolescents with cancer and their families to improve quality of life for all. [PFE00150]. European Commission. 2025-2028. IP: Marta Pérez Campdepadrós.
- Donación MINERVA (Trastorno de la Conducta Alimentaria). [PFNR0239]. 2026-2028. IP: Eduardo Serrano Troncoso.
- Riesgo de psicopatología en población pediátrica con Cardiopatía Congénita: Desarrollo de algoritmos de predicción mediante el uso de Aprendizaje Automático. [PFIS0429]. Instituto de Salud Carlos III (ISCIII). 2026-2028. IP: Marta Llorens Capdevila.

18 Projects

COMPETITIVE: 10
NON COMPETITIVE: 8

1 Clinical Trial & Observational Studies

24 Publications

Impact factor 97
average Impact Factor 4,0
Publications in 1st quartile.... 71%
Publications in 1st decile..... 21%
Leadership 29%

Epilepsy and Movement Disorders in Paediatrics

From Rare Disease to Real Impact: Patient-Focused Research in Paediatric Epilepsy and Movement Disorders

Alexandros Arzimanoglou, MD, PhD



RESEARCHER

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Martina Sedó Parellada
Santiago Antonio Candela Cantó
Silvia Liendo Vallejos
Veronica Delgadillo Chilavert

21 Projects

COMPETITIVE: 11
NON COMPETITIVE: 10

16 Clinical Trial & Observational Studies

32 Publications

Impact factor 186
average Impact Factor 5,8
Publications in 1st quartile..... 50%
Publications in 1st decile..... 38%
Leadership..... 34%

Our research is focused on improving the definition, classification, and understanding of rare epilepsies and movement disorders through a patient-centred approach. By combining deep phenotyping, advanced neurophysiological techniques, and innovative analytical strategies, we aim to generate robust and clinically relevant knowledge.

We actively participate in international multicentre studies and also conduct our own independent research projects. We are committed to bridging research and clinical practice, enhancing the entire care pathway—from early and accurate diagnosis to the development of personalized therapeutic strategies—while ensuring that research activities remain aligned with patients' needs and contribute to improved clinical outcomes and quality of life.

ACHIEVEMENTS 2025

As coordinating HCP of the European Reference Network for Rare and Complex Epilepsies [EpiCARE] and an active member of the ERN for Rare Neurological Diseases, we strengthened our leadership through participation in 24 competitive research projects, 16 clinical studies and 37 scientific publications.

Our research focused on improving the diagnosis and characterization of rare neurological disorders, including rare genetic epilepsies, movement disorders and conditions such as NKX2-1-related disorders, GNAO1-related disorders and alternating hemiplegia of childhood. Through investigator-initiated projects and international collaborations, we continue to generate high-impact knowledge aimed at improving clinical outcomes and quality of life for patients.

FUTURE CHALLENGES

Our future priorities include advancing innovative and collaborative research in rare epilepsy and movement disorders, with a strong focus on clinical trials involving gene therapies, novel anti-seizure treatments and other precision medicine approaches. Our goal is to translate scientific advances into effective and personalized therapies for patients.

We will strengthen our contribution to European clinical practice guidelines and maintain a leading role within EpiCARE working groups. International collaborations will be reinforced through new partnerships, including a scientific collaboration with the Utrecht epilepsy research team and participation in Horizon-funded initiatives such as REALISED, aimed at improving clinical research in ultra-rare diseases.

SELECTED PUBLICATIONS

• Moya ME, Bidzimu MT, Muralidharan P, Zhang Z, Ezekian JE, Perelli RM et al. ATP1A3 Variants, Variably Penetrant

Short QT Intervals, and Lethal Ventricular Arrhythmias. JAMA Pediatr. 2025;179(5):529-539. IF:18,000. [Q1].

- Moya V, Adham A, Convers P, Lesca G, Mauguier F, Soulier H et al. Electro-Clinical Features and Functional Connectivity Analysis in SYNL-Related Epilepsy. Ann. Neurol. 2025;97(1):34-50. IF:7,700. [Q1].
- Lersch R, Hartlieb T, Pieper T, Kudernatsch M, Hofer W, Barba C et al. Seizure outcomes following epilepsy surgery in pediatric and young adult patients with high-grade brain tumors: Results from a European survey. Epilepsia. 2025;66(6):1865-1875. IF:6,600. [Q1].
- Neugebauer J, Reinson K, Bellusci M, Park JH, Hikmat O, Bertini E et al. Current global vitamin and cofactor prescribing practices for primary mitochondrial diseases: Results of a European reference network survey. J. Inherit. Metab. Dis. 2025;48(1). IF:3,800. [Q2].

SELECTED PROJECTS

- RealiseD: Comprehensive methodological and operational approach to clinical trials in rare and ultra-rare diseases. (PFE00141). European Commission (HORIZON-JU-IHI-2023-04-04). 2025-2029. IP: María del Carmen Fons Estupiña.
- El análisis de la conectividad cerebral como herramienta para evaluar los trastornos neuroconductuales y de regulación emocional [EpiETRE.net]. (PFIS0311). Instituto de Salud Carlos III (ISCIII). 2022-2026. IP: Alexis Arzimanoglou.
- Mapas de conectividad funcional cerebral y neurodesarrollo en epilepsias pediátricas de debut precoz (Proyecto EPI-NEUROMAPS). (PFIS0358). Instituto de Salud Carlos III (ISCIII). 2023-2025. IP: María del Carmen Fons Estupiña.

SELECTED CLINICAL STUDIES

- An Open-Label Extension Trial to Assess the Long-Term Safety of ZX008 (Fenfluramine Hydrochloride) Oral Solution as an Adjunctive Therapy for Seizures in Patients with Rare Seizure Disorders Such as Epileptic Encephalopathies Including Dravet Syndrome and Lennox-Gastaut Syndrome. (ZX008-1900). Zogenix, Inc. Phase III. 2019-2025. IP: Alia Ramírez Camacho.
- A Phase 3, Randomized, Double-Blind, Placebo-Controlled, Fixed-Dose, Multicenter Study to Examine the Efficacy and Safety of ZX008 in Subjects with CDKL5 Deficiency Disorder Followed by an Open-Label Extension. (ZX008-2103). Zogenix, Inc. Phase III. 2023. IP: Alia Ramírez Camacho.
- A Phase 3, Randomized, Double-Blind, Placebo-Controlled, Multicenter Study to Investigate the Efficacy, Safety, and Tolerability of LP352 in the Treatment of Seizures in Children and Adults with Dravet Syndrome. (LP352-302). Longboard Pharmaceuticals, Inc. Phase III. 2025. IP: María del Carmen Fons Estupiña.

Neurodevelopment and Comparative Cognition (NeuroDevCo)

How brains begin to learn language: from newborns to animal models.

Chiara Santolin, MD, PhD



PREDOCTORAL RESEARCHER

Flora Chartier Guillaume
Laura Sirley Piracun García

POSTDOCTORAL RESEARCHER

Gonzalo García-Castro García

RESEARCH ASSISTANT

Chara Sofocleous
Thais Lacambra

1 Projects

COMPETITIVE: 1
NON COMPETITIVE: 0

2 Publications

Impact factor	7
average Impact Factor	3,5
Publications in 1st quartile....	50%
Publications in 1st decile.....	0%
Leadership	50%

We are a brand-new research group that officially joined the Institut de Recerca Sant Joan de Déu in 2025. Our research lies at the crossroads of cognitive neuroscience, psychology, and comparative cognition. Our core mission is to investigate how early-life experiences (e.g., language) shape cognitive functions and brain development. To do this, we study humans from birth throughout the first year of life, as well as animal models to expand our knowledge on the evolution of cognitive functions. We use neuroimaging methods and behavioral techniques. Specifically, we focus on the foundations of speech processing and language acquisition from both a developmental and evolutionary perspective. Our approach provides a unique lens to investigate what types of computations supports language learning across developmental stages, and their evolutionary origins.

ACHIEVEMENTS 2025

During this first year at IRSJD, we implemented some of the studies of the ERC StG [GALA; Dr. Santolin] to investigate the developmental and evolutionary bases of universal mechanisms of speech processing. We conducted studies with newborns (in collaboration with Dr. Ana Alarcon-Allen, Head of Neonatology at HSJD) using optical neuroimaging (fNIRS) to measure hemodynamic responses to speech structures such as syllables and words. We conducted similar studies with young infants using behavioral techniques. Preliminary results have been presented at international conferences (e.g., García-Castro, Alarcon-Allen & Santolin, 2025, Workshop for Infant Language Development, San Sebastian, Spain; Chartier, García-Castro & Santolin, 2025, Eyetracking Workshop for Developmental Scientists, London, UK). We also began a research line with Long-Evans rats as a non-human model to study the phylogenetic origins of the cognitive mechanisms recruited to learn speech structures.

Dr. Santolin co-authored a study in iScience showing for the first time that honeybees, an invertebrate species, can learn regularities from sequentially presented stimuli, a core domain-general ability supporting early language learning in humans.

Dr. Santolin was awarded a Ramón y Cajal fellowship.

FUTURE CHALLENGES

A key challenge for the future is to connect our basic neuroscience research with clinically relevant questions about early development. Building on our current work, we aim to apply our methodologies (e.g., optical neuroimaging, eye-tracking) to newborns and infants at neurodevelopmental risk to better characterize early neurodevelopmental trajectories. We aim to test how neural and cognitive responses to language structures differ in newborns and infants

at risk, and across stages of development in such populations. This would contribute to a more comprehensive understanding of variability in early language development and its neurobiological bases.

A further challenge will be to include new species as animal models in our research, such as songbirds (e.g., zebra finches), which provide a powerful model for studying the behavioral bases and neural circuits underlying early vocal practice, babbling-like vocalizations, and vocal learning. This would allow us to test whether similar cognitive mechanisms support vocal learning across species.

SELECTED PUBLICATIONS

- Marcout C, Santolin C, Giurfa M, Paoli M. Statistical olfactory learning in honey bees. iScience. 2025;28(11). IF:4,100. [Q1].
- Hernández A, García G, Redolar DE. Dissociating the Role of Dorsolateral Prefrontal Cortex and Ventrolateral Prefrontal Cortex in Cognitive Control in Depression: A Combined HD-tDCS and fNIRS Study. Brain Topogr. 2025;39(1):2-2. IF:2,900. [Q2].

SELECTED PROJECTS

- Gates to Language (GALA). (PFE00132). European Commission (HORIZON-ERC-2023-StG). 2024-2029. IP: Chiara Santolin.
- Perceptual foundations of mechanisms of early language acquisition. (PFP00368). Ministerio de Ciencia e Innovación (Ramón y Cajal 2024). 2026-2031. IP: Chiara Santolin.

SELECTED CLINICAL STUDIES

- Study on the early mechanisms of language acquisition in at-term, healthy newborns and infants, using optical neuroimaging and behavioural techniques. (FSJD-PIC-GALA-2024). Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 2025. IP: Chiara Santolin.

1. Medicine and pediatric science area

1.2. Adaptive Response, Metabolism and Immunobiology Foetal Medicine and Surgery

Fetal Medicine and Surgery

Health starts before birth

Eduard Gratacós Solsona, MD, PhD



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Ivan Vallejo Gutierrez
Laura Fernández Vallespín
Laura Sanchez Benito
Lavinia Vally Frunza
Leticia Benítez Quintanilla
Mar Ampurdanes Noro
Mar Velilla Aparicio
María Ciudad Celdrán
María Farras Riu
María Moya Guerrero
Marina Chorda Sánchez
Nathalia Andrea Torrico Sempertegui
Núria Blanco i Quintanilla
Olga Coronel García
Ruth del Río Florentino
Sonia Santacruz Novillo
Talita Micheletti

RESEARCH INTERN

Marina Sales Portet

16 Projects

COMPETITIVE: 11
NON COMPETITIVE: 5

1 Clinical Trial & Observational Studies

25 Publications

Impact factor 110
average Impact Factor 4.4
Publications in 1st quartile.... 68%
Publications in 1st decile..... 32%
Leadership 40%

Fetal Medicine and Surgery is a multidisciplinary team focused on improving prenatal care through research. Fetal medicine opens a window of intervention that did not exist until decades ago. Thanks to research, it will be possible to improve the health of future generations from the beginning of life. Our research is structured around three main areas:

1. Developing new technologies for fetal medicine, including advances in fetal surgery, artificial placenta systems for extremely premature fetuses and the use of artificial intelligence to support diagnosis.
2. Complications or environmental changes in pregnancy can influence fetal development affecting our future health, increasing threats to mental, cardiovascular and metabolic health. Our group investigates solutions for better diagnosis and lifestyle-based interventions.
3. Clinical research on major maternal-fetal complications such as preeclampsia, fetal growth restriction, and prematurity, with the goal of improving early detection, prevention and personalized care.

ACHIEVEMENTS 2025

In 2025, we continued our research aimed at improving diagnosis and therapy in maternal-fetal medicine. Our activity includes clinical trials, translational studies on biomarkers and maternal-fetal interactions, research on microbiome and stress-related mechanisms, and the development of technologies such as artificial placenta systems and sealing devices after fetal surgery. This work is carried out within competitive national and international grants.

FUTURE CHALLENGES

We are driving towards personalized prevention strategies, especially in conditions such as preeclampsia, prematurity and placental disease, combining preclinical evidence with clinical studies. Another key challenge is translating new fetal therapies into clinical practice. This includes bringing a fetal-sealing device into clinical use to reduce complications after fetal surgery and continuing the experimental development of artificial placenta system, ensuring safety and preparing the path toward future clinical studies. We also seek to modernize obstetric care by introducing innovative ultrasound-based approaches that improve safety and patient experience during childbirth.

Across all research areas, our focus is on improving long term child outcomes, reducing severe neonatal complications, and facilitating access to high quality clinical care for mothers and newborns.

SELECTED PUBLICATIONS

- Youssef L, Crispi F, Paolucci S, Miranda J, Lobmaier S, Crovetto F et al. Angiogenic factors alone or in combination with ultrasound Doppler criteria for risk classification among late-onset small fetuses with or without pre-eclampsia. *Ultrasound Obstet Gynecol.* 2025;65(3):317-324. IF:6,300. [Q1].
- Miranda J, Benítez L, Macías S, Paules C, Gomez A, Basso A et al. Maternal stress and fetoplacental cortisol regulation in small-for-gestational-age newborns. *Ultrasound Obstet Gynecol.* 2025;65(6):738-748. IF:6,300. [Q1].
- Selma M, Crispi F, Castro S, Casas I, Larroya M, Genero M et al. Effects of Mediterranean diet or Mindfulness-Based Stress Reduction during pregnancy on maternal gut and vaginal microbiota: a subanalysis of the IMPACT BCN trial. *Am J Clin Nutr.* 2025;122(4):1121-1133. IF:6,900. [Q1].

SELECTED PROJECTS

- Fase 2 del Programa Interdisciplinar para el Desarrollo de un Prototipo Experimental de Placenta Artificial y Evaluación de Aplicación Clínica. [PCP00390]. Fundació Bancària "La Caixa". 2023-2026. IP: Eduard Gratacós Solsona.
- Preeclampsia y microbiota intestinal: una nueva diana terapéutica potencial. [PFIS0422]. Instituto de Salud Carlos III [ISCIII]. 2026-2028. IP: Francesca Crovetto.
- Impacto de las mejoras tecnológicas en el desarrollo de un sistema de placenta artificial en la morbilidad y mortalidad. [PFIS0423]. Instituto de Salud Carlos III [ISCIII]. 2026-2028. IP: Miriam Illa Armengol.

SELECTED CLINICAL STUDIES

- Estudio prospectivo observacional sobre cohorte de fetos con Flutter auricular o taquicardia supraventricular [FAST REGISTRY]. SickKids. 2018. IP: Eduard Gratacós Solsona.

Metabolic Endocrinology

Prenatal Growth and Postnatal Endocrine-Metabolic Health

Lourdes Ibañez Toda, MD, PhD



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Judith Bassols Casadevall

6 Projects

COMPETITIVE: 5

NON COMPETITIVE: 1

5 Clinical Trial & Observational Studies

12 Publications

Impact factor	63
average Impact Factor	5,2
Publications in 1st quartile.....	92%
Publications in 1st decile.....	17%
Leadership.....	33%

Our research is mostly patient-oriented, and mainly focused on:

- 1- the longitudinal exploration of novel epigenetic, clinical and biochemical markers of metabolic co-morbidities in prospective cohorts of subjects born small (SGA) and appropriate-for-gestational age (AGA);
- 2- the development of novel preventive and therapeutic strategies derived from new pathophysiological insights in adolescent girls and young women with polycystic ovary syndrome (PCOS).

Since 2006, our group is member of CIBERDEM [Biomedical research center network for diabetes and associated metabolic diseases, ISCIII, Madrid], and since 2009 we are a consolidated group within AGAUR [Agència de Gestió d'Ajuts Universitaris i de Recerca, Generalitat de Catalunya]. The group leader is the coordinator of both the Pediatric and Adolescent Gynecology Working Group of the European Society for Pediatric Endocrinology (ESPE), and of the Working Group of the patient born SGA of the Spanish Society for Pediatric Endocrinology.

ACHIEVEMENTS 2025

Research results include:

- The characterization of the key factors underlying adolescent PCOS and the development of a first pathophysiological treatment for this disorder [García-Beltrán, Trends Mol Med 2025]. This research has enabled us to pinpoint the key role of ectopic fat, resulting in the development of a triple combination of generics in one single pill. The safety, efficacy, and tolerability of this combination on top of a lifestyle intervention program is now being tested in a multinational phase II clinical trial coordinated by Hospital Sant Joan de Déu (www.spiomet4health.eu).
- The identification of new markers for the early detection of subjects at risk for developing endocrine-metabolic co-morbidities associated with the SGA condition, followed by an excessive catch-up in weight. [Díaz, Int J Mol Sci 2025]. This approach has allowed us to implement therapeutic strategies directed at preventing or treating those co-morbidities, including early pubarche/puberty/ menarche and correlates like insulin resistance.

FUTURE CHALLENGES

The central challenge of the group is improving the prevention and treatment of childhood endocrine-metabolic disorders, with a focus on SGA-associated comorbidities, and on adolescent PCOS.

Cohorts of SGA and AGA individuals will continue to be prospectively followed into adulthood to gain a deeper insight into the epi(genetic) mechanisms accounting for SGA-associated co-morbidities and to unveil potential new markers such as exosomes, for early risk stratification and personalized preventive interventions.

In the field of adolescent PCOS, we will analyse the results of the spiomet4health multi-centric, multi-national clinical trial and, if the results are positive, we will advance into a phase III pre-market clinical study after seeking scientific advice from the European Medications Agency (EMA), which will be followed by commercialization.

Additional ongoing studies include an experimental study in a fruit fly model of PCOS to identify potential biomarkers for early diagnosis in humans.

SELECTED PUBLICATIONS

- García C, de Zegher F, Ibañez L, clinical investigators of the spiomet4health C. Adolescent polycystic ovary syndrome: an endocrine-metabolic mode in response to ectopic fat. Trends Mol. Med. 2025;31(5):492-493. IF:13,800. [Q1].
- de Zegher F, Ibañez L. Early Origins of Polycystic Ovary Syndrome: Bridging the Hypotheses. J. Clin. Endocrinol. Metab. 2025;110(8):2797-2799. IF:5,100. [Q1].

nol. Metab. 2025;110(8):2797-2799. IF:5,100. [Q1].

- Díaz M, Quesada T, Villarroya F, Casano P, López A, de Zegher F et al. The Proteome of Exosomes at Birth Predicts Insulin Resistance, Adrenarche and Liver Fat in Childhood. Int. J. Mol. Sci. 2025;26(4). IF:4,900. [Q1].
- Díaz M, Quesada T, Villarroya F, López A, de Zegher F, Ibañez L et al. Cord Blood Exosomal miRNAs from Small-for-Gestational-Age Newborns: Association with Measures of Postnatal Catch-Up Growth and Insulin Resistance. Int. J. Mol. Sci. 2025;26(14). IF:4,900. [Q1].

SELECTED PROJECTS

- SPIOMET4HEALTH_PCOS in adolescent girls and young women: Toward a treatment guided by pathophysiology. [PFE00077]. European Commission (H2020)Health|SC1-BHC-08-2020). 2021-2026. IP: Lourdes Ibañez Toda.
- Variaciones longitudinales del perfil de expresión de microRNAs exosomales en niños con bajo peso para la edad gestacional con y sin recuperación de peso y talla postnatal. [PFI0355]. Instituto de Salud Carlos III (ISCIII). 2023-2027. IP: Paula Casano Sancho; Marta Díaz Silva.
- Nous coneixements sobre la patogènesi de la síndrome d'ovari poliquístic mitjançant un model genètic: identificació de biomarcadors potencials per al diagnòstic precoç en humans. [PFP00340]. Fundació La Marató de TV3 (Projectes de Recerca Salut Sexual i Reproductiva). 2025-2028. IP: Lourdes Ibañez Toda.

SELECTED CLINICAL STUDIES

- Efectos del tratamiento con SPIOMET a mitad de dosis en niñas con pubertad adelantada y aceleración de la maduración ósea: estudio multicéntrico, aleatorizado y controlado con placebo (MINI-SPIOMET). Institut d'Investigació Biomèdica de Girona Dr. Josep Trueta (IDIBGi). Phase II. 2022. IP: Lourdes Ibañez Toda.
- SPIOMET4HEALTH: A Phase II, randomised, multi-centric, multi-national clinical trial to evaluate the efficacy, tolerability, and safety of a fixed dose combination of Spironolactone, Pioglitazone & Metformin (SPIOMET) for adolescents and young adult women with polycystic ovary syndrome. Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. Phase II. 2022. IP: Lourdes Ibañez Toda.
- Identification of circulating microRNAs in short children born small for gestational age: Relationship with pre- and postnatal growth and metabolic parameters. (LOR-HOR-2013-01). López Bermejo Abel. 2014-2025. IP: Lourdes Ibañez Toda.

Metabolic Diseases of Paediatric Origin

ECHO (Early-life CHildhood Obesity).
Tracing early-life origins of metabolic disease

**Carles Lerín Martínez, PhD and
José Carlos Jiménez Chillarón, PhD**



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Lorena González López

10 Projects

COMPETITIVE: 6

NON COMPETITIVE: 4

7 Clinical Trial & Observational Studies

9 Publications

Impact factor	46
average Impact Factor	5,1
Publications in 1st quartile....	67%
Publications in 1st decile.....	33%
Leadership	11%

Our group is formed by biochemists, endocrinologists, nutritionists, and nurses with a central interest in childhood obesity studies. We investigate both the mechanisms underlying this condition and the early-life factors that impact its development. Our research follows a life-course perspective on health and disease, from the role of breastfeeding and early nutritional programming to the long-term metabolic consequences of obesity in childhood. To address these questions, we combine clinical and preclinical models and apply multi-omics approaches, including epigenomics, metabolomics, metagenomics, and spatial transcriptomics. Together, our work allows us to move from mechanistic insight to translational research, with the aim of identifying and designing interventions to reduce the burden of childhood obesity.

ACHIEVEMENTS 2025

In 2025, our research group reached several relevant milestones. We started a coordinated EU-funded project on digital innovation applied to childhood obesity prevention and management, marking a step forward in our capacity to address this problem at a larger scale. In parallel, we advanced negotiations toward licensing a patent, moving our translational work closer to practical application. On the research output front, we continued consolidating our scientific activity through publications, with 90% of our papers appearing in Q1 journals, reflecting both the quality and the continuity of the work performed by the group.

FUTURE CHALLENGES

Our main goal is to consolidate our research activities within EU consortia, strengthening collaborative networks and broadening the scope and impact of our work. At the same time, we aim to deepen our understanding of the mechanisms associated with the early development of obesity, from metabolic and epigenetic programming in the first stages of life to the biological pathways that drive disease progression. A specific focus is the application of spatial transcriptomics to pediatric adipose tissue for mapping the cellular and molecular architecture of this tissue in the context of childhood obesity.

SELECTED PUBLICATIONS

- Goday A, Pérez G, Fernández A, Díaz X, Leis R, de Hollanda A et al. Bridging the gap: recommendations to accomplish transition from pediatric to adult care in adolescents living with obesity. *Rev. Endocr. Metab. Disord.* 2025. IF:8,000. [Q1].
- Casas E, Mitjavila A, Sierra P, Moreta C, Cebrià J, Panzeri I et al. Genetic polymorphisms lead to major,

locus-specific, variation in piRNA production in mouse. *Embo J.* 2025;44(14):4104-4119. IF:8,300. [Q1].

- Saavedra LPJ, Raposo SR, Assakawa ALM, Lucredi NC, Peres MNC, Piován S et al. Fenofibrate treatment during lactation prevents liver and adipose tissue associated metabolic dysfunction in a rat model of childhood obesity. *Biomed Pharmacother.* 2025;188:118166-118166. IF:7,500. [Q1].
- Ribó S, Ramon M, Marimon JM, Busato F, Palmieri F, Mourin M et al. Transgenerational inheritance of hepatic steatosis in mice: sperm methylome is largely reprogrammed and inherited but does not globally influence liver transcriptome. *Environ. Epigenetics.* 2025;11(1). IF:3,200. [Q2].

SELECTED PROJECTS

- Role of microbial metabolites in regulating hypothalamic pathways involved in feeding behavior. [PFE00116]. Foundation for Prader-Willi Research. 2023-2025. IP: Carles Lerin Martinez.
- Promoting HEalthy hABits to tackLe the childhood obesity through a multifactorial family-focus strategy. [PFE00162]. European Commission [ERASMUS+ K220]. 2025-2028. IP: Carles Lerin Martinez.
- CONNECT-CARE: Inclusive Healthcare Access and Personalized Health Management for Children and Adolescents. [PFIS0402]. Instituto de Salud Carlos III (ISCIII). 2025-2027. IP: Carles Lerin Martinez.

SELECTED CLINICAL STUDIES

- A trial comparing the effect and safety of once weekly dosing of somapacitan with daily Norditropin® in children with growth hormone deficiency. [NN8640-4263]. Novo Nordisk Pharma, S.A. Phase III. 2020-2026. IP: Marta Ramon Krauel.
- A Phase 3, Randomized, Double-Blind, Placebo-Controlled, Four-Arm Parallel-Group Study of Setmelanotide in Patients with Specific Gene Defects in the Melanocortin-4 Receptor Pathway. [RM-493-035]. RHYTHM Pharmaceuticals, Inc. Phase III. 2022. IP: Marta Ramon Krauel.
- A study comparing the effect and safety of once weekly dosing of somapacitan with daily Norditropin® as well as evaluating long-term safety of somapacitan in a basket study design in children with short stature either born small for gestational age or with Turner syndrome, Noonan syndrome, or idiopathic short stature. [NN8640-4467]. Novo Nordisk A/S. Phase III. 2022. IP: Montserrat Amat Bou.

Adipose Tissue Molecular Biology and Gene Regulation and Associated Disorders

Towards the identification of molecular determinants of metabolic health

Francesc Villarroya Gombau, PhD



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Mercedes Morales Rueda

10 Publications

Impact factor	74
average Impact Factor	7,4
Publications in 1st quartile.....	100%
Publications in 1st decile.....	30%
Leadership	50%

Our team is a basic and translational research group focused on understanding the molecular and physiological mechanisms that regulate energy metabolism and their links to human disease. We investigate the molecular pathways governing adipose, cardiac, and hepatic function, and how these contribute to systemic metabolism and related disorders. To achieve this, we develop and analyze experimental models at multiple levels, including subcellular, cellular, and whole-animal systems, and study biological samples from patients with obesity, diabetes, cardiac dysfunction, lipodystrophy, and other metabolic diseases.

ACHIEVEMENTS 2025

We have identified acyl-CoA-binding protein (ACBP/DBI) as a novel regulator of adipose tissue plasticity in the context of obesogenesis. In addition, we have demonstrated a key role for chaperone-mediated autophagy in the regulation of energy expenditure and brown adipose tissue activity, with important implications for metabolic dysfunction during aging. We also identified brown adipose tissue as a previously unrecognized target of the anti-diabetes/obesity drug tirzepatide. Furthermore, we have advanced the assessment of several circulating biomarkers associated with lipodystrophy and metabolic dysfunction in pediatric populations.

FUTURE CHALLENGES

We aim to identify the key intracellular and secret factors in adipose tissues and the heart that are essential for healthy function, and to determine how their dysregulation contributes to cardiometabolic disease. In addition, we seek to achieve a comprehensive characterization of the brown adipose tissue secretome and to define its components. These objectives will be pursued through the study of cellular and animal models, complemented by the analysis of human samples. Particular emphasis will be placed on elucidating the role of brown adipose tissue and its secretome in early life, and on understanding how alterations in these systems influence infantile and long-term cardiometabolic health, including susceptibility to conditions such as obesity and type 2 diabetes.

SELECTED PUBLICATIONS

- Villarroya F, Peyrou M, Giralts M. Adipose Tissue, at the Core of the Action of Incretin and Glucagon-Based Anti-Obesity Drugs. *Curr. Obes. Rep.* 2025;14(1):67-67. IF:11,000. [Q1].
- Mestres A, Quesada T, Blasco A, Gavalda A, Godoy FJ, Cereijo R et al. Chaperone-mediated autophagy controls brown adipose tissue thermogenic activity. *Sci. Adv.* 2025;11(44). IF:12,500. [Q1].
- Blasco A, Quesada T, Mestres A, Villarroya J, Godoy FJ, Cereijo R et al. Acyl CoA-binding protein in brown adipose tissue acts as a negative regulator of adaptive thermogenesis. *Mol. Metab.* 2025;96:102153-102153. IF:6,600. [Q1].
- Díaz M, Quesada T, Villarroya F, Casano P, López A, de Zegher F et al. The Proteome of Exosomes at Birth Predicts Insulin Resistance, Adrenarche and Liver Fat in Childhood. *Int. J. Mol. Sci.* 2025;26(4). IF:4,900. [Q1].

Neonatology Research Group (GReN)

Shaping the Future of Neonatal Care through Multidisciplinary Research

Marta Camprubi Camprubi, MD, PhD



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Ruth Ibañez

RESEARCH COLLABORATOR

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11 Projects

COMPETITIVE: 9

NON COMPETITIVE: 2

5 Clinical Trial & Observational Studies

17 Publications

Impact factor **67**
average Impact Factor **3,9**
Publications in 1st quartile.... **59%**
Publications in 1st decile..... **18%**
Leadership **18%**

The Neonatology Research Group (GReN) studies how neonatal diseases and early-life exposures affect both immediate outcomes and long-term health, particularly in metabolism and neurodevelopment. Its research combines clinical data, advanced imaging and biomarkers to improve the care of vulnerable populations, including preterm infants and newborns with critical conditions such as congenital heart disease.

Key areas include neonatal nutrition, early brain injury, neurodevelopment, and the use of innovative technologies such as continuous neuromonitoring and artificial intelligence for risk prediction. Through multidisciplinary and translational research, including projects led by nursing professionals, GReN aims to improve diagnosis, treatment and family-centered care, ultimately promoting better health outcomes from birth into adulthood.

ACHIEVEMENTS 2025

In 2025, the Neonatology Research Group (GReN) strengthened its research activity through several competitive grants, reinforcing key areas such as neonatal nutrition, growth, microbiota, and their long-term impact on health. New research lines in respiratory disease and prematurity were launched, incorporating innovative tools such as lung MRI to improve the assessment of pulmonary development.

In critical care and neurodevelopment, the group advanced projects focused on prognostic biomarkers, artificial intelligence-based risk prediction, and novel neuromonitoring technologies. GReN also initiated a new research line on language acquisition in children with congenital heart disease, further expanding its focus on long-term neurodevelopmental outcomes. These achievements reflect the group's commitment to innovative and translational neonatal research.

FUTURE CHALLENGES

GReN aims to advance precision neonatal care through multidisciplinary and translational research. Key priorities include developing personalized nutrition strategies by integrating clinical, metabolic and microbiota data, as well as expanding the study of microbiota in hospitalized neonates to better understand its role in health and disease.

The group will also strengthen research in chronic lung disease, neuromonitoring and neurodevelopment through advanced imaging, novel biomarkers and artificial intelligence-based predictive models. Special attention will be given to congenital heart disease, promoting clinical decision-support tools and structured follow-up programs to improve long-term neurodevelopmental outcomes.

SELECTED PUBLICATIONS

- Balcells C, Aldecoa V, Borràs C, López M, Valls A, Batllori M et al. Intestinal Biomarkers in Preterm

Infants: Influence of Mother's Own Milk on Fecal Calprotectin and of Gestational Age on IFABP Concentrations. *Nutrients*. 2025;17(13). IF:5,000. [Q1].

- Ten JA, van den Bosch GE, Allegaert K, Bhatt A, Brindley N, Byrne D et al. Pain management in preterm infants with necrotizing enterocolitis: an international expert consensus statement. *Eur. J. Pediatr*. 2025;184(6):342-342. IF:2,600. [Q1].
- Ajanovic S, Jobst B, Jiménez J, Quesada R, Santos F, Carandell F et al. Non-invasive meningitis screening in neonates and infants: multicentre international study. *Pediatr. Res*. 2025. IF:3,100. [Q1].
- Izquierdo M, García E, Balcells C, Hurtado B, Inarejos E, Iglesias I. Clinical and ultrasound assessment of body composition in preterm infants at discharge: an observational study. *BMJ Paediatr. Open*. 2025;9(1). IF:2,300. [Q2].

SELECTED PROJECTS

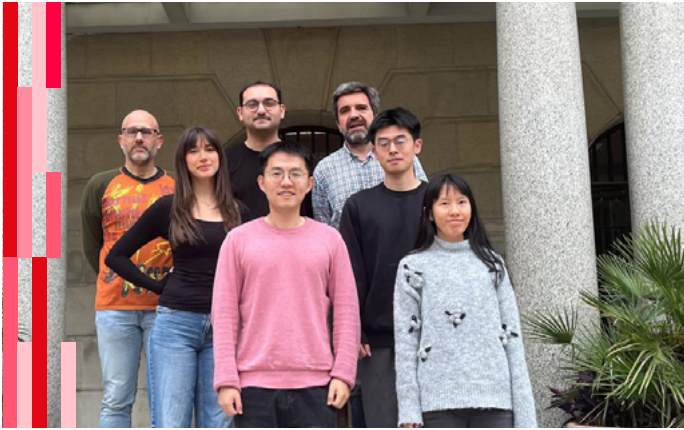
- Psicopatología y Cardiopatía Congénita: Desarrollo de algoritmos de predicción mediante el uso de Inteligencia Artificial. (PCP00424). Fundación Alicia Koplowitz. 2024-2026. IP: Marta Camprubi Camprubi.
- Score de daño cerebral quirúrgico para recién nacidos con cardiopatía congénita utilizando herramientas de inteligencia artificial. (PCP00455). Federación Española de Enfermedades Raras (FEDER). 2025. IP: Marta Camprubi Camprubi.
- Impacte de la suplementació amb probiòtics en el desenvolupament de la microbiota intestinal, el creixement i la salut del nadó prematur. (PFNR0206). Provincia San Juan de Dios de España. 2024-2026. IP: Montserrat Izquierdo Renau.

SELECTED CLINICAL STUDIES

- Eficacia y seguridad de la administración de budesonida con surfactante pulmonar por vía endotraqueal en la prevención de displasia broncopulmonar del recién nacido prematuro ≤ 32 semanas de edad gestacional: ensayo clínico aleatorizado multicéntrico (BuS). (BuS2020). Fundació de Recerca Clínic Barcelona-IDIBAPS. Phase III. 2023. IP: Cristina Carrasco Carrasco.
- Imágenes biofotónicas del cerebro infantil, el eslabón perdido entre el daño cerebral celular y la unidad neurovascular durante la enfermedad aguda. (FSJD-TinyBrains-2022). Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 2023. IP: Marta Camprubi Camprubi.
- Estudio piloto de validación de la adquisición de imagen de resonancia magnética pulmonar. (HCB/2022/0933). Hospital Clínic Barcelona. 2023. IP: Cristina Carrasco Carrasco.

Pharmacological Tragetts in Inflammation and Metabolic Diseases

PharmaMet
Manuel Vázquez Carrera, PhD



- RESEARCHER**
F. Xavier Palomer Tarridas
- PREDOCTORAL RESEARCHER**
Wang Jerry
Wu Siyuan
Tang Xiaoman

7 Publications

Impact factor 55

average Impact Factor 7,8

Publications in 1st quartile.....100%

Publications in 1st decile..... 14%

Leadership..... 43%

The group’s research lines focus on the study of insulin resistance, a key factor in the development of various metabolic diseases and closely associated with chronic inflammation. This process plays a determining role in the development of pathologies such as metabolic dysfunction–associated steatotic liver disease (MASLD/MASH) and diabetic cardiomyopathy, with a significant impact on cardiovascular and hepatic health. The group’s research is aimed at identifying new pharmacological targets with the goal of improving the treatment of diabetes mellitus and its associated complications. The group’s areas of expertise include cell culture (adipocytes, hepatocytes, myocytes, and cardiomyocytes), as well as molecular biology and biochemical techniques such as RT-PCR, Western blot, co-immunoprecipitation, and EMSA, in addition to the use of animal models of obesity, type 1 and type 2 diabetes, MASLD, MASH, and diabetic cardiomyopathy.

ACHIEVEMENTS 2025

During 2025, our research group has made significant contributions to the field of metabolic and cardiovascular disease. We identified a novel mechanism by which palmitate induces insulin resistance in skeletal muscle through reduced nuclear GDF15 levels, leading to activation of the SMAD3–PAI-1 pathway and impaired insulin signaling. In parallel, we advanced the understanding of hepatic fibrosis by highlighting AMP-activated protein kinase (AMPK) as a key regulator of fibrogenesis and a promising therapeutic target for metabolic dysfunction-associated steatotic liver disease (MASLD), providing a comprehensive evaluation of emerging AMPK-based therapies and translational challenges. Finally, we demonstrated a critical cardioprotective role for GADD45A, showing that its deficiency promotes cardiac inflammation, fibrosis, apoptosis, and hypertrophy via activation of AP-1, NF-κB, and STAT3 pathways, while its overexpression mitigates these effects. Together, these findings identify novel molecular mechanisms and therapeutic targets for metabolic and cardiovascular complications.

FUTURE CHALLENGES

During the following years, our research will focus on uncovering novel mechanisms by which GDF15 regulates hepatic gluconeogenesis. In particular, we will investigate the role of GDF15 in the gut and how alterations in the gut–liver axis may influence hepatic glucose production, especially in Gdf15-deficient mice. In parallel, we will explore the potential synergistic effects of combining two approved drugs used in the treatment of insulin resistance and metabolic dysfunction-associated steatotic liver disease (MASLD), with the aim of improving therapeutic outcomes. Finally,

we will examine the role of the transcription factor ATF3 in the development of diabetic cardiomyopathy, seeking to better understand its contribution to cardiac dysfunction and its potential as a therapeutic target.

SELECTED PUBLICATIONS

- Palomer FX, Wang JR, Escalona C, Wu S, Wahli W, Vazquez M. Targeting AMPK as a potential treatment for hepatic fibrosis in MASLD. Trends Pharmacol. Sci. 2025;46(6):551-566. IF:19,900. [Q1].
- Rostami A, Palomer X, Pizarro J, Peña L, Matias R, Montori M et al. GADD45A suppression contributes to cardiac remodeling by promoting inflammation, fibrosis and hypertrophy. Cell. Mol. Life Sci. 2025;82(1):189-189. IF:6,200. [Q1].
- Montori M, Barroso E, Jurado J, Peyman M, Wahli W, Palomer FX et al. Palmitate potentiates the SMAD3–PAI-1 pathway by reducing nuclear GDF15 levels. Cell. Mol. Life Sci. 2025;82(1):43-43. IF:6,200. [Q1].
- Girona J, Guardiola M, Barroso E, García M, Ibarretxe D, Plana N et al. GDF15 Circulating Levels Are Associated with Metabolic-Associated Liver Injury and Atherosclerotic Cardiovascular Disease. Int. J. Mol. Sci. 2025;26(5). IF:4,900. [Q1].

Allergic Diseases in Childhood and Adolescence

Advancing in the research of allergic diseases from infants to adolescents

Montserrat Alvaro Lozano, MD, PhD



RESEARCHER

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RESEARCH MANAGEMENT

Silvia del Valle Fernandez

9 Projects

COMPETITIVE: 7

NON COMPETITIVE: 2

17 Clinical Trial & Observational Studies

14 Publications

Impact factor	75
average Impact Factor	5,4
Publications in 1st quartile....	50%
Publications in 1st decile.....	29%
Leadership	14%

During 2025 our research team has participated in many clinical trials around food allergy, respiratory allergy, immunotherapy and chronic urticaria showing the great interest of industry in our participation in international research. Other studies have been developed by us in the same fields and in relation with drug allergy and atopic dermatitis. We are engaged with SEICAP [Spanish Pediatric Society of Allergy, Asthma and Clinical Immunology] participating in multicentric studies in the field of drug and food allergy. Our important commitment with EAACI (European Academy of Allergology and clinical Immunology) has made us participate in some Task Forces with the involvement of some Allergy Departments of other countries. We are conducting some studies for which we have been awarded with grants.

Our group and their components, in association with other national and international partners, has also published some works in well-known and indexed scientific magazines.

ACHIEVEMENTS 2025

One of our components is part of the EAACI "Quality Committee" being involved in the research and support of centres from an international perspective.

Within our teaching activities, we are conducting a "Universitat de Barcelona" Master in Pediatric Allergology and Clinical Immunology and we are an accredited Centre for the training in "European Pediatric Allergist" by EAACI.

One of our main areas of interest is food allergy and the development of new treatments which are important to protect children from anaphylaxis and death. The leader of this research group is one of the authors for the most important international guidelines in the diagnosis and treatment of food allergies. She has also been Chair for the international "Pediatric Allergy and Asthma Meeting" (PAAM) in 2025 which was held in our country.

Our group and their components have also published some works in well-known and indexed scientific magazines.

FUTURE CHALLENGES

We are driving to achieve even more participation in international trials and in conducting our own ones to add knowledge and experience in pediatric allergology. The good relationship with the international scientific community will enhance our results.

Our group has incorporated three new members who will help in our research tasks, although from the basic perspective one of them is an immunologist developing her tasks within the lab frame.

Our group will strengthen during the next months, and we'll be working to carry on the projects we have already started and to achieve more national and international research goals, gaining visibility in the international community.

SELECTED PUBLICATIONS

- Santos AF, Riggioni C, Agache I, Akdis CA, Akdis M, Alvarez A et al. EAACI guidelines on the management of IgE-mediated food allergy. Allergy. 2025;80(1):14-36. IF:12,000. [Q1].
- Dribin TE, Muraro A, Camargo JR, Turner PJ, Wang J, Roberts G et al. Anaphylaxis definition, overview, and clinical support tool: 2024 consensus report-a GA³LEN project. J. Allergy Clin. Immunol. 2025;156(2). IF:11,200. [Q1].
- Rodríguez Del Río P, Riggioni C, Deschildre A, Greenhawt M, Schnadt S, Arasi S et al. Patient-Reported Outcomes on Food Immunotherapy Differ Between Countries and Foods: Results From CO-FAITH. J. Allergy Clin. Immunol.-Pract. 2025;13(8). IF:6,600. [Q1].

- Domínguez O, Elisabet C, Riggioni C, Salamanca G, Jiménez R, Lozano J et al. Baked Milk Modulates Cow's Milk Allergy in Children: Impact of Phenotype, Age, and Intake. J. Allergy Clin. Immunol.-Pract. 2025;13(9). IF:6,600. [Q1].

SELECTED PROJECTS

- Genetics of Food Allergy Barcelona. [PCP00297]. Max Delbrück Centrum für Molekulare Medizin Berlin-Buch. 2021-2025. IP: Montserrat Alvaro Lozano.
- Tratamiento proactivo mediante inmunomodulación precoz, con dosis baja y fija de proteínas de leche de vaca fermentada, en pacientes menores de 5 años, con alergia a proteínas de leche de vaca. [PCP00425]. Sociedad Española de Inmunología Clínica, Alergia y Asma Pediátrica. 2023-2026. IP: Olga Domínguez Sánchez.
- Caracterización Clínica y Analítica de Pacientes Pediátricos Diagnosticados de Urticaria Crónica. [PCP00452]. Sociedad Española de Inmunología Clínica, Alergia y Asma Pediátrica. 2025-2027. IP: Montserrat Alvaro Lozano.

SELECTED CLINICAL STUDIES

- A double-blind, randomized, placebo-controlled trial to evaluate the efficacy, pharmacokinetics and safety of remibrutinib (LOU064) for 24 weeks in adolescents from 12 to less than 18 years of age with chronic spontaneous urticaria inadequately controlled by H1-antihistamines followed by an optional open-label extension. [CLOU064F12301]. Novartis Farmacéutica, S.A. Phase III. 2023. IP: Montserrat Alvaro Lozano.
- A three-year, multi-center, double-blind, extension study to evaluate the long-term safety and efficacy of ligelizumab in patients who completed ligelizumab's Phase III studies in food allergy. [CQ-GE031612303B]. Novartis Farmacéutica, S.A. Phase III. 2023-2025. IP: Montserrat Alvaro Lozano.
- A 52-week, randomized, double-blind, double dummy multinational, multicenter, active controlled, 2-arm parallel group trial comparing CHF 5993 100/6/12.5 µg pMDI to Seretide® Evohaler® 125/25 µg pMDI in adolescent subjects with uncontrolled asthma on medium doses of inhaled corticosteroids. [CLI-05993AA5-06]. Chiesi España, S.A. Phase III. 2025. IP: Jaime Lozano Blasco.

Study of Immune Dysfunction Diseases in Pediatrics (GEMDIP)

Pediatric Precision Medicine in Autoinflammation, Inborn Errors of Immunity and Advanced Therapies

**Jordi Antón López, MD, PhD and
Laia Alsina Manrique de Lara, MD, PhD**



RESEARCHER

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32 Projects

COMPETITIVE: **21**
NON COMPETITIVE: **11**

35 Clinical Trial & Observational Studies

28 Publications

Impact factor **136**
average Impact Factor **4,8**
Publications in 1st quartile..... **64%**
Publications in 1st decile..... **7%**
Leadership..... **29%**

GEMDIP is a clinical-translational research group focused on paediatric immune dysfunction disorders, including inborn errors of immunity, immune dysregulation, autoimmunity, autoinflammation and secondary immunodeficiencies. Through the integration of patient cohorts, clinical trials, genomics and functional immunology, the group aims to reduce diagnostic delays and improve targeted therapies for rare diseases.

ACHIEVEMENTS 2025

During 2025, GEMDIP strengthened its position as a leading group in paediatric immune dysfunction through several key milestones: the defence of two PhD theses by Daniel Acevedo and Rosa María Pino-Ramírez, the launch of the NEWborn-IMM-PACT program, the initiation of the independent CART19-ARI-0001 trial in paediatric autoimmune diseases, and the consolidation of CERTERA as a strategic platform for ATMPs and gene therapy.

The group maintained a highly active portfolio of clinical trials and multicentre studies, with significant participation in major European initiatives such as EULAR, Eurofever, and ERN-RITA. In parallel, GEMDIP continued implementing harmonized immunomonitoring and precision medicine approaches in autoinflammation, immunodeficiencies, and complex autoimmune diseases.

FUTURE CHALLENGES

GEMDIP's main challenges are to consolidate a precision medicine pathway for rare paediatric immune disorders by reducing diagnostic times, integrating biomarkers and functional assays into routine care, and generating robust evidence for targeted therapies. A key priority is advancing the implementation of gene therapy and other advanced therapies for severe immunodeficiencies.

The group also aims to strengthen knowledge transfer and standardization, enabling the adoption of its protocols and clinical tools by other centres. At the same time, GEMDIP seeks sustainable growth by attracting and training new talent, supporting emerging leaders, and reinforcing its position as an international reference centre in paediatric immune dysfunction.

SELECTED PUBLICATIONS

- Courel J, Prieto R, Briones E, Ariza P, Angevare S, Anton J et al. Systematic literature review informing the EULAR points to consider for patient education in physical activity and self-management of pain during transitional care. *Ann. Rheum. Dis.* 2025;84(12):2115-2127. IF:20,600. [Q1].
- Bustaffa M, Bella S, Bayindir Y, Amaryan G, Gallizzi R, Papadopoulos E et al. Long-term efficacy and safety of colchicine and anti-IL-1 blockers in FMF: results from the Eurofever multicenter observational study. *J. Autoimmun.* 2025;153:103421-103421. IF:7,000. [Q1].
- Neth O, Alsina L, Rivière JG, López E, Seoane ME, González LI et al. Spanish Consensus on the Diagnosis and Management of Patients With Activated PI3K Delta Syndrome (APDS). *J. Investig Allergol Clin Immunol.* 2025;35(2):87-102. IF:6,700. [Q1].

- Luo Y, Argüello G, Acevedo D, Jou C, Codina A, Márquez JM et al. Age-Related Patterns of Type II Interferon Immunity: Implications for Intramacrophagic Infections and MSMD Diagnosis During Childhood. *J. Clin. Immunol.* 2025;46(1):13-13. IF:5,700. [Q1].

SELECTED PROJECTS

- Consorcio estatal en red para el desarrollo de medicamentos de terapias avanzadas (CERTERA). [PFIS0371]. Instituto de Salud Carlos III [ISCIII]. 2024-2026. IP: Alessandra Magnani.
- Impacto de la exposición intrauterina a fármacos inmunomoduladores en el desarrollo del sistema inmunológico del recién nacido: estudios in vivo y desarrollo de organoides. Estudio NEWborn-IMM-PACT. [PFIS0399]. Instituto de Salud Carlos III [ISCIII]. 2025-2027. IP: Laia Alsina Manrique de Lara.
- Ensayo clínico fase Ib multicéntrico, exploratorio, abierto, no-aleatorizado y prospectivo, basket trial, con células CAR-T anti-CD19 (ARI-0001) en pacientes pediátricos con enfermedades autoinmunes sistémicas. [PFIS0424]. Instituto de Salud Carlos III [ISCIII]. 2026-2029. IP: Jordi Antón López; Susana Rives Solà.

SELECTED CLINICAL STUDIES

- A Phase 3, Randomized, Double-Blind, Placebo-Controlled, Multicenter Study of Mavoxiafor in Patients with WHIM Syndrome with Open-Label Extension. [X4P-001-103]. X4 Pharmaceuticals Inc. Phase III. 2020-2026. IP: Laia Alsina Manrique de Lara.
- Multi-centre, randomised, open-label, blinded endpoint assessed, trial of corticosteroids plus intravenous immunoglobulin (IVIG) and aspirin, versus IVIG and aspirin for prevention of coronary artery aneurysms in Kawasaki disease. [KD-CAAP]. University College London. Phase III. 2022-2025. IP: Jordi Antón López.
- A Phase 2, Multicenter, Open-Label Study of CC-97540 [BMS-986353], CD19-Targeted NEXT CAR T Cells, in Participants with Active SLE (Including Lupus Nephritis) with Inadequate Response to Glucocorticoids and at Least 2 Immunosuppressants (Breakfree-SLE). [CA0611011]. Bristol-Myers Squibb, S.A.U. Phase II. 2025. IP: Jordi Antón López.

Infectious Diseases and Microbiome

Bridging microbiome science and infectious diseases research to improve health in vulnerable populations.

Carmen Muñoz Almagro, MD, PhD



RESEARCHER

Aleix Soler-García
Antoni Noguera Julian
Clàudia Fortuny Guasch
Cristian Launes Montaña
Desiree Henares Bonilla
Juan José García García
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RESEARCH TECHNICIAN

Amaresh Pérez-Argüello

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Alejandro Pérez Requena
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María Cussó Bordes
Marina Pons

19 Projects

COMPETITIVE: 15
NON COMPETITIVE: 4

12 Clinical Trial & Observational Studies

45 Publications

Impact factor	238
average Impact Factor	5,3
Publications in 1st quartile.....	49%
Publications in 1st decile.....	24%
Leadership	24%

The Infectious Diseases and Microbiome Research Group investigates infectious diseases through a clinical-translational approach that integrates clinical, molecular and epidemiological research with diagnostic innovation and microbiome science. Its work is focused on improving the prevention, diag-

nosis and management of infections, particularly in paediatric populations.

ACHIEVEMENTS 2025

In 2025, the Infectious Diseases and Microbiome Research Group strengthened its translational research in infectious diseases, microbiome science and precision medicine in vulnerable paediatric populations. A major achievement was the launch of a new research line on microbiota and cancer, supported by two competitive projects focused on the role of the microbiome in stem cell transplantation outcomes and response to immunotherapy in children with neuroblastoma.

The group also advanced the use of next-generation sequencing for epidemiological surveillance, vaccine evaluation and the diagnosis of bacterial and viral infections. In addition, significant progress was made in developing non-invasive diagnostic approaches for paediatric tuberculosis, further enhancing the group's impact on clinical care and public health.

FUTURE CHALLENGES

The Infectious Diseases and Microbiome Research Group aims to advance precision medicine approaches for the prevention, diagnosis and management of infectious complications in vulnerable paediatric patients. A key priority is the expansion of its microbiota and cancer research line, integrating microbiome profiling into risk assessment and therapeutic decision-making in oncology and transplantation.

The group will further develop next-generation sequencing, bioinformatics and innovative diagnostic tools to improve molecular surveillance, vaccine evaluation and the diagnosis of infectious diseases. Through multidisciplinary collaboration, artificial intelligence and clinical integration, it seeks to translate research into actionable knowledge that improves patient outcomes and quality of life.

SELECTED PUBLICATIONS

- Shaw D, Torreblanca RA, Amin Z, Bautista A, Bennett D, Broughton K et al. The importance of microbiology reference laboratories and adequate funding for infectious disease surveillance. *Lancet Digit Health*. 2025;7(4):275-281. IF:24,100. [Q1].
- Chen J, Deng S, Xu X, Chen S, Abo YN, Bassat Q et al. Regional and type-specific variations in the global seasonality of human parainfluenza viruses and the influence of climatic factors: a systematic review and meta-analysis. *Lancet Glob Health*. 2025;13(8):1425-1435. IF:18,000. [Q1].
- Dietl B, Henares D, Cuchí E, Blanco M, Rajadell M, Brotons P et al. Differential nasopharyngeal

microbiota patterns: A comparative study of pneumococcal pneumonia, COVID-19, and healthy adults. *J. Infect*. 2025;91(3):106589-106589. IF:11,900. [Q1].

- Aina P, Baquero F, Méndez A, Del Rosal T, Rodríguez P, Toro C et al. A 28-Year Multicenter Cohort Study of Nontuberculous Mycobacterial Lymphadenitis in Children, Spain. *Emerg. Infect. Dis*. 2025;31(3):536-546. IF:6,600. [Q1].

SELECTED PROJECTS

- Nuevos biomarcadores para el diagnóstico y la monitorización de la respuesta al tratamiento de la tuberculosis pediátrica. (PFIS0356). Instituto de Salud Carlos III (ISCIII). 2023-2026. IP: Antoni Noguera Julian.
- Tendencia actual de la enfermedad neumocócica invasiva pediátrica (ENI) y su impacto previsible en la introducción de nuevas vacunas conjugadas. (PFIS0372). Instituto de Salud Carlos III (ISCIII). 2024-2026. IP: María Fernández de Sevilla Estrach.
- Estudio de la capacidad de resiliencia a largo y corto plazo de la microbiota nasofaríngea y su implicación en el paso de la colonización a enfermedad invasiva por bacterias patobiontes. (PFIS0385). Instituto de Salud Carlos III (ISCIII). 2024-2026. IP: Carmen Muñoz Almagro.

SELECTED CLINICAL STUDIES

- A Phase 3, open-label, single-arm, repeated-dose study to evaluate the safety and tolerability, pharmacokinetics, and antiviral activity of maribavir for the treatment of cytomegalovirus (CMV) infection in children and adolescents who have received a hematopoietic stem cell transplant (HSCT) or a solid organ transplant (SOT). (TAK-620-2004). Takeda Farmacéutica España S.A. Phase III. 2022. IP: Clàudia Fortuny Guasch.
- A Phase 2a Multicenter, Observer-Blinded, Randomized 2-Arm Study to Investigate Pharmacokinetics, Safety, Tolerability and Efficacy of Intravenous Aztreonam-Avibactam ± Metronidazole Compared to Best Available Therapy (BAT) in Pediatric Participants 9 Months to Less Than 18 Years of Age with Serious Gram-Negative Bacterial Infections Including Complicated Intra-Abdominal Infection. (C3601008). Pfizer, S.L.U. Phase II. 2023. IP: Eneritz Velasco.
- A Phase 3, Randomized, Double-Blind Study to Evaluate the Safety, Tolerability, and Immunogenicity of V116 in Children and Adolescents with Increased Risk of Pneumococcal Disease. (V116-013). Merck Sharp & Dohme LLC. Phase III. 2024-2025. IP: Antoni Noguera Julian.

Gut Microbiota

Extracellular vesicles at the core of microbiota-host interactions

Laura Baldomà Llavínés, PhD



RESEARCHER

Josefa Badia Palacin

POSTDOCTORAL RESEARCHER

Sergio Martínez Ruiz

3 Publications

Impact factor	16
average Impact Factor	5,4
Publications in 1st quartile	100%
Publications in 1st decile	0%
Leadership	33%

Research into the gut microbiome is essential for advancing our understanding of human health. Many microbiota-host interactions occur indirectly through secreted factors, among which extracellular vesicles (EVs) released by gut microbes play a central role. These vesicles act as carriers of functional bacterial molecules, enabling communication with distant cells and emerging as key mediators in gut-organ signaling networks. In this context, our group has pioneered the study of EVs derived from probiotic and commensal *Escherichia coli* strains. Our work has expanded current knowledge of how beneficial gut microbes support intestinal homeostasis, particularly through the regulation of epithelial barrier integrity and immune responses. The mechanisms triggered by microbial EVs are strain-specific and involve, among others, modulation of TLR signaling pathways and microRNA expression. Research on this field is essential not only for deepening our understanding of the complex microbiota-host communication network but also for laying the groundwork for innovative biotherapies, in particular, postbiotic strategies based on microbiota-derived EVs.

ACHIEVEMENTS 2025

We investigated how microbiota-derived EVs influence the gut-liver axis under physiological conditions. The liver is directly connected to the gut via the portal circulation; it is particularly exposed to gut-derived signals. While previous studies have focused on disease models, little was known about the role of EVs in healthy states. Using healthy neonatal rats, we demonstrated that EVs from probiotic and commensal *Escherichia coli* strains beneficially modulate liver function through multiple mechanisms. In the gut, EVs reduce intestinal permeability, limiting the translocation of harmful compounds. After reaching the liver, they promote antioxidant and anti-lipogenic gene expression profiles, protecting against oxidative stress and metabolic imbalance. EVs from the probiotic strain also exert anti-inflammatory effects. These findings were confirmed in HepG2 cells, showing that direct EV exposure reproduces these benefits. Our studies identify gut microbiota-derived EVs as physiological regulators of liver function and support their potential as postbiotic agents for preventing chronic liver diseases characterized by inflammation, steatosis and oxidative stress-induced injury.

FUTURE CHALLENGES

Building on our previous findings, we aim to explore novel beneficial effects of microbiota- and probiotic-derived EVs on extraintestinal tissues, with a view toward their application in preventing or mitigating highly prevalent leaky gut-associated diseases, including chronic liver disorders and neurological dysfunctions. First, we will evaluate the protective effects of microbiota-derived EVs against liver dysfunction and injury using cellular models of both alcoholic and non-alcoholic liver disease. In parallel, we will investigate their impact on brain function within the framework of the gut-brain axis. Preliminary data from iPSC-derived neurons indicate that EVs from beneficial commensal *Escherichia coli* strains promote neuronal development, as evidenced by increased nuclear size and enhanced dendritic branching. We will further elucidate the underlying regulatory mechanisms by analyzing key gene and protein expression profiles in this model. These findings will be validated in an ex vivo model using primary neuronal and glial cultures derived from neonatal mouse brains.

SELECTED PUBLICATIONS

- Bonilla L, Espina M, García ML, Baldoma L, Badia J, Gliszczynska A et al. Combination of Apigenin and Melatonin with nanostructured lipid carriers as anti-inflammatory ocular treatment. *Int. J. Pharm.* 2025;670:125160-125160. IF:5,200. (Q1).
- Martínez S, Badia J, Baldoma L. Extracellular Vesicles from *Escherichia coli* Strains of the Gut Microbiota Trigger Hepatic Antioxidant and Anti-Lipogenic Effects via the Gut-Liver Axis in Healthy Neonatal Rats. *Nutrients.* 2025;17(19):3066. IF:5,000. (Q1).
- Leyton A, Fernández I, Rodríguez MJ, Català C, Casadó S, Martín NB et al. The OT-II model reveals dual in vitro and in vivo immunomodulatory properties of CD6 in T cell activation. *Front. Immunol.* 2025;16:1571590-1571590. IF:5,900. (Q1).

Environment and Complications during Pregnancy

From knowledge to prevention: reducing environmental impact and exposure to toxins during pregnancy.

Maria Dolores Gómez Roig, MD, PhD



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Patricia Ferrer Aguilar
Sharon Santos Segura

9 Projects

COMPETITIVE: 7
NON COMPETITIVE: 2

4 Clinical Trial & Observational Studies

27 Publications

Impact factor	183
average Impact Factor	6,8
Publications in 1st quartile....	85%
Publications in 1st decile.....	59%
Leadership	11%

The Environment and Complications during Pregnancy group focuses its research on investigating how various environmental factors influence maternal and child health. Its main objectives include analysing exposure to pollutants, substance use (such as tobacco, alcohol and drugs) and lifestyle habits during pregnancy, and assessing their impact on obstetric, perinatal and postnatal outcomes.

With this multidisciplinary approach, we aim to identify preventable risks and promote effective interventions that improve the health of the mother and newborn.

Through research, the team aims to better understand how the environment and the use of toxic substances influence pregnancy.

Furthermore, the group aims to generate scientific knowledge that contributes to the design of better public health policies and prevention programmes, promoting safer pregnancies and fostering healthy development in the early stages of life.

ACHIEVEMENTS 2025

The Environment and Complications during Pregnancy group has established a strong scientific track record, with 30 publications in international journals and participation in more than 10 R&D projects. Research has focused on prenatal alcohol exposure, placental function, neurological development, the environmental exposome and pollution.

The EMOTIVE+ and PREALGEN studies have developed innovative strategies for the objective detection of alcohol exposure using biomarkers, as well as for the early identification of structural brain alterations and their impact on neurological development. PREALGEN also contributes to the characterisation of genetic and epigenetic susceptibility profiles, integrating molecular data and neurobehavioural phenotypes for individualised risk stratification.

In parallel, the environmental exposome has improved our understanding of the effects of multiple combined environmental factors, including chemical pollutants and the urban environment, from the earliest stages of life, through projects such as ATHLETE and the Exposome and Sexual and Reproductive Health study.

FUTURE CHALLENGES

We will quantify prenatal alcohol exposure using objective biomarkers (ethyl glucuronide in maternal hair and phosphatidylethanolamine in maternal and umbilical cord blood).

We will assess molecular changes in the placenta and umbilical cord blood (telomere length, mitochondrial DNA content and DNA methylation).

We will analyse the association between molecular changes, placental function and postnatal neurodevelopment.

We will characterise the correlation between molecular markers in the placenta and umbilical cord blood and assess the potential of these markers as predictive biomarkers of the impact of prenatal alcohol consumption on foetal and neonatal health.

We will study the association between the exposome (alcohol consumption, tobacco use, diet, endocrine disruptors and air pollution) and sexual and reproductive health in young adults (age 16–24). We will investigate the association between the exposome and pubertal development, ovarian function, the most common gynaecological conditions, and methylation patterns of imprinted genes in male sperm.

SELECTED PUBLICATIONS

- Gómez L, Zhao Y, Rivas I, Eixarch E, Domínguez C, Galmes T et al. Air pollution and fetal brain morphological development: a prospective cohort study. *Lancet Planet. Health.* 2025;9(6):480–490. IF:21,600. (Q1).
- Rolland M, Bustamante M, Jedynak P, Thomsen C, Sakhi AK, Foraster M et al. Prenatal phenol exposure and child behaviour: insights into the hypothalamic-pituitary-adrenal axis from two prospective mother-child cohorts. *Lancet Planet. Health.* 2025;9(12):101330–101330. IF:21,600. (Q1).

mic-pituitary-adrenal axis from two prospective mother-child cohorts. *Lancet Planet. Health.* 2025;9(12):101330–101330. IF:21,600. (Q1).

- Jedynak P, Bustamante M, Rolland M, Mustieles V, Thomsen C, Sakhi AK et al. Prenatal Exposure to Synthetic Phenols Assessed in Multiple Urine Samples and Dysregulation of Steroid Hormone Homeostasis in Two European Cohorts. *Environ. Health Perspect.* 2025;133(5):57011–57011. IF:9,800. (Q1).

- Vieiros M, Almeida L, Serra M, Navarro E, Ramos A, Muñoz C et al. Effects of maternal drinking patterns and epigallocatechin-3-gallate treatment on behavioural and molecular outcomes in a mouse model of fetal alcohol spectrum disorders. *Biomed Pharmacother.* 2025;187:118138–118138. IF:7,500. (Q1).

SELECTED PROJECTS

- Consumo de alcohol prenatal, marcadores moleculares, y su repercusión en la función placentaria y el neurodesarrollo. [PFIS0387]. Instituto de Salud Carlos III [ISCIII]. 2024–2026. IP: Maria Dolores Gómez Roig.
- Spanish network in maternal, neonatal, child and developmental health research (RICORS-SAMID). [PFIS0411]. Instituto de Salud Carlos III [ISCIII]. 2025–2027. IP: Maria Dolores Gómez Roig.
- Impact of the environment (exposome) on sexual and reproductive health in a national multicenter birth cohort. [PFP00341]. Fundació La Marató de TV3. 2025–2028. IP: Maria Dolores Gómez Roig.

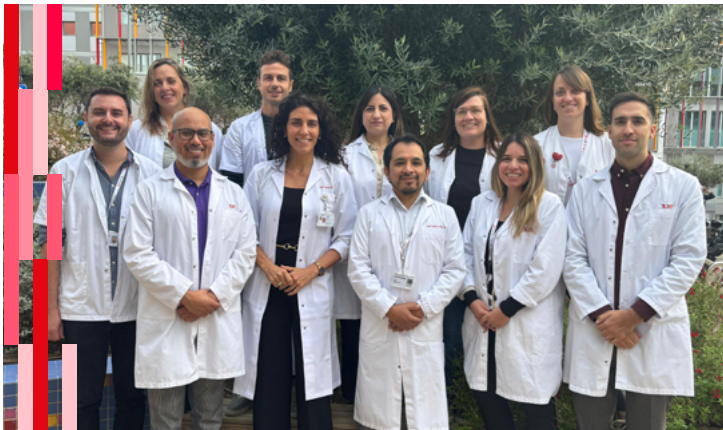
SELECTED CLINICAL STUDIES

- Optimización del manejo antenatal de mujeres con amenaza de parto pretérmino mediante modelos de predicción: estudio clínico randomizado multicéntrico abierto (OPTIM-PTL). Fundació de Recerca Clínica Barcelona-IDI-BAPS. Phase III. 2022. IP: Silvia Irena Ferrero Martínez.
- Balón de Cook versus dinoprostona vaginal para la inducción del parto a término en la restricción del crecimiento intrauterino (COLIGROW). Herriaz García Ignacio. 2023. IP: Eduarne Mazarico Gallego.
- Evaluación de la seguridad y la capacidad predictiva de parto prematuro del dispositivo de investigación clínica 'Cervisense TPTL': un estudio clínico internacional. Ultrasound-Innovation Medtech S.L. 2025. IP: Silvia Irena Ferrero Martínez.

Cardiovascular Diseases and Child Development

Cardiovascular Research for Children

Joan Sánchez de Toledo, MD, PhD and Georgia Sarquella Brugada, MD, PhD



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RESEARCH MANAGEMENT

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The group also investigates the impact of congenital and acquired heart disease on child development, with a focus on brain injury and long-term outcomes after cardiac surgery.

ACHIEVEMENTS 2025

In 2025, the group strengthened its position as a reference in paediatric cardiovascular research through competitive projects, scientific publications, technological innovation and participation in clinical guideline development. These activities enhanced both its scientific impact and translational capacity.

Key achievements included advances in neuro-monitoring, translational models and AI-based risk prediction for congenital and acquired cardiovascular diseases. The group also contributed to digital health solutions, value-based care models and international collaborative projects, while maintaining a strong commitment to researcher training and strategic partnerships with leading institutions.

FUTURE CHALLENGES

Over the coming years, the group aims to consolidate a fully integrated, life-course model of precision cardiovascular care for children and young adults.

Key priorities include advancing precision medicine strategies through the integration of multi-omics, clinical, and imaging data; strengthening early diagnosis and risk stratification; and expanding personalized therapeutic approaches.

Building on recent advances in neuromonitoring and experimental modeling, the group will further refine brain-heart protection strategies in congenital heart disease, with a focus on early detection of neurological vulnerability, risk-adapted follow-up, and multicenter validation of predictive tools.

Cross-cutting priorities include scaling digital and device-based innovations, embedding AI-supported decision-making into clinical workflows within robust governance frameworks, and reducing variability in care and outcomes across healthcare systems.

SELECTED PUBLICATIONS

- Lieve KV, van der Werf C, Kallas D, Denjoy I, Bos JM, Aiba T et al. Catecholaminergic polymorphic ventricular tachycardia mediated by ryanodine receptor 2: a validated risk stratification. Eur. Heart J. 2025. IF:35,700. [Q1].
- Martínez E, Greco A, César S, Díez C, Cruzalegui JC, Nuria E et al. Appropriate time interval to update ambiguous genetic diagnosis in inherited arrhythmogenic syndromes. iScience. 2025;28(5):112300-112300. IF:4,100. [Q1].

- Aurensanz E, García P, Gorostegui M, Rivera C, Escobar MC, Randanane P et al. Uncovering subclinical cardiotoxicity across chemotherapy phases in pediatric oncology. Front. Oncol. 2025;15:1623081-1623081. IF:3,300. [Q2].
- Grau E, Rubertiello C, Raquel L, Camprubí M, Sanchez J, Philip M et al. Parental Knowledge of Congenital Heart Disease: Insights from the Spanish Version of The Leuven Knowledge Questionnaire. Academic Journal of Pediatrics & Neonatology. 2025;15(5).

SELECTED PROJECTS

- UNCAN-Connect: Decentralized Collaborative Network for Advancing Cancer Research and Innovation. (PFE00144). European Commission (HORIZON-MISS-2024-CANCER-01). 2025-2030. IP: Joan Sánchez de Toledo.
- Nuevos dispositivos portátiles no invasivos para la rehabilitación cardíaca (Heart-Now). (PFP00364). Ministerio de Ciencia e Innovación. 2025-2028. IP: Joan Sánchez de Toledo.
- Identificación de predictores de arritmias cardíacas y muerte súbita en pacientes pediátricos afectos de enfermedades neuromusculares. (PFP00374). Generalitat de Catalunya. 2026-2028. IP: Georgia Sarquella Brugada.

SELECTED CLINICAL STUDIES

- A Phase 2/3 Randomized, Placebo-Controlled, Double-Blind Clinical Study to Evaluate the Efficacy, Safety, and Pharmacokinetics of Vericiguat in Pediatric Participants with Heart Failure due to Systemic Left Ventricular Systolic Dysfunction (VALOR). (MK-1242-036). Merck, Sharp & Dohme de España. S.A. Phase II/III. 2023. IP: Sergio César Díaz.
- A Randomized, Double-Blind, Placebo-Controlled Clinical Study to Evaluate Mavacamten in Adolescents (age 12 years to <18 years) with Symptomatic Obstructive Hypertrophic Cardiomyopathy. (CV027-010). Bristol-Myers Squibb, S.A.U. Phase III. 2024. IP: Georgia Sarquella Brugada.
- A Phase 3, Single Arm, Open-Label Extension Study to Evaluate the Safety of Finerenone in Addition to Standard of Care, in Pediatric Heart Failure Patients, from Birth to 18 Years of Age, with Left Ventricular Systolic Dysfunction (LVSD). [21467]. Bayer Pharma AG. Phase III. 2025. IP: Georgia Sarquella Brugada.

29 Projects
COMPETITIVE: **22**
NON COMPETITIVE: **7**

8 Clinical Trial & Observational Studies

21 Publications
Impact factor **118**
average Impact Factor **5,6**
Publications in 1st quartile..... **67%**
Publications in 1st decile..... **19%**
Leadership..... **24%**

We are a multidisciplinary research group focused on improving outcomes in paediatric cardiovascular diseases through integrated clinical, translational and digital approaches. Our research combines genetics, biomarkers and innovative technologies to advance the diagnosis and management of familial cardiomyopathies, paediatric arrhythmias, sudden cardiac death and rare cardioneuromuscular diseases.

Immune and Respiratory Dysfunction in the Critically ill Child

Scientific Excellence Improves Clinical Outcomes and the impact of diseases and critical interventions on child health.

Francisco José Cambra Lasaosa, MD, PhD



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The group has a high research capacity, with more than 30 active professionals, including medical and nursing staff, a consolidated scientific production and a relevant participation in competitive projects, clinical trials and national and international multi-center studies during the period 2020–2025. The research activity is carried out in close collaboration with other clinical areas of the hospital and with external institutions, reinforcing the translational nature of the research.

ACHIEVEMENTS 2025

In 2025, the group maintained a strong research activity, publishing 26 scientific articles, including 22 in high-impact journals and 21 in Q1 or Q2 publications. The team conducted three industry-sponsored phase III clinical trials focused on antivirals, antibiotics and sedatives in critically ill paediatric patients, while also participating in six competitive research projects, five of them as principal investigators.

The group reinforced its international leadership through the coordination of studies within the ESPNIC POKER network, including the ISHION study on infections in paediatric intensive care. It also strengthened collaborations with international research networks and leading institutions such as St. Jude Children's Research Hospital, promoting multicentre and high-impact research in complex paediatric populations.

FUTURE CHALLENGES

The group aims to develop and implement innovative technologies, including artificial intelligence, continuous neuromonitoring, advanced ultrasound and other non-invasive tools, to support clinical decision-making, enable early detection of complications and promote personalized care.

A key priority is to strengthen participation in national and international networks, multicentre clinical trials and competitive research projects, while fostering collaboration with hospitals, universities and technology centres. The group also seeks to integrate the perspectives of families into research and innovation, facilitate the translation of research findings into clinical practice and health policies, and consolidate its position as a leading translational research group in paediatric intensive care and neurodevelopment.

SELECTED PUBLICATIONS

- Tissières P, Esteban E, Hübner J, Randolph AG, Rey C, Weiss SL. Use of procalcitonin in therapeutic decisions in the pediatric intensive care unit. Ann. Intensive Care. 2025;15(1):55-55. IF:5,500. [Q1].
- Trastoy J, Ciudad M, Hernandez L, Rausa M, Laura I, Castillejo MI et al. Electric impedance tomography

to monitor body positioning and chest physiotherapy in mechanically ventilated pediatric intensive care unit patients. Sci Rep. 2025;15(1):36741-36741. IF:3,900. [Q1].

- Huerta S, Guitart C, Carrasco JL, Bárbara F, Cambra FJ, Jordán I et al. Lung Elastance and Microvascularization as Quantitative Non-Invasive Biomarkers for the Aetiological Diagnosis of Lung Consolidations in Children [ELASMIC Study]. Diagnostics. 2025;15(7). IF:3,300. [Q1].
- Guitart C, Becerra J, Bobillo S, Carrasco JL, Pavan G, Balaguer M et al. Diagnostic Accuracy of Lung Ultrasound for Pneumonia in Acutely and Critically Ill Neonates, Children, and Young Adults: A Systematic Review and Meta-Analysis. Diagnostics. 2025;15(24):3122. IF:3,300. [Q1].

SELECTED PROJECTS

- Desarrollo, validación y prueba piloto de modelos basados en aprendizaje automático para predicción y detección temprana de sepsis en Urgencias e intensivos pediátricos. Proyecto PESERS 2.0. [PFIS0373]. Instituto de Salud Carlos III [ISCIII]. 2024-2026. IP: Iolanda Jordán García; Pedro Brotons de los Reyes.
- Desarrollo de un modelo predictivo con inteligencia artificial para la detección temprana de insuficiencia respiratoria en pacientes pediátricos. Estudio e.Breathe. [PFIS0401]. Instituto de Salud Carlos III [ISCIII]. 2025-2027. IP: Mónica Balaguer Gargallo.
- Desarrollo de nuevas herramientas inteligentes de formación y capacitación en ventilación mecánica neonatal y pediátrica — SMARTLUNG. [PFP00339]. Ministerio de Ciencia e Innovación. 2024-2027. IP: Martí Pons Òdena.

SELECTED CLINICAL STUDIES

- A Phase I, open-label, non-comparative, multicenter clinical trial to evaluate the safety, tolerability, and pharmacokinetics of ceftolozane/tazobactam [MK-7625A] in pediatric participants with nosocomial pneumonia. [MK-7625A-036]. Merck Sharp & Dohme LLC. Phase I. 2019-2025. IP: Iolanda Jordán García.
- An open label, single arm study to evaluate the pharmacokinetics, safety and tolerability of intravenous (IV) zanamivir in hospitalised neonates and infants under 6 months of age with confirmed or suspected influenza. [200925]. GlaxoSmithKline, S.A. Phase II. 2020. IP: Mónica Balaguer Gargallo.
- A Phase I/IIa Open-label Study in Infants with Respiratory Syncytial Virus Lower Respiratory Tract Infection, Followed by a Double-blind, Placebo-controlled Part, to Evaluate the Safety, Tolerability, Pharmacokinetics and Antiviral Effect of RV521. [REVC003]. ReViral Ltd. Phase II. 2021-2025. IP: Iolanda Jordán García.

12 Projects

COMPETITIVE: 10
NON COMPETITIVE: 2

3 Clinical Trial & Observational Studies

19 Publications

Impact factor 78
average Impact Factor 4,1
Publications in 1st quartile.... 58%
Publications in 1st decile..... 16%
Leadership..... 58%

1. Medicine and pediatric science area

1.3. Paediatric Cancer

Pediatric Cancer Epigenetics

Alexandra Avgustinova, PhD

Decoding the developmental and epigenetic origins of childhood tumours to enable personalised therapies.



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4 Projects

COMPETITIVE: 3
NON COMPETITIVE: 1

3 Publications

Impact factor 98
average Impact Factor 32,6
Publications in 1st quartile....100%
Publications in 1st decile.....100%
Leadership 0%

The Pediatric Cancer Epigenetics lab is a joint IRB Barcelona-IRSJD group led by Dr Alexandra Avgustinova. The group studies how epigenetic deregulation drives developmental tumours, with a particular focus on malignant rhabdoid tumours. Using genomic and epigenomic profiling, gene editing, lineage tracing, animal models and single-cell approaches, the lab aims to identify which molecular alterations truly drive malignant transformation, define the cells of origin of different tumour subtypes, and understand why some tumours are immune hot while others are immune cold. The overall goal is to uncover actionable vulnerabilities and translate this knowledge into more precise, less toxic and more personalised treatments for children with cancer.

ACHIEVEMENTS 2025

In 2025, the group helped advance personalised immunotherapy research in childhood cancer through the study by Sentís et al., published in Annals of Oncology, “Spatiotemporal T-cell tracking for personalized T-cell receptor T-cell therapy designs in childhood cancer.” This work analysed the immune response of a child with malignant rhabdoid tumour and identified tumour-reactive T cells and receptors with potential for future TCR-T strategies. More broadly, the lab continues to consolidate its joint IRB Barcelona-IRSJD programme, combining cutting-edge basic science with clinical insight to study aggressive paediatric tumours and move toward stratified therapies.

FUTURE CHALLENGES

Over the next few years, the group aims to define when, where and why cells during development transform to give rise to childhood cancers. Key challenges include distinguishing driver from passenger epigenetic changes, identifying the cells of origin of malignant rhabdoid tumour subtypes, understanding the basis of tumour heterogeneity and immunogenicity, and translating mechanistic findings into biomarkers and therapeutic options. The lab is also working to connect multi-omic, single-cell and functional data with clinically relevant models so that discoveries can support patient stratification and rational treatment design. A central ambition is to develop personalised and less aggressive strategies that improve prognosis and quality of life for children with high-risk cancers.

SELECTED PUBLICATIONS

- Sentís I, Melero JL, Cebrià A, Grzelak M, Soto M, Michel A et al. Spatiotemporal T-cell tracking for personalized T-cell receptor T-cell therapy designs in childhood cancer. Ann. Oncol. 2025;36(9):1096-1106. IF:65,400. [Q1].
- Figuerola E, Rios C, Blanco E, Sanchez M, Táboas P, Fernandez G et al. KDM6 Demethylases Contribute to EWSR1::FLI1-Driven Oncogenic Reprogramming in Ewing Sarcoma. Cancer Res. 2025;85(22):4485-4503. IF:16,600. [Q1].
- Prada E, Táboas P, Andrades E, Gomez S, Mateo S, Cebrià A et al. PRKG1 hinders myogenic differentiation and predicts response to AKT inhibitor ipatasertib in Rhabdomyosarcoma. Nat. Commun. 2025;16(1):9816-9816. IF:15,700. [Q1].

SELECTED PROJECTS

- ONCO-COMP: Oncogenic competence during development — When, Where and Why? [PFE00104]. European Commission (HORIZON-ERC-2022-StG). 2023-2028. IP: Alexandra Avgustinova.
- GLEBioassay: Nano-Monitoring of Cancer Immunotherapy Efficiency: The Lateral Electrophoretic Bioassay platform. [PFIS0322]. Instituto de Salud Carlos III (ISCIII). 2022-2025. IP: Carlos Javier Rodríguez Hernández.
- Tumors rabadoides. [PFNR0135]. Clientes Diversos. 2020. IP: Alexandra Avgustinova.
- Ayudas para contratos Ramón y Cajal (RYC) 2019 — Beneficiaria: Alexandra Avgustinova. [PFP00189]. Ministerio de Economía y Competitividad (MINECO). 2020-2025. IP: Alexandra Avgustinova.

Translational Genomics

Decoding Biology to Deliver Precision Therapies

Cinzia Emilia Lavarino, PhD



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14 Projects

COMPETITIVE: 8

NON COMPETITIVE: 6

4 Clinical Trial & Observational Studies

12 Publications

Impact factor **160**
average Impact Factor **13,4**
Publications in 1st quartile..... **67%**
Publications in 1st decile..... **50%**
Leadership..... **17%**

The Group of Translational Genomics integrates expertise in [epi]genomics and bioinformatics with extensive experience in pediatric cancer genetics, within a well-defined clinical context of solid pediatric tumors, particularly neuroblastoma and central nervous system tumors. Our research combines multi-omics profiling with in vitro functional studies and in vivo drug testing to uncover the molecular mechanisms underlying tumor development, progression, and treatment response.

A central goal of the group is to elucidate mechanisms of therapeutic resistance and identify clinically relevant biomarkers that can enhance diagnostic accuracy, risk stratification, and disease monitoring. By linking molecular characterization, functional validation, and preclinical testing, our translational projects aim to support precision medicine and ultimately improve outcomes and quality of life for children with cancer.

ACHIEVEMENTS 2025

In 2025, our group was awarded two competitive research grants: a European canSERV project aimed at profiling the bone marrow microenvironment in high-risk neuroblastoma using single-cell transcriptomics and immune proteomics, and a national grant from the Barcelona Supercomputing Center providing access to advanced computational resources. In parallel, we are conducting a dedicated study on resistance mechanisms to anti-GD2 immunotherapy in high-risk neuroblastoma, while further consolidating our participation in multicenter precision medicine projects, as well as other national and international collaborations.

At the training level, two PhD students were awarded FI-STEP fellowships, and a third-year PhD student received support for an international research stay at Cornell University to advance work in liquid biopsy for pediatric cancer.

Sustained private funding has also played a key role, enabling the initiation of new projects and the generation of preliminary data for future acquisition of competitive funding. Overall, the group published 17 peer-reviewed articles in 2025, contributing to the fields of pediatric oncology, neurogenetic disorders, and vascular anomalies.

FUTURE CHALLENGES

In 2026, our main priorities are to consolidate and advance ongoing competitive projects while continuing to secure new funding to expand our research projects. A key focus will be the publication of major findings generated by the Group, including studies based on multi-omics approaches combined with high-throughput drug screening to investigate mechanisms of chemotherapy resistance in neuroblastoma.

We will also report on the detection of GD2 in patients treated with anti-GD2 immunotherapy, as well as on the characterization of distinct neuroblastoma cell populations with differential treatment responses. In parallel, we will advance our work on miRNA regulation in relation to MYCN, alongside ongoing collaborative projects.

Our overarching goal is to strengthen a truly translational research program that bridges laboratory discoveries and clinical practice, improving diagnosis, deepening our understanding of resistance mechanisms, and enabling more precise and personalized therapeutic strategies for children with neuroblastoma.

SELECTED PUBLICATIONS

- Sentís I, Melero JL, Cebrià A, Grzelak M, Soto M, Michel A et al. Spatiotemporal T-cell tracking for personalized T-cell receptor T-cell therapy designs

in childhood cancer. Ann. Oncol. 2025;36(9):1096-1106. IF:65,400. [Q1].

- C, Perosanz X, Ressler AK, Ivars M, Rodriguez J, Rovira C et al. Somatic Uniparental Disomy of PTEN in Endothelial Cells Causes Vascular Malformations in Patients with PTEN Hamartoma Tumor Syndrome. Cancer Discov. 2025;15(7):1350-1362. IF:33,300. [Q1].
- Figuerola E, Rios C, Blanco E, Sanchez M, Táboas P, Fernandez G et al. KDM6 Demethylases Contribute to EWSR1::FLI1-Driven Oncogenic Reprogramming in Ewing Sarcoma. Cancer Res. 2025;85(22):4485-4503. IF:16,600. [Q1].
- Keck MK, Al M, Amayiri N, Yiadom A, Chamyan G, Cheesman E et al. PLAG1 fusions define a third subtype of CNS embryonal tumor with PLAG family gene alteration. Acta Neuropathol. 2025;150(1):12-12. IF:9,300. [Q1].

SELECTED PROJECTS

- Multi-ómica y cribado masivo de fármacos para el tratamiento dirigido del Neuroblastoma resistente al tratamiento. [PFIS0392]. Instituto de Salud Carlos III (ISCIII). 2024-2026. IP: Cinzia Emilia Lavarino; Marta García López.
- Study of the mechanisms of chemoresistance associated with high-risk neuroblastoma. Search for new therapeutic options for relapsed/refractory neuroblastoma. [PFP00379]. Agaur - Agència de Gestió d'Ajuts Universitaris i de Recerca [FI-STEP]. 2026-2028. IP: Marta García López.
- Single-cell transcriptomic and immuno-proteomic landscape of the bone marrow microenvironment in high-risk neuroblastoma. [00202073]. Horizon Europe research [canSERV Consortium]. 2025. IP: Marta García López.

SELECTED CLINICAL STUDIES

- Ensayo de Fase I/II, Abierto y de un solo brazo para Evaluar la Farmacocinética, Seguridad/Tolerabilidad y Eficacia de la Formulación Granulada de Selumetinib en niños de ≥ 1 a < 7 Años con Neurofibromas Plexiformes (NP) Sintomáticos e Inoperables relacionados con Neurofibromatosis Tipo 1 (NF1) [SPRINKLE]. [D1346C00004]. AstraZeneca Farmaceutica Spain, S.A. Phase I/II. 2021. IP: Héctor Salvador Hernández.
- A Phase Ib, Open-Label Study of Mirdametinib in Infants and Toddlers with Neurofibromatosis Type 1 Associated Plexiform Neurofibromas. [MEK-NF1-104]. SpringWorks Therapeutics, Inc. Phase I. 2025. IP: Héctor Salvador Hernández.

Sarcomas and Neuroblastoma

Translational research in Developmental Cancer

Cinzia Emilia Lavarino, PhD



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27 Projects

COMPETITIVE: 16
NON COMPETITIVE: 11

12 Clinical Trial & Observational Studies

21 Publications

Impact factor 247
average Impact Factor 11,8
Publications in 1st quartile.... 43%
Publications in 1st decile..... 33%
Leadership 48%

Our work bridges basic science and clinical application, resulting in investigator-initiated clinical trials and the development of innovative therapeutic approaches, including nanomedicine platforms, immunotherapy regimens, and preclinical models. These efforts have been translated into patents and biotech spin-offs, fostering innovation beyond academia.

ACHIEVEMENTS 2025

The team has demonstrated a strong capacity to translate scientific discoveries into clinical applications. In 2025, it treated the first patient with a CAR-T therapy for Ewing sarcoma developed and manufactured in-house under compassionate use, marking a major milestone in translational research. This achievement was made possible by the integrated infrastructure of the PCCB, which combines research, GMP manufacturing and clinical care to accelerate the transfer of innovation to patients. The group also advanced the understanding of Ewing sarcoma biology, identifying the cell of origin of this aggressive paediatric cancer. Using a novel experimental model, researchers demonstrated that EWS-FLI1 expression in human embryonic mesenchymal stem cells is sufficient to induce the disease. These findings were published in Nature Communications in 2025.

FUTURE CHALLENGES

The combination of scientific leadership, expertise in immunotherapy, preclinical development, and GMP manufacturing capacity uniquely positions our team to address the challenges for opening the Phase 1 clinical trial with our CART for Ewing sarcoma in 2026. We keep working on Rhabdomyosarcoma to bring the discovery of PRKG1 (from 2024) as a biomarker of the disease to select patients to be treated with PRLG1 inhibitors (like capivasertib). We started to build the PIONEER platform (Pediatric Immunotherapy Optimization and Novel Early-stage Experimental Research), a paradigm shift in precision medicine for pediatric oncology. By leveraging patient-derived tumor fragments (PDTFs)—organotypic ex vivo models that preserve the architecture, immune microenvironment, and innate/adaptive immune populations — PIONEER enables high-throughput, clinically relevant testing of immunotherapies and combination regimens.

SELECTED PUBLICATIONS

• Figuerola E, Rios C, Blanca E, Sanchez M, Táboas P, Fernandez G et al. KDM6 Demethylases Contribute to EWSR1::FLI1-Driven Oncogenic Reprogramming in Ewing Sarcoma. Cancer Res. 2025;85(22):4485-4503. IF:16,600. [Q1].

- Prada E, Táboas P, Andrades E, Gomez S, Mateo S, Cebrià A et al. PRKG1 hinders myogenic differentiation and predicts response to AKT inhibitor ipatasertib in Rhabdomyosarcoma. Nat. Commun. 2025;16(1):9816-9816. IF:15,700. [Q1].
- Hernandez MI, Cuervas I, Prada E, Pulecio J, Gimeno R, Andrades E et al. EWS::FLI1 expression in human embryonic mesenchymal stem cells leads to transcriptional reprogramming, defective DNA damage repair and Ewing sarcoma. Nat. Commun. 2025;16(1):9427-9427. IF:15,700. [Q1].
- Mora J, Chan GCF, Morgenstern DA, Amoroso L, Nysom K, Faber J et al. The anti-GD2 monoclonal antibody naxitamab plus GM-CSF for relapsed or refractory high-risk neuroblastoma: a phase 2 clinical trial. Nat. Commun. 2025;16(1):1636-1636. IF:15,700. [Q1].

SELECTED PROJECTS

- Exploiting Cell State Vulnerabilities to target Pediatric Cancers. [PCP00479]. Fundación Privada de Estudios e Investigación Oncológica [IV Beca FERO Dr. Baselga]. 2026-2028. IP: Jaume Mora Graupera.
- Disrupción de enhancers: la nueva generación de terapia epigenética en el sarcoma de Ewing. [PFIS0395]. Instituto de Salud Carlos III [ISCIII]. 2025-2027. IP: Jaume Mora Graupera; Sara Sánchez Molina.
- Multilayer Pediatric Patient Similarity Network modeling: biomolecular profiles for clinical and phenotype prediction. [PFP00362]. Agaur - Agència de Gestió d'Ajuts Universitaris i de Recerca [FI-STEP]. 2025-2028. IP: Giancarlo Castellano.

SELECTED CLINICAL STUDIES

- Ensayo de Fase pivotal 2 del anticuerpo Naxitamab (hu3F8) y factor estimulante de colonias de granulocitos y macrófagos (GM-CSF) en pacientes con Neuroblastoma de alto riesgo con enfermedad refractoria primaria o con respuesta incompleta al tratamiento de rescate en el hueso y/o médula ósea. [Y-MABS 201]. Y-mAbs Therapeutics A/S. Phase III. 2018. IP: Jaume Mora Graupera.
- A Phase 1, Multicentre, Open-Label, Dose-Escalation and Cohort Expansion Study of Niraparib and Dostarlimab in Paediatric Patients with Recurrent or Refractory Solid Tumours. [213406]. GlaxoSmithKline Research and Development Ltd. Phase I. 2021-2025. IP: Jaume Mora Graupera.
- First-in-paediatrics, open label, exploratory, externally controlled clinical trial to evaluate safety, efficacy and pharmacokinetics of 7-ethyl-10-hydroxy-compotrothecin [SN-38] formulated as a biocompatible polymeric nanofiber membrane [CEB-01] for treatment of paediatric patients with locally resectable tumours. [CEB-01-RLP01-CT]. Cebiotex S.L. Phase II. 2025. IP: Marta Pilar Martín Giménez.

Paediatric Cancer Treatment

From Discovery to Hope in Pediatric Cancer

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RESEARCH COLLABORATOR

Guillermo Chantada

21 Projects

COMPETITIVE: 13

NON COMPETITIVE: 8

6 Clinical Trial & Observational Studies

23 Publications

Impact factor 125
average Impact Factor 5,4
Publications in 1st quartile..... 39%
Publications in 1st decile..... 22%
Leadership 30%

Our mission is to develop novel therapies for pediatric cancers, with a primary focus on pharmaceutical innovation and advanced drug delivery systems. We address the urgent clinical need for high-risk patients by developing high-fidelity preclinical models from patient biopsies, which serve as a critical foundation for testing innovative treatments within our laboratory or through global collaborations.

ACHIEVEMENTS 2025

In 2025, our research program at SJD Barcelona achieved significant milestones in pharmaceutical innovation and clinical translation. A major highlight was the initiation of the Phase I clinical trial for CEB-01, our patented polymeric nanofiber membrane designed for local drug delivery in pediatric solid tumors.

This year marked a regulatory triumph as our patented medicine G2B-002 was granted Orphan Drug Designation (ODD) by the FDA for the treatment of gliomas. Combined with a new patent for PTGER3 and La Caixa Foundation funding, these achievements reinforce our mission of bringing breakthrough laboratory science directly to the patient's bedside. Furthermore, we secured a high-value research contract with Oncomatrix Biopharma to evaluate novel therapeutic candidates in Ewing sarcoma.

FUTURE CHALLENGES

Our future research program is committed to the clinical translation of at least two novel treatments within the next five years. A primary focus is the G2B-002 candidate, a CNS-penetrant SN-38 formulation licensed to Gate2Brain. Having recently achieved ODD, we are currently preparing the Phase I trial for pediatric high-grade glioma.

Additionally, we aim to translate the combination of the oncolytic virus VCN-01 and tapotectan. Licensed to Theriva, our research will determine if the success seen in ocular retinoblastoma can be expanded to pediatric sarcomas and CNS-disseminated disease, leading to a dedicated Phase I trial.

We will continue exploring the immune environment and the PI3K/Akt pathway in diffuse midline gliomas. Our drug delivery innovation will advance through targeted sono-chemodynamic therapy using novel nanomaterials, in collaboration with Dr Alejandro Sosnik (Technion-Israel). Finally, we remain dedicated to advanced therapies by developing CAR-T treatments for Ewing sarcoma, ensuring our "bench-to-bedside" pipeline continues to offer hope for the most challenging pediatric cancers.

SELECTED PUBLICATIONS

- Lagan E, Gannon D, Silva AJ, Bibawi P, Doherty AM, Nimmo D et al. A specific form of cPRC1 containing CBX4 is co-opted to mediate oncogenic gene

repression in diffuse midline glioma. Mol. Cell. 2025;85(11):2110-2127. IF:16,600. [Q1].

- Olmedo J, Granado E, Delgado D, Lobo L, Jordan C, Monteiro AT et al. EWS::FLI1-DHX9 interaction promotes Ewing sarcoma sensitivity to DNA topoisomerase 1 poisons by altering R-loop metabolism. Oncogene. 2025;44(38):3537-3552. IF:7,300. [Q1].
- Baulenas M, Paco S, Marino F, Mohr J, Panisello C, Balaguer L et al. Proteins of the cancer cell secretome induce the protumoral microenvironment of diffuse intrinsic pontine glioma. Neuro-Oncol. Adv. 2025;7(1). IF:4,100. [Q1].
- Balaguer L, Gene N, Aschero MR, Resa C, Paco S, Cuadrado M et al. Establishment of xenografts and methods to evaluate tumor burden for the three most frequent subclasses of pediatric-type diffuse high grade gliomas. J. Neuro-Oncol. 2025;172(3):599-611. IF:3,100. [Q2].

SELECTED PROJECTS

- Accelerating an armored CAR T cell therapy for metastatic/refractory bone and soft tissue sarcoma. [PCP00481]. Fundació Bancària "La Caixa" [Caixa Impulse Health Innovation Call 2025]. 2025-2027. IP: Angel Montero Carcaboso.
- JANE-2: Joint Action on Networks of Expertise on Cancer. [PFE00136]. European Commission [EU4H-2023-JA-3-IBA]. 2024-2028. IP: Andrés Morales La Madrid.
- Ensayo clínico de seguridad y factibilidad de inmunoterapia celular: Células dendríticas autólogas pulsadas con un lisado de líneas tumorales alógenicas, asociadas con CART anti-IL13Ra2 en pacientes con tumor difuso intrínseco de tronco [DIPG] (fase Ib). [PFIS0388]. Instituto de Salud Carlos III [ISCIII]. 2024-2027. IP: Andrés Morales La Madrid.

SELECTED CLINICAL STUDIES

- Phase 1/2, Open-label, Safety, Tolerability, Pharmacokinetics, and Anti-tumor Activity Study of Repotrectinib in Pediatric and Young Adult Subjects with Advanced or Metastatic Malignancies Harboring ALK, ROS1, or NTRK1-3 Alterations [CARE]. [TPX-0005-07]. Turning Point Therapeutics, Inc. Phase I/II. 2023. IP: Alicia Castañeda Heredia.
- A Phase I Trial of ABTL0812 in Children with Relapsed/Refractory Neuroblastoma and Other Solid Tumours [ETNA]. Fundació Institut de Recerca Hospital Universitari Vall d'Hebron. Phase I. 2025. IP: Alicia Castañeda Heredia.
- LIGHTBEAM-U01 Substudy 01C: A Phase 1/2 Substudy to Evaluate the Safety and Efficacy of Patritumab Deruxtecan in Pediatric Participants with Relapsed or Refractory Solid Tumors. [MK-9999-01C]. Merck Sharp & Dohme LLC. Phase I/II. 2025. IP: Alicia Castañeda Heredia.

Leukaemia and Paediatric Haematology Disorders

Advancing integrative translational and clinical research in pediatric leukemia and hematological diseases for evidence-based implementation

**Susana Rives Solà, MD, PhD and
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RESEARCH MANAGEMENT

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17 Projects

COMPETITIVE: 10
NON COMPETITIVE: 7

38 Clinical Trial & Observational Studies

29 Publications

Impact factor 425
average Impact Factor 14,6
Publications in 1st quartile.... 86%
Publications in 1st decile..... 48%
Leadership 14%

Our research group conducts translational research aimed at rapidly transferring diagnostic and therapeutic innovations into clinical practice for paediatric leukaemia and hematological diseases. Through a multidisciplinary structure that integrates clinical and translational research, the team addresses unmet patient needs and develops solutions with direct clinical impact.

In recent years, we have expanded our diagnostic, therapeutic and research capabilities while strengthening key national biobank collections, including ALLTogether and ReALLnet. The group is actively involved in numerous clinical trials in areas such as CAR-T therapy, acute lymphoblastic and myeloid leukaemia, bone marrow failure and haemophilia, consolidating its position as a reference centre in paediatric haematology research.

ACHIEVEMENTS 2025

In 2025, a new Paediatric Haematologic Malignancies Research Program was launched, bringing together expertise from IJC, HSJD Barcelona and IRSJD to create a coordinated translational network spanning from basic discovery to early-phase clinical evaluation.

Among the group's achievements, funding was secured for the ARI-chALL project through the European ATTRACT initiative, supporting a clinical trial aimed at obtaining EMA approval for the academic CAR-T therapy ARI-0001 and enabling the first decentralized academic CAR-T production model in Europe for children with relapsed acute lymphoblastic leukaemia.

FUTURE CHALLENGES

A key priority of the Paediatric Haematologic Malignancies Research Programme is to accelerate the translation of scientific discoveries into new diagnostic and therapeutic strategies for childhood blood cancers. To achieve this, the programme will strengthen access to advanced genomics, single-cell technologies, functional models and immunotherapy platforms, while fostering close collaboration between clinicians and translational researchers through the new consortium with IJC.

The programme also aims to enhance one of Europe's largest paediatric tumour biobanks, supporting longitudinal molecular profiling, biomarker discovery and precision medicine approaches for children with high-risk and rare hematological malignancies. These efforts seek to reduce treatment toxicity, overcome therapy resistance and improve responses to immunotherapies.

SELECTED PUBLICATIONS

• Pearson A, Rossig C, Mackall CL, Shah NN, Baruchel A, Daems S et al. New models for the development of and access to CART-cell therapies for children and adolescents with cancer: an ACCELERATE multistakeholder analysis. *Lancet Oncol.* 2025;26(4):214-224. IF:35,900. [Q1].

- Bartoló A, Aran A, Johansson AM, Ortiz V, Klein N, Alonso A et al. T-cell responses against CD19-targeted CAR T cells varnimcabtagene autoleucl [ARI-0001]: implications for immune response and therapy outcomes. *J. Immunother. Cancer.* 2025;13(9). IF:10,600. [Q1].
- Vicente C, Fernandez G, Esperanza E, Richarte M, Crespo A, Montesdeoca S et al. RNA-sequencing: A reliable tool to unveil transcriptional landscape of paediatric B-other acute lymphoblastic leukaemia. *Br. J. Haematol.* 2025;206(5):1355-1365. IF:3,900. [Q1].
- Theron A, Alonso A, Dapena JL, López M, Diaz de Heredia C, Verdú J et al. Secondary haematological dysplasia after CAR-T-cell therapy for acute lymphoblastic leukaemia in children. *Br. J. Haematol.* 2025;206(1):186-194. IF:3,900. [Q1].

SELECTED PROJECTS

- Ensayo clínico fase Ib multicéntrico, exploratorio, abierto, no-aleatorizado y prospectivo, basket trial, con células CAR-T anti-CD19 [ARI-0001] en pacientes pediátricos con enfermedades autoinmunes sistémicas. (PFIS0424). Instituto de Salud Carlos III (ISCIII). 2026-2029. IP: Jordi Antón López; Susana Rives Solà.
- ARI-chALL: Phase 2 clinical trial to evaluate the efficacy and safety of varnimcabtagene autoleucl [ARI-0001] for first relapsed/refractory paediatric B-cell acute lymphoblastic leukaemia. (PFE00165). Asociación Española Contra el Cáncer [ATTRACT 2025]. 2025-2032. IP: Susana Rives Solà.
- Análisis de los factores pronósticos de fracaso del tratamiento tras terapia con células T con receptores antígenicos quiméricos (CAR-T) en pacientes pediátricos con leucemia linfoblástica aguda de línea B. (PFIS0315). Instituto de Salud Carlos III (ISCIII). 2022-2026. IP: Susana Rives Solà; Montserrat Torredell Burriel.

SELECTED CLINICAL STUDIES

- A Phase II, Single Arm, Open Label Study on the Safety and Efficacy of Quizartinib in Newly Diagnosed Pediatric De Novo FLT3-ITD Positive/NPM1 Wild Type AML Patients (CHIP-AML22/MASTER). Princess Máxima Center for Pediatric Oncology B.V. Phase II. 2025. IP: Albert Català Temprano.
- ALLTogether1 – A Treatment Study Protocol of the ALLTogether Consortium for Children and Young Adults (0-45 years of age) with Newly Diagnosed Acute Lymphoblastic Leukaemia (ALL) [ALLTogether1-PILOT]. Karolinska Institutet. 2023. IP: José Luis Dapena Díaz.
- Safety and Efficacy of hCD1a-CAR T (OC-1) Therapy in Patients with Relapsed/Refractory T-cell Acute Lymphoblastic Leukemia/Lymphoma (T-ALL/LL). [OC-01-21001]. Onechain Immunotherapeutics S.L. Phase I. 2023. IP: Susana Rives Solà.

Molecular Pharmacology and Experimental Therapeutics (MPET)

Turning Metabolism into Medicine

Marçal Pastor-Anglada, PhD



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The Molecular Pharmacology and Experimental Therapeutics (MPET) group focuses its research on nucleotide metabolism and disease, with a strong translational profile focusing mostly, but not exclusively, on cancer and rare diseases. MPET is a worldwide reference in transporter pharmacology, and the role transporters play in response to therapy and has made seminal contributions in this field, focusing mostly in anticancer and antiviral drugs. Our group is also advancing knowledge on the crosstalk among nucleoside transport processes and nucleotide metabolism as a way to understand how this molecular metabolic network properly responds to metabolic challenges and contributes to the maintenance of nucleotide (purines/pyrimidines) balance homeostasis, thereby preventing disease. The study of the molecular basis behind nucleotide metabolic reprogramming during oncogenesis is a major goal in our group. Generation of basic knowledge in this field facilitates the identification of new targets which are being tackled with novel therapeutic interventions.

ACHIEVEMENTS 2025

A major achievement during 2025 originated from the completion of a research project in collaboration with VHIR researchers, which led to the design and probable future implementation of a new therapeutic approach for the treatment of selected mitochondrial DNA depletion syndromes associated with alterations in nucleotide metabolism. This advancement is now under evaluation for patenting before publication. The translational strength of our group has also led to the development of new hits targeting nucleoside transporters. Within the framework of a competitively funded public-private collaboration with the biotech company Polo Biofarma we identified the first known hCNT3-subtype activators. During 2025 MPET PIs were responsible for the organization of the biannual meeting of the international Purine and Pyrimidine Society in Barcelona. The MPET headline was elected President of the Society reinforcing the international projection of our group and the institute in the field of nucleotide metabolism and disease.

FUTURE CHALLENGES

Short-term challenges involve development of pharmacological tools targeting nucleoside transporters (NT). We still need to develop NT-subtype specific modulators likely to become drugs. A major effort is needed in understanding how NTs are physiologically tuned by their own substrates at the expression and transporter dynamics levels.

A major mid-term challenge is to get a better understanding of the regulatory mechanisms governing nucleotide-metabolic network performance and how this is disrupted in oncogenesis. Nucleotide metabolism and more predominantly, pyrimidine metabolism, appears to be crucial for tumor growth not only at the cancer cell level but even more importantly in the immune component of the tumor microenvironment. We aim at identifying actionable vulnerabilities in nucleotide metabolism that can be exploited through synergistic targets. We are in an excellent position to foster private-public projects (as we have and are currently doing) to generate innovative therapeutic strategies capable of simultaneously targeting distinct biological pathways.

SELECTED PUBLICATIONS

- Jordheim LP, Pastor M. Building together a “trench” of nucleotide metabolism. Nucleosides Nucleotides Nucleic Acids. 2025;1-10. IF:1,300. [Q4].

SELECTED PROJECTS

- MAPping the mechanisms of lesion onset and progression in PHTS-related vascular malformations (MAPten). (PFE00148). PTEN Research Foundation. 2025-2029. IP: Sandra Castillo Diez.
- Anomalías vasculares causadas por mutaciones en GNAQ: un gen, dos destinos. (PFP00378). Ministerio de Ciencia e Innovación. 2025-2028. IP: Sandra Castillo Diez.
- Historia Natural, Calidad de vida y Resultados comunicados por el paciente en anomalías vasculares. (PFIS0390). Instituto de Salud Carlos III (ISCIII). 2024-2026. IP: Eulalia Baselga Torres.
- Tratamiento y prevención de la coagulopatía intravascular localizada en malformaciones venosas y linfáticas de bajo flujo en pacientes pediátricos. Uso de enoxaparina durante intervencionismo percutáneo. (PFIS0398). Instituto de Salud Carlos III (ISCIII). 2025-2027. IP: Eulalia Baselga Torres; Rubén Berruero Moreno.

SELECTED CLINICAL STUDIES

- EPIK-P2: Estudio de fase II doble ciego con un periodo inicial aleatorizado, controlado con placebo y

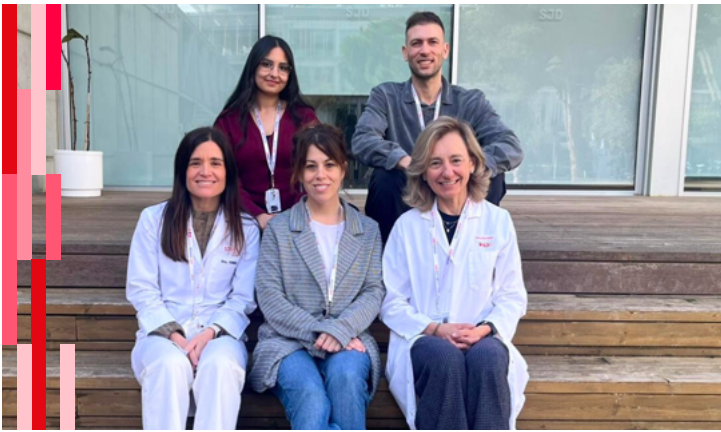
de 16 semanas de duración para evaluar la eficacia, la seguridad y la farmacocinética de alpelisib (BYL719) en pacientes pediátricos y adultos con síndrome de sobrecrecimiento asociado a PIK3CA (SSAP). (CBYL719F12201). Novartis Farmacéutica, S.A. Phase II. 2021. IP: Eulalia Baselga Torres.

- A two-stage double-blind, randomized, placebo-controlled study to assess the efficacy, safety and pharmacokinetics of alpelisib in pediatric and adult patients with lymphatic malformations associated with a PIK3CA mutation. (CBYL719P12201). Novartis Farmacéutica, S.A. Phase II. 2024. IP: Eulalia Baselga Torres.
- Phase 2 Study of Mutant-selective PI3Ka Inhibitor, RLY-2608, in Adults and Children with PIK3CA Related Overgrowth Spectrum and Malformations Driven by PIK3CA Mutation. (RLY-2608-201). Relay Therapeutics, Inc. Phase II. 2025. IP: Eulalia Baselga Torres.

Vascular Tumors and Malformations

Eulalia Baselga Torres, PhD
and Sandra Castillo Diez, PhD

From mechanisms to therapies in vascular anomalies



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12 Projects

COMPETITIVE: 9

NON COMPETITIVE: 3

18 Clinical Trial & Observational Studies

3 Publications

Impact factor	10
average Impact Factor	3,2
Publications in 1st quartile....	67%
Publications in 1st decile.....	0%
Leadership	0%

Our research group focuses on uncovering the genetic and molecular mechanisms that drive vascular tumors and malformations. These rare disorders caused by abnormal development of blood and lymphatic vessels, usually present at birth. We combine genomic analyses with experimental approaches to identify disease-causing mutations and understand how disrupted signalling pathways affect vascular development. We collect detailed patient data through deep phenotyping and long-term follow-up to characterize disease progression. Using these insights, we develop experimental models that accurately replicate vascular anomalies, enabling us to study their underlying biology. Our ultimate goal is to translate these findings into clinical impact by identifying key disease drivers and using them to design and test targeted therapeutic strategies, improving diagnosis, treatment, and patient care.

ACHIEVEMENTS 2025

In 2025 our group made significant advances in understanding and treating vascular anomalies. We published a study in Cancer Discovery identifying the genetic cause of vascular malformations in patients with PTEN Hamartoma Tumour Syndrome, and developed preclinical and clinical studies to translate molecular discoveries into therapeutic strategies. We are participating in clinical trials evaluating targeted therapies, including alpelisib and zovogalisib, for patients with PIK3CA-related vascular malformations.

We have secured funding through the "Proyectos Generación de Conocimiento" program and the PTEN Research Foundation. We have launched an ISCIII-funded project on localized intravascular coagulopathy in patients with vascular malformations. This study aims to characterize coagulation abnormalities and evaluate prophylactic strategies to reduce bleeding and thrombosis. We launched the NARRATIVE project (EJPRD JTC), establishing a large-scale, international registry that follow over 1,200 individuals with vascular anomalies across Europe. This initiative will generate longitudinal data to define disease trajectories and optimize personalized management strategies.

FUTURE CHALLENGES

A major challenge for our group is that half of patients with vascular anomalies still lack a molecular diagnosis. To address this, we are developing alternative approaches to uncover the genetic and molecular basis of these diseases. These efforts will guide the identification of actionable targets and more effective therapies. In parallel, we are generating innovative experimental models that recapitulate these disorders, providing platforms

for preclinical studies. Beyond current molecular inhibitors, we aim to develop advanced therapeutic strategies, including next-generation and combination approaches. A key priority is to understand how genetic alterations influence long-term prognosis, disease evolution, and patient quality of life. By integrating genomic data with longitudinal clinical and patient-reported outcomes, we seek to build predictive frameworks that support more informed, individualized treatment decisions. Ultimately, we are committed to translating these advances into clinical practice through mutation-specific trials and precision medicine approaches that improve patient outcomes.

SELECTED PUBLICATIONS

• Gasparella P, Haxhija EQ, Andersen R, Borea M, Baselga E, Miguel S et al. The VASCERN-VASCA diagnostic and management pathways for kapo-siform hemangioendothelioma. Eur. J. Pediatr. 2025;185(1):14-14. IF:2,600. (Q1).



1. Medicine and pediatric science area

1.4. Precision Medicine in Rare Diseases

Metabolomics and Biochemical Genetics

Targeted metabolomics as a tool for the study of genetically based metabolic diseases and other rare diseases

Rafael Artuch Iriberry, MD, PhD



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Cristina Sierra March

20 Projects

COMPETITIVE: 12
NON COMPETITIVE: 8

9 Clinical Trial & Observational Studies

16 Publications

Impact factor **112**
average Impact Factor **7,0**
Publications in 1st quartile..... **56%**
Publications in 1st decile..... **13%**
Leadership..... **31%**

Our group is composed of professionals from different disciplines, including pediatric neurologists, clinical biochemists, biologists, geneticists, and laboratory technicians. Our research is focused on patients with genetically based rare diseases, mainly in the pediatric setting. It includes activities such as the identification of new genotypes and phenotypes, the application of therapies, and the development and validation of biochemical and molecular biomarkers.

We have also developed a growing line of activity in the phenotyping of different animal and cellular models, including organoids, of various rare genetic diseases. Finally, in recent years we have initiated new activities in the technological and translational fields, such as the development and validation of a biosensor to measure ammonium and amino acids in patients' homes, and a project on federated access to patients' electronic health record data using artificial intelligence tools.

ACHIEVEMENTS 2025

From a scientific perspective, we have published—together with other groups—scientific papers that are fully aligned with the activities described above. By way of example, we have reported the technical aspects of the new ammonium biosensor that we are developing jointly with the UAB and the UPC; we have validated amino acids as biomarkers in epileptic encephalopathies; we have participated in the preparation and publication of clinical guidelines on mitochondrial diseases; and we have expanded the phenotypic description of a new mitochondrial disease related to a disturbance in copper homeostasis.

It is also worth highlighting that during that year we participated in eight different clinical trials, mainly aimed at treating phenylketonuria, congenital disorders of glycosylation, or Angelman syndrome. During this same period, we had twelve active research projects of various types, including local, regional, national, and competitive international projects.

FUTURE CHALLENGES

Over the next years, we plan to consolidate our position as a reference laboratory for the diagnosis of genetically based metabolic diseases, as well as for the phenotyping of animal and cellular models. This year, we expect to receive a new piece of infrastructure consisting of a state-of-the-art liquid chromatograph coupled to a tandem mass spectrometry system, which will foreseeably provide us with new capabilities for targeted and semi-high-throughput metabolomic studies.

In the area of technological development and knowledge transfer, we plan to clinically validate the ammonia and amino acid sensor on which we have been working in recent years in collaboration with the UAB and the UPC. Finally, in 2026 we will conclude the Impact-Únicas Project that we have developed over the past few years, and the technological tools generated through this initiative will be applied in real-world hospital settings for the automated extraction and analysis of health data.

SELECTED PUBLICATIONS

- Julià NA, Muñoz G, Maroofian R, Bertoli AM, Gómez M, Muchart J et al. Clinical and molecular characterization of SLC31A1-related developmental and epileptic encephalopathy: insights from 13 new cases. *Brain Commun.* 2025;7(5). IF:4,500. [Q1].
- Rodríguez H, Nou L, Ormazabal A, Casado M, Arias AY, Pias LD et al. Cerebrospinal amino acid profiling in a large cohort of neuropsychiatric patients with epilepsy. *Neurobiol. Dis.* 2025;216:107098-107098. IF:5,600. [Q1].
- Hipp JF, Bacino CA, Bird LM, Bruenig I, Chan D, de Wit MC et al. The UBE3A-ATS antisense oligonucleotide rugonersen in children with Angelman syndrome: a phase 1 trial. *Nat. Med.* 2025;31(9):2936-2945. IF:50,000. [Q1].
- Epifani F, Cabus L, Nolasco GA, Bolasell M, Perez J, Alcalá A et al. Exploring a Circulating miRNA Signature for PMM2-CDG: Initial Insights Toward Diagnosis, Stratification, and Monitoring. *J. Inherit. Metab. Dis.* 2025;48(6). IF:3,800. [Q2].

SELECTED PROJECTS

- Stroke-like episodes en CDG: propuesta multicéntrica internacional para descubrir el verdadero fenotipo, mejorar el diagnóstico y tratamiento y entender los mecanismos subyacentes. (PFIS0310). Instituto de Salud Carlos III (ISCIII). 2022-2025. IP: Mercedes Serrano Gimarré.
- ÚNICAS: Implementation of a Pediatric Network for Personalised Medicine in rare pediatric diseases. A Pilot Project. (PFIS0367). Instituto de Salud Carlos III (ISCIII). 2023-2026. IP: Rafael Artuch Iriberry.
- Pipeline para el diagnóstico y seguimiento de pacientes con enfermedades mitocondriales basado en un análisis multiómico: Mitoverso. (PFIS0383). Instituto de Salud Carlos III (ISCIII). 2024-2026. IP: Rafael Artuch Iriberry.

SELECTED CLINICAL STUDIES

- A Phase 2b, Multicenter, Double-Blind, Randomized, Placebo-Controlled Study to Assess the Efficacy and Safety of Weekly Doses of GLM101 Administered Intravenously to Participants with PMM2-CDG. (GLM101-003). Glycomine, Inc. Phase II. 2025. IP: Mercedes Serrano Gimarré.
- A Phase 3, Randomized, Double-blind, Placebo-controlled Trial Investigating the Safety and Efficacy of GTX-102 in Pediatric Patients with Angelman Syndrome. (GTX-102-CL301). Ultragenyx Pharmaceutical, Inc. Phase III. 2025. IP: Mercedes Serrano Gimarré.
- Phase 3 study of the efficacy and safety of ION582 in children and adults with Angelman syndrome. (ION582-CS2). Medpace Clinical Research, LLC. Phase III. 2025. IP: Mercedes Serrano Gimarré.

Neurogenetics and Molecular Medicine

Beyond the Pair Bases

Francesc Palau Martínez, MD, PhD
and Janet Hoenicka, PhD



RESEARCHER

Guerau Fernandez Isern

PREDOCTORAL RESEARCHER

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17 Projects

COMPETITIVE: 12

NON COMPETITIVE: 5

14 Publications

Impact factor	76
average Impact Factor	5,4
Publications in 1st quartile	86%
Publications in 1st decile	29%
Leadership	43%

At GenomicScientia, we are committed to understanding the biology and pathophysiology of neurogenetic disorders—covering from principles of genetic variation to diagnostic and therapeutic aspects that impact individuals living with these rare diseases. We investigate genomic features, gene discovery, disease mechanisms and pathways, and molecular targets. Our aim is to find disease causes and pathogenic mechanisms, improve genetic and functional diagnostics, accelerate drug discovery, and develop new therapeutic targets and treatments. We are a multidisciplinary group comprising geneticists, molecular and cell biologists, bioinformaticians, pediatricians, and medical geneticists who conduct research on Charcot-Marie-Tooth neuropathy, Menkes disease and copper-related disorders, the neurodevelopmental disorder Coffin-Siris syndrome, genetic Parkinson's disease, and ANKK1-related addiction disorders. We integrate basic biomedical research, translational research from the lab to the clinic, and clinical studies using phenotype data and human cell models from patients, collaborating with physicians, as well as utilizing animal models and computational models of disease.

ACHIEVEMENTS 2025

We highlight key milestones in our scientific and translational efforts across three areas:

1. Therapeutic Research: We led the Copperless international collaborative group. We applied a new treatment—elesclomol-copper—as a disease-modifying therapy for Menkes disease. It follows a strategy of drug repurposing (small molecules) for rare diseases, and it represents a model of co-creation research involving clinicians, researchers, and patients (Journal of Clinical Investigation).
2. New unexpected variant in familial Parkinson disease: Pathogenic variants in the catalytic domains of the LRRK2 gene are the leading genetic cause of Parkinson's disease (PD). We discovered in a PD family a new LRRK2 allele affecting an interaction domain. It enhances LRRK2 activity, expanding our knowledge of the disease's fundamental mechanisms (NPJ Parkinsons Disease).
3. Gene Discovery: The identification of the DARS2 gene typically associated with leukodystrophy, as a new genetic and phenotypic form of Charcot-Marie-Tooth disease (Annals of Neurology).

FUTURE CHALLENGES

Our objectives for 2026 focus on maintaining continuity across the group's research areas in gene discovery, studying pathogenic mechanisms in neurogenetic diseases, and drug repurposing and preclinical trials. A key goal is developing the Sant

Joan de Déu Functional Genomics Platform (PGF-SJD) as a scientific and medical service—serving both SJD Children's Hospital and external users—and integrating computational biology into the analysis of genetic variants. We have outlined these initiatives as follows:

- Incorporation of computational structural genomics and molecular modeling.
- Maintenance and expansion of collaborations within our immediate scientific community (e.g., SJD Children's Hospital, IBEC, Spanish Parkinson's Group) and internationally (e.g., BETTER project, the Medical College of Wisconsin, the Mayo Clinic in Phoenix, the "Nelson Pediatric Textbook of Rare Diseases," and the ACAL & RELAGH books collaboration on "Human Genetics in Latin America").
- Implementation of new functional genomics and molecular tools such as CRISPRa and CRISPRi.

SELECTED PUBLICATIONS

- Godoy E, Serrano NL, Jiménez A, Villaronga M, Marqués Pérez RM, Varela R et al. Elesclomol-copper therapy improves neurodevelopment in two children with Menkes disease. J. Clin. Invest. 2025;135(19). IF:13,600. [Q1].
- Vela L, Pascual A, Montal V, Guerrero C, Osuna M, Guallar V et al. A new LRRK2 variant in a family with Parkinson's disease affects binding to RAB8A. NPJ Parkinsons Dis. 2025;11(1):154-154. IF:8,200. [Q1].
- Estévez B, Sarv S, Bonello N, Carrera L, Orte CI, Exposito JM et al. Biallelic Variants in the DARS2 Gene as a Novel Cause of Axonal Charcot-Marie-Tooth Disease. Ann. Neurol. 2025;98(6):1335-1351. IF:7,700. [Q1].
- Olival J, Hoenicka J, Arca G, Arnaez J, Agut T, Maynou J et al. Idiopathic neonatal arterial ischaemic stroke: a trio-based whole-exome sequencing study. Arch. Dis. Child.-Fetal Neonatal Ed. 2025. IF:3,600. [Q1].

SELECTED PROJECTS

- BETTER: Better rEal-world healTh-daTa distributed analytics Research platform. [PFE00122]. European Commission (HORIZON-HLTH-2023-TOOL-05-04). 2023-2027. IP: Francesc Palau Martínez.
- Genes y Fenotipos de Síndromes Parkinsonianos: validación funcional de hallazgos genéticos — ParkGenPhen. (PFIS0357). Instituto de Salud Carlos III (ISCIII). 2023-2026. IP: Janet Hoenicka.
- Mitochondrial membrane contact sites in the axonopathy of neurogenetic disease. (PFP00386). Ministerio de Ciencia e Innovación. 2025-2028. IP: Francesc Palau Martínez; Lara Cantarero Abad.

Genomics for the Diagnosis of Rare Diseases

Advancing Rare Pediatric Disease Diagnosis Through Translational Genomics

Judith Silvia Armstrong Morón, PhD



RESEARCHER

Délia Yubero Siles

POSTDOCTORAL RESEARCHER

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Laura Martí Sanchez
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Amàlia Fosch Tena
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Carlota Ros Bonaventura
David de las Heras Cruces
Marta Tejedor Casilla

RESEARCH ASSISTANT

Roger Prats Oliva

Translational genomics group developing advanced tools to improve diagnosis of rare pediatric diseases through scalable, clinically driven approaches.

ACHIEVEMENTS 2025

Expanded our group with new researchers, broadening diseases and technologies to improve genomic diagnosis in paediatric rare diseases.

FUTURE CHALLENGES

Consolidate new researchers through competitive funding and develop scalable genomic strategies to improve diagnosis in rare pediatric diseases.

SELECTED PUBLICATIONS

- Greene D, De Wispelaere K, Lees J, Codina M, Jensson BO, Hales E et al. Mutations in the small nuclear RNA gene RNU2-2 cause a severe neurodevelopmental disorder with prominent epilepsy. Nat. Genet. 2025;57(6):1367-1373. IF:29,000. [Q1].
- Siqueira E, Velasco CD, Tarrasón A, Soler M, Srinivas T, Setién F et al. NEAT1-mediated regulation of proteostasis and mRNA localization impacts autophagy dysregulation in Rett syndrome. Nucleic Acids Res. 2025;53(4). IF:13,100. [Q1].
- Estévez B, Sarv S, Bonello N, Carrera L, Ortez CI, Exposito JM et al. Biallelic Variants in the DARS2 Gene as a Novel Cause of Axonal Charcot-Marie-Tooth Disease. Ann. Neurol. 2025;98(6):1335-1351. IF:7,700. [Q1].
- De la Rosa SO, Rizzo V, Jauss RT, Bartolomaeus T, Escolar M, Bernard G et al. MBOAT7 encephalopathy: Characterizing the neurology and epileptology. Epilepsia. 2025;66(7):2379-2390. IF:6,600. [Q1].

SELECTED PROJECTS

- Estudio de validación de dianas terapéuticas en muestra cerebral y sangre periférica de pacientes con síndrome de Rett. (PFNR0185). Fundación ADEY. 2023-2027. IP: Judith Silvia Armstrong Morón.
- Identificación de biomarcadores y dianas terapéuticas a través del análisis integrado de multiómica de la huella molecular del síndrome de Rett y trastornos del neurodesarrollo. (PFIS0381). Instituto de Salud Carlos III (ISCIII). 2024-2026. IP: Judith Silvia Armstrong Morón.
- Identification of biomarkers and therapeutic targets through integrated multi-omics analysis of the molecular signature of Rett Syndrome and neurodevelopmental disorders. (PFP00380). Agaur - Agència de Gestió d'Ajuts Universitaris i de Recerca (FI-STEP). 2026-2028. IP: Judith Silvia Armstrong Morón.

9 Projects

COMPETITIVE: 7

NON COMPETITIVE: 2

10 Publications

Impact factor 51
average Impact Factor 5.1
Publications in 1st quartile..... 70%
Publications in 1st decile..... 30%

Human Molecular Genetics I

Study of the genetic and molecular basis of human diseases

Raquel Rabionet Janssen, PhD



RESEARCHER

Noelia Fernández Castillo
Bru Cormand Rifa
Roser Corominas Castiñeira
Ferran Casals López
Marina Mitjans Niubo

RESEARCH TECHNICIAN

Mónica Cozar Morillo

12 Publications

Impact factor	70
average Impact Factor	5,9
Publications in 1st quartile....	83%
Publications in 1st decile.....	33%
Leadership	25%

We investigate genetic factors affecting human health, involving both common and rare human disorders. Our research involves rare neurodevelopmental syndromes (Williams-Beuren [WBS], 7q11.23 microduplication [DUP7], TRAF7, Shcaaf-Yang [SYS], among others), primary immunodeficiencies, and neuropsychiatric disorders such as autism spectrum disorder, schizophrenia, substance use disorders, ADHD or stroke outcome. We apply cellular, animal and computational models to elucidate disease mechanisms.

We work with iPSC to generate relevant disease-specific cellular and organoid models for neurodevelopmental and immunological disorders. For psychiatric disorders, we generate and characterize animal models, and we perform genomic, epigenomic and integrative multi-omics analyses in human datasets.

ACHIEVEMENTS 2025

For SYS, WBS and DUP7, we used iPSCs to generate cortical organoids (days 30-60-90) which are now being analyzed, and analyzed scRNAseq from iPSC-derived neuronal models, annotating cell identity groups that recapitulate neuronal differentiation stages.

We performed transcriptomics on fibroblasts from TRAF7 patients and generated iPSC to model TRAF7 syndrome.

We identified an inflammation related gene, VNN2, potentially involved in stroke outcome.

We investigated somatic variants in inborn errors of immunity, examining their clonal evolution over time in affected patients.

By conducting a population genetics-based analysis estimating carrier frequencies for recessive disorders, we found that the majority of variants of unknown significance are unlikely to have a pathogenic effect.

We have studied the shared and specific genetic architecture of several psychiatric conditions, including schizophrenia, substance use disorders, and autism spectrum disorder. We have generated knock-out brain organoids and a zebrafish model to study a highly pleiotropic gene identified by us.

FUTURE CHALLENGES

Our objectives for 2026 are:

- To profile at morphological and transcriptomic level WBS, DUP7 and control models 3D cortical organoids and explore the transcriptomic alteration of a WBS fetal cortex sample as a validation model.
- To generate iPSC-derived neurons and osteoblasts-osteoclasts from TRAF7 patient derived or gene-edited iPSCs.
- To generate a MAGEL2_KO cell line as a proof of concept of a therapeutic gene silencing approach in SYS.

- To perform functional studies on VNN2 edited cells to study its role in post-stroke inflammation.
- To analyze genetic variation data in large epidemiological cohorts to assess the prevalence of post-zygotic variants at preclinical level for autoimmune disorders and identify candidate pathogenic variant combinations.
- For psychiatric disorders, we aim to explore sex differences at the genetic and epigenetic levels, which could account for differences in vulnerability. We will also functionally characterize the organoid and animal models already generated by us for specific psychiatric genes.

SELECTED PUBLICATIONS

- Koller D, Løkhammer S, Goroshchuk O, Denner V, Stiltner B, Mitjans M et al. Observational and Genetic Analyses of Traumatic Experiences and Endometriosis. *JAMA Psychiatry*. 2025;82(4):386-394. IF:17,100. (Q1).
- Alcaide E, Mola M, Escaramís G, Lazcano U, Fernández I, Reig J et al. Rare Variant Association Analysis Uncovers Involvement of VNN2 in Stroke Outcome. *Stroke*. 2025;56(9):2571-2578. IF:8,900. (Q1).
- Leggieri A, García J, Hosseinian S, Ashdown P, Anagianni S, Wang X et al. rbfox1 LoF mutants show disrupted bdnf/trkb2 and crhb/nr3c2 expression and increased cortisol levels during development coupled with signs of allostatic overload in adulthood. *Transl. Psychiatr*. 2025;15(1):519-519. IF:6,200. (Q1).
- Bonet N, Mascaro JMJR, Hurtado L, Angosto D, Callejas JL, Clemente D et al. Novel Insights into the Clinical Features, Genetic Spectrum and Clonal Evolution of Patients Carrying NLRP3 Mosaicism. *J. Clin. Immunol*. 2025;45(1):134-134. IF:5,700. (Q1).

Functional Genetics and Modelling of Inherited Retinal Dystrophies (IRDs)

Advancing Precision Therapies for Inherited Retinal Diseases

Gemma Marfany Nadal, PhD



1 Publications

Impact factor	5
average Impact Factor	5,4
Publications in 1st quartile.....	100%
Publications in 1st decile.....	0%
Leadership.....	0%

Our research focuses on the generation and characterization of animal and alternative 2D/3D human retinal organoid models to study inherited retinal dystrophy (IRD) genes aiming to design an effective precision therapy.

To study the molecular bases of hereditary blindness, we generated mouse models by CRISPR techniques on genes that cause either retinitis pigmentosa (CERKL) and/or ciliopathies (USP48) with retinal affection. Regarding CERKL, we collaborate with other IBUB and IRSJD groups (Dr. Villaroya, Dr. Artuch) to show that CERKL depletion causes alterations in mitochondrial morphology and dynamics, combining transcriptomics metabolomics and lipidomics in retinal organoids opening new perspectives for treatments by regulation of mitochondrial metabolism. We are also collaborating with groups that study VUS in as yet unreported genes that might cause ciliopathies with neurodevelopmental disorders and retinal alterations (USP48).

phies. The cutting-edge technological & phenotyping approaches planned in the project will enable new therapeutic strategies for retinal dystrophies and may have a significant social and health impact on the wellbeing of the population of patients affected by these discapacitating rare diseases. We aim to explore future therapeutic strategies that will benefit patients by increasing their quality of life.

SELECTED PUBLICATIONS

- Toulis V, Marfany G, Mirra S. Marine Derived Strategies Against Neurodegeneration. Mar. Drugs. 2025;23(8). IF:5,400. [Q1].
- Marfany G. Editorial. Revista de Bioética y Derecho. 2025;64:1-4.

ACHIEVEMENTS 2025

The most important achievement of our group during 2025, is the social impact of our research in society. Our PhD student, Rocío García-Arroyo (co-supervised by Serena Mirra and myself) phenotypically characterized a Cerkl mouse model including the first results of gene therapy using subretinal injections with AAV-CERKL. She also generated alternative disease models differentiating retinal organoids from patient's hiPSCs. During 2025, this PhD thesis was prized with the Premio Extraordinario de Doctorado UB (to scientific excellence), as well as the Prize to the best doctoral PhD thesis given by the "Retina Catalunya" Prize to the best Thesis in retina (2025 Prize edition) recognizing the social impact and scientific research transference to patients.

Moreover, we have also obtained a grant from Torrons Vicens-RAC1 2026 together with the research group of Dr. Judith Armstrong (IRSJD), which has allowed us to contract technical support for our research.

FUTURE CHALLENGES

Retinal dystrophies are severe rare disabling rare diseases (1:3000) with high emotional and economical social costs. Patient associations are increasingly concerned about availability and efficacy of genetic diagnosis and future therapeutic treatments. Basic research in rare diseases is scarce and underfunded, but it is the only hope to enable precision medicine. Finding a cure for retinal dystrophies, many of which have a devastating outcome, represents an important and unmet medical need. This project aims to fill this gap by bringing together basic scientific knowledge and gene-therapeutic approaches to retinal dystro-

Diagnostic and Therapeutic Imaging

Seeing childhood differently, advancing care together

Ignasi Barber Martínez de la Torre, PhD
and Emilio Inarejos Clemente, MD, PhD



RESEARCHER

Mónica Rebollo Polo
Enrique Ladera González
Andrea González
Flavio Zuccarino
María Navallas Irujo

1 Projects

COMPETITIVE: 0
NON COMPETITIVE: 1

12 Publications

Impact factor 73
average Impact Factor 6,1
Publications in 1st quartile.... 58%
Publications in 1st decile..... 33%
Leadership 25%

We are the Diagnostic Imaging Research Team at Hospital Sant Joan de Déu, Barcelona, dedicated to advancing pediatric imaging science for high-complexity clinical care. Our multidisciplinary group of radiologists, technologists and data scientists develops and validates imaging protocols and quantitative biomarkers tailored to fetal, neonatal and pediatric populations. We support investigator-initiated and multicenter clinical studies, optimize radiation dose and sedation-free techniques, and translate novel sequences and postprocessing methods into routine practice. By integrating clinical expertise with research, education, and quality improvement, we aim to shorten diagnostic pathways, personalize management, and improve long-term outcomes for children with congenital, oncologic, neurological, and critical care needs.

ACHIEVEMENTS 2025

In 2025 we implemented low-dose, motion-robust MRI protocols across multiple pediatric specialties, reducing need for sedation by 35% and image-acquisition time by 25%. We led two multicenter studies validating quantitative MRI biomarkers for pediatric brain tumor response assessment and published results in high-impact journals. Our team deployed a tool for automated fat organ segmentation in girls and adolescents. We expanded research imaging capacity with a dedicated pediatric imaging research slots in our scanners. Collaborative initiatives improved liaison with surgical, oncologic, obstetric and neonatal teams, increasing recruitment to prospective imaging studies.

FUTURE CHALLENGES

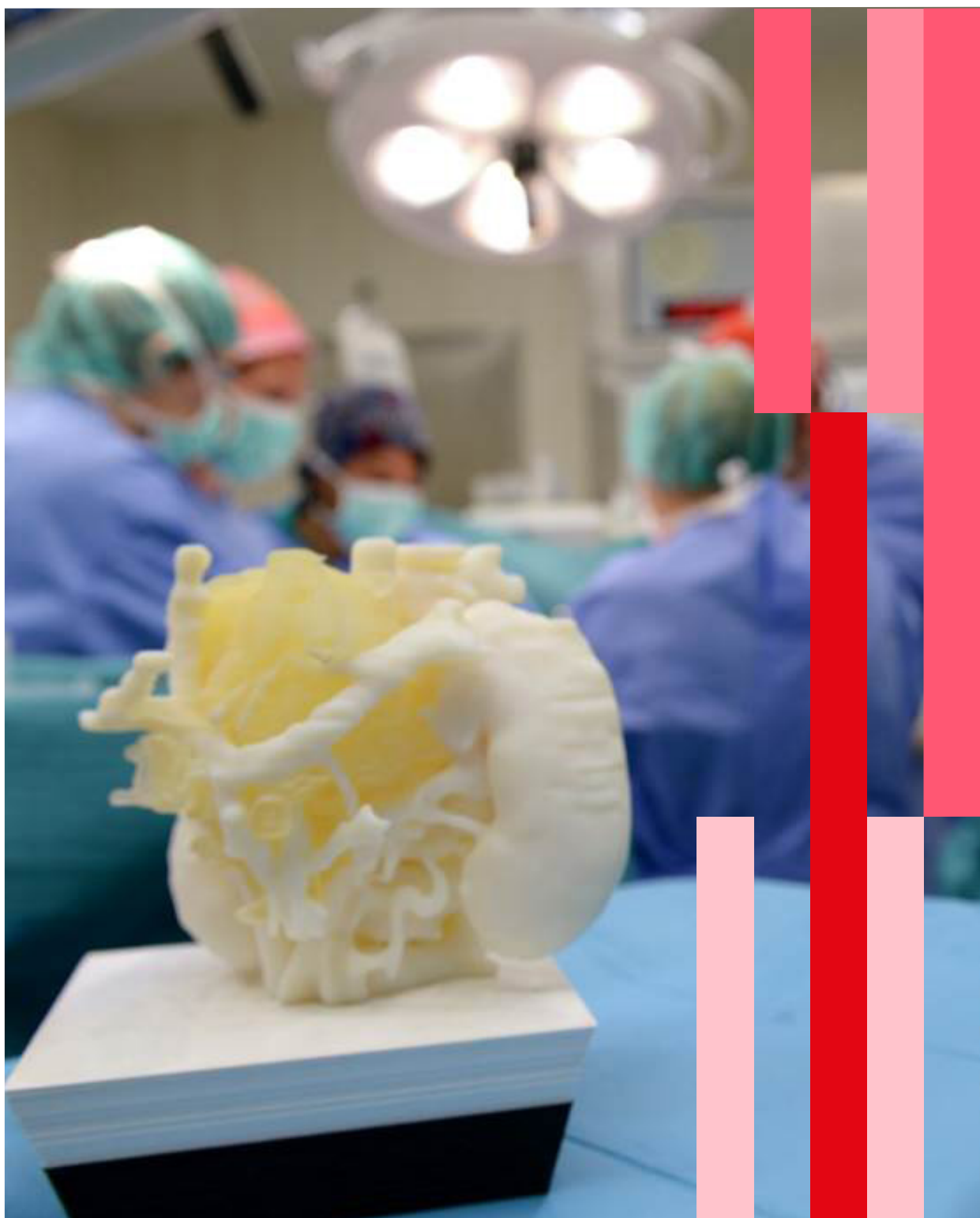
We will focus on translating quantitative imaging and AI into validated clinical decision tools that are robust for pediatric physiology and anatomy. Key challenges include generating larger, harmonized pediatric imaging datasets while preserving data privacy, achieving regulatory and clinical validation for AI applications, and standardizing biomarkers across scanners and centers. We aim to further reduce sedation and radiation exposure through rapid sequences and hybrid imaging pathways, and to integrate imaging-derived biomarkers with genomics and clinical data to enable personalized treatment plans. Building sustainable collaborations, securing funding for multicenter trials, and training the next generation of pediatric imaging researchers are essential to ensure our innovations improve outcomes for children with the highest complexity of care. We also expect to expand our research imaging capacity with a dedicated pediatric imaging research MR unit.

SELECTED PUBLICATIONS

- Inarejos E, Moreno D, Barber I, Enrique G, Navarro OM. Tenosynovial giant cell tumor and its differential diagnosis in children. *Pediatr Radiol*. 2025;55(10):1992-2008. IF:2,300. [Q2].
- D'Hondt A, Shelmerdine S, Aertsen M, Cassart M, Miller E, Klein W et al. Fetal and neonatal postmortem magnetic resonance imaging clinical protocol: recommendations from the European society of paediatric radiology postmortem task force. *Pediatr Radiol*. 2025;55(10):2047-2053. IF:2,300. [Q2].
- Brunet L, Zuccarino F, Carretero JM. Left pulmonary artery sling in a pediatric cohort: a single-center 20-year experience. *An. Pediatr*. 2025;103(5). IF:2,100. [Q2].
- Inarejos E, Navallas M, Martin T, Winant AJ, Lee EY. Pediatric Musculoskeletal Infection Old and New Techniques for Clinical Use. *Radiol. Clin. N. Am*. 2025;63(5):803-822. IF:1,900. [Q3].

SELECTED PROJECTS

- Radiation, Health, Safety and Quality for Youth: A Comprehensive Approach to Justification, Optimisation, and Education. (PFE00159). European Commission [EU4H-2024-PJ-03]. 2025-2029. IP: Ignasi Barber Martínez de la Torre.



1. Medicine and pediatric science area

1.5. Associated Clinical Research Groups

Pediatric Chronicity and Palliative Care

Palliative and complex care research group (C2P2)

Sergi Navarro, MD, PhD



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Pau Miquel
Queralt Soler
Silvia Asenjo
Silvia Ciprés
Tamara López
Verónica Gimeno
Xavier Fernández i Llana

9 Projects

COMPETITIVE: 8
NON COMPETITIVE: 1

7 Publications

Impact factor 15
average Impact Factor 2,1
Publications in 1st quartile..... 43%
Publications in 1st decile 33%
Leadership 71%

The clinical research group Palliative and complex care research group, linked to the C2P2 Service and affiliated with the Sant Joan de Déu Research Institute (IRSJD), focuses on improving care delivery and quality of life for children and adolescents with complex chronic conditions or palliative care needs, as well as for their families.

The group's strategic areas include comprehensive care and clinical research in paediatric complex chronic conditions and palliative care, innovative models of care, data science and epidemiology applied to quality-of-care assessment, educational innovation and training, and the application of digital transformation to clinical practice.

The group develops and consolidates research lines with a short-, medium-, and long-term perspective, aimed at generating high-quality knowledge and ensuring its effective translation into clinical practice. In addition, the group contributes to academic and professional training in paediatric chronicity and palliative care, with the objective of progressing steadily toward excellence and consolidating itself as a reference research group.

ACHIEVEMENTS 2025

In 2025, the C2P2 Service significantly strengthened its research and academic activity, reinforcing its identity and fostering a culture of excellence, interdisciplinary collaboration, and responsible innovation.

The group have actively participated in several national and international research projects, including leadership roles in two European initiatives: PALLIA-KID (Horizon Europe) and HOME-C2P2 (THCS), as well as co-leadership of the pilot work package within the HOPE4Kids project (European Joint Programme). In parallel, the team continued its involvement in national and regional research, notably the C3AP project, which aims to improve coordination of home-based care through digital health services.

Additionally, previous and new internal research initiatives were developed and consolidated, focusing on improving treatment provision, care implementation, and quality of life for patients and their families. Findings across all projects were disseminated through international conferences via oral communications and poster presentations, as well as through publications in international peer-reviewed journals.

FUTURE CHALLENGES

C2P2 research group aims to strengthen its position by consolidating a robust scientific and organizational structure within the C2P2 Service and the IRSJD. A key priority is to establish a professionalized, transversal governance model that supports research, education, and innovation, while fostering intrahospital and interinstitutional collaboration at national and international level.

The group will focus on increasing high impact scientific production and knowledge translation through structured publication plans, multicentre studies, and the development of advanced data infrastructures and registries that enable longitudinal analyses, predictive modeling, and evidence based clinical guidance. Innovation will be driven through digital health, telemonitoring, and other methodologies to evaluate and scale integrated, homebased, and sustainable care models.

In parallel, C2P2 seeks to expand its educational network, attract talent and resources, and enhance national and international visibility, ensuring measurable impact on clinical practice, health systems, and the lived experience of children and families.

SELECTED PUBLICATIONS

- Asenjo S, Soler A, Morillo A, Habimana NA, Guillen M, Balancé C et al. Analysis of the surprise question as a tool for predicting death in neonates. Eur. J. Pediatr. 2025;184(2):182-182. IF:2,600. [Q1].
- Toro D, Camprdon E, Balance C, Guillen M, Navarro S, Limonero JT. Cross-sectional study of the perceived well-being of children in palliative care. An. Pediatr. 2025;102(1). IF:2,100. [Q2].
- Hernández BS. Reflections on social work leadership in paediatric palliative care: A collaborative model in Catalonia. Br. J. Soc. Work. 2025;55(8):4217-4222. IF:1,500. [Q2].
- Peñarrubia L, Junior CG, Ricart S, Navarro S, Ruiz C, Valls A et al. Family perspectives and experiences on implementing telehealth in pediatric palliative care: a qualitative approach. Eur. J. Pediatr. 2025;184(5):287-287. IF:2,600. [Q1].

SELECTED PROJECTS

- PALLIAKID: Comprehensive Paediatric Palliative Care Approach. (PFE00125). European Commission (HORIZON-HLTH-2023-DISEASE-03-01). 2023-2028. IP: Sergi Navarro Vilarrubi; Silvia Ricart Campos.
- Holistic Oncological Palliative care 4 Europe's Kids. (PFE00158). European Commission (EU4H-2024-JA-IBA-09). 2025-2029. IP: Lucía Navarro Marchena; Sergi Navarro Vilarrubi.
- HOME-C2P2: Supporting children with complex chronic conditions or palliative needs at home: Clinical Command Center to coordinate efforts with primary healthcare. (PFIS0404). Instituto de Salud Carlos III (ISCIII). 2025-2027. IP: Silvia Ricart Campos.

Orthopaedic Surgery and Traumatology

Translating Clinical Challenges into Innovative Solutions in Paediatric Orthopaedics and Traumatology

César Galo García Fontecha, MD, PhD



RESEARCHER

Lydia De Sena De Cabo
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RESEARCH COORDINATOR

Marc Ferré Oliver

PROJECT MANAGER

Stella Nicolaou
Sara Gutierrez Fernandez

9 Projects

COMPETITIVE: 7
NON COMPETITIVE: 2

4 Clinical Trial & Observational Studies

8 Publications

Impact factor 27
average Impact Factor..... 3,4
Publications in 1st quartile.... 75%
Publications in 1st decile..... 13%
Leadership 25%

We are a multidisciplinary research group focused on advancing knowledge and clinical practice in paediatric orthopaedic surgery and traumatology. Our work integrates clinical expertise, translational research, and technological innovation to improve diagnosis, treatment, and outcomes in children with musculoskeletal disorders. We investigate congenital upper limb pathology, skeletal dysplasias, and spinal deformities, alongside the development and clinical assessment of new techniques in paediatric orthopaedic surgery, combining clinical studies with biomechanical analysis, imaging, and digital health tools. A key strength of the group is the close collaboration between surgeons,

bioengineers, and researchers, allowing us to transform clinical challenges into innovative solutions. We are committed to evidence-based medicine and to the development of less invasive, more precise, and patient-centred surgical techniques.

ACHIEVEMENTS 2025

In 2025, the group has consolidated its research activity through increased scientific output, multicentre collaborations, and the launch of new strategic projects. Notably, we have initiated the multicentre project SPINE-SYNC: Multi-stakeholder platform for scoliosis education, communication, professional collaboration and health literacy, led by Dr. César Galo García Fontecha and funded under the European Transforming Health and Care Systems (THCS) call [AC24/00151]. The group has published a total of 8 peer-reviewed articles in international journals, reflecting the growing impact and visibility of our work. In addition, we have continued to expand collaborative networks and actively contributed to scientific meetings, presenting results on paediatric orthopaedic conditions and surgical outcomes. As a result of these achievements, our participation has been confirmed in the European Commission-funded project AMIGO: A multi-ingredient brain function model predicting chronic pain in youth: a window into future well-being, further strengthening our involvement in high-impact research initiatives.

FUTURE CHALLENGES

Our future strategy focuses on further integrating technology and personalized medicine into paediatric orthopaedic care. We aim to expand the use of artificial intelligence, advanced imaging, and biomechanical modelling to enhance diagnosis, personalized surgical planning, and outcome prediction. Another key challenge is to strengthen multicentre and international collaborations to increase the impact and scalability of our research. We also plan to develop prospective clinical trials to validate innovative surgical techniques and digital tools in real-world settings. Ultimately, our goal is to consolidate our position as leaders in paediatric orthopaedic research and to further strengthen our role as a reference centre in the field, recognized for excellence in research, innovation, and patient-centred care, while continuously improving functional outcomes and quality of life for children with musculoskeletal conditions.

SELECTED PUBLICATIONS

• Jeys LM, Morris GV, Kurisunkal VJ, Botello E, Boyle RA, Ebeid W et al. Identifying consensus and areas for future research in chondrosarcoma: a report

from the Birmingham Orthopaedic Oncology Meeting. Bone Joint J. 2025;107-B(2):246-252. IF:4,600. [Q1].

- Peiró A, Garcia R, Martin V, Inmaculada V, Gonzalez L, Martin JM et al. Impact on Quality of Life of Full-time and Night-time Braces in Adolescent Idiopathic Scoliosis: A Randomized Clinical Trial. SPINE. 2025;50(4):231-237. IF:3,500. [Q1].
- Jeys L, Botello E, Boyle RA, Ebeid W, Houdek MT, Kurisunkal VJ et al. A modified Delphi consensus on periprosthetic infection in orthopaedic oncology: a report from the Birmingham Orthopaedic Oncology Meeting (BOOM). Bone Joint J. 2025;107-B(12):1352-1359. IF:4,600. [Q1].
- Adell NE, Buj I, Domingo M, Llumà J, Travieso JA, Rubio J et al. Characterization of 3D-Printed Glass Fiber-Filled and Calcium Carbonate-Filled Polypropylene Components for Surgical Planning. Polymers. 2025;17(19):2684. IF:4,900. [Q1].

SELECTED PROJECTS

- Ensayo clínico aleatorizado comparativo del corsé diurno y nocturno. [PCP00379]. Sociedad para el estudio de las enfermedades del raquis [GEER]. 2023-2027. IP: Alejandro Peiró García.
- AMIGO: A multi-ingredient brain function model predicting chronic pain in youth: a window into future well-being. [PFE00161]. European Commission [ERC-2024-COG]. 2026-2030. IP: César Galo García Fontecha.
- SPINE-SYNC: Multi-stakeholder platform for scoliosis education, communication, professional collaboration and health literacy. [PFIS0403]. Instituto de Salud Carlos III (ISCIII). 2025-2027. IP: César Galo García Fontecha.

SELECTED CLINICAL STUDIES

- A Phase 3 Open-label Single-arm Interventional Study to Assess the Efficacy and Safety of NVD003 in Pediatric Participants Treated Surgically for Congenital Pseudarthrosis of the Tibia. [NVD003-CLN03]. Novadip Biosciences. Phase III. 2025. IP: César Galo García Fontecha.
- Registre multicèntric internacional observacional prospectiu de fractures. PedORTHO. [PedORTH0]. AO Foundation. 2023. IP: Melisa Stitzman Wengrowicz.
- Evaluation of clinical and radiographic outcomes following spinal surgery using the Perlo® TL posterior osteosynthesis system for the treatment of spinal deformities over a period of up to 24 months. [P79_CLD001]. Spineart SA. 2025. IP: Alejandro Peiró García.

Environment Effects on Child/Adolescent Well-being

From environment to emergency care:
improving children's health

Carles Luaces Cubells, MD, PhD



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POSTDOCTORAL RESEARCHER

Cristina Parra Cotanda

5 Projects

COMPETITIVE: 2

NON COMPETITIVE: 3

1 Clinical Trial & Observational Studies

13 Publications

Impact factor	32
average Impact Factor	2,4
Publications in 1st quartile.....	23%
Publications in 1st decile.....	15%
Leadership.....	31%

The group conducts research aimed at expanding knowledge about the influence of the environment (climate, air pollution, noise, light, etc.), the physical setting (school, daycare, hospital, rural, urban, etc.), and the social context (immigration, travel, adoption, separation, etc.) on childhood and adolescence, with the aim of developing preventive strategies.

In addition, it seeks to improve the interaction of children and adolescents and their families with the healthcare environment, facilitating high-quality medical care and greater patient satisfaction, while promoting safety in care delivery, with special attention to children and adolescents with special needs.

ACHIEVEMENTS 2025

In 2025, we developed an early hospital admission prediction model based on emergency triage data using Machine Learning algorithms, which improves patient flow and reduces length of stay in the Pediatric Emergency Department. In addition, we continued working on patient safety and experience by involving patients and their families in the design and implementation of various improvement measures. In this regard, we participated in an international multicenter clinical trial aimed at optimizing analgesia in patients with fractures. Finally, we continued collaborating with other hospitals (ReSync 3, RHEDI, and NIRSEVIMABV2 studies) to assess the impact of the introduction of Nirsevimab immunization on the care burden of respiratory disease in the Pediatric Emergency Department, as well as its type and severity.

FUTURE CHALLENGES

In 2026, in addition to continuing our ongoing research projects, we will collaborate on the international multicenter project Implementation of Child Abuse & Neglect Readiness Package (CAN-ready), for which we have been selected, with the aim of improving the detection of children and adolescents who present to the Pediatric Emergency Department as victims of violence. In addition, we are collecting data to determine the impact of environmental pollution on the number and characteristics of visits to the Pediatric Emergency Department, with particular emphasis on respiratory diseases. We are also collaborating in the study of possible risk factors for the early detection of sepsis. Finally, we will continue our research on hospital admission prediction models, assessing the benefit of making predictions using data beyond triage and/or evaluating their prospective and multicenter validation.

SELECTED PUBLICATIONS

- Supervía A, Gispert M, Puiguriguer J, Álvarez PB, Martínez L, Olmos S et al. Paracetamol poisoning: a prospective comparison of 2 protocols for N-acetylcysteine treatment. *Emergencias*. 2025;37(1):39-43. IF:6,300. [Q1].
- Ajanovic S, Jobst B, Jiménez J, Quesada R, Santos F, Carandell F et al. Non-invasive meningitis screening in neonates and infants: multicentre international study. *Pediatr. Res*. 2025. IF:3,100. [Q1].
- Andina D, Barrueco C, Escalada S, Ranero A, Guerra JL, Gimeno V et al. Unequal impact of respiratory syncytial virus immunization in patients attending Spanish pediatric emergency departments. *Emergencias*. 2025;37(5):360-366. IF:6,300. [Q1].
- Batlle A, Pardo A, Daunis P, García R, López S, Achotegui A et al. Predicting Healthcare Workload in Pediatric Home Hospitalization: The Role of Patient Complexity and Family Participation. *Healthcare*. 2025;13(23). IF:2,700. [Q2].

SELECTED PROJECTS

- Ajuts "Post-FSE HSJD" (Starting) — Financament d'ajuts "Post-FSE HSJD" (Starting). [PCIH2403]. Hospital Sant Joan de Déu - Esplugues (HSJD). 2024-2025. IP: Pedro Brotons de los Reyes; Victoria Trenchs Sainz de la Maza.
- Ajut Post-FSE HSJD Advanced 2025. [PCIH2403]. Hospital Sant Joan de Déu - Esplugues (HSJD). 2025-2027. IP: Pedro Brotons de los Reyes; Victoria Trenchs Sainz de la Maza.

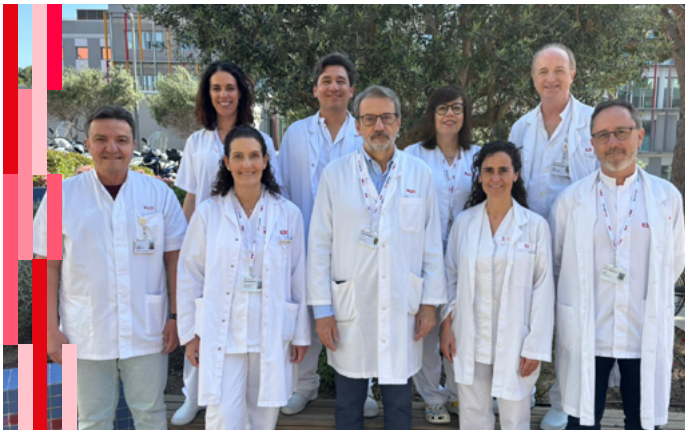
SELECTED CLINICAL STUDIES

- Open-label, prospective study to assess the safety, tolerability, analgesic effect and feasibility of IN SUF/KET in pediatric patients with moderate or severe pain, in an acute care setting. [PDC-01-0202]. Cessatech AS. Phase III. 2024-2025. IP: Yolanda Fernández Santervas.
- RSV in Hospital Emergency Departments in Iberia (RHEDI) Study. [RHEDI]. 2022. IP: Carles Luaces Cubells.

Hospital Dentistry and Periodontal Medicine

Where dentistry and medicine work together

Alejandro Rivera Baró, MD, PhD



RESEARCHER

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1 Projects

COMPETITIVE: 1

4 Publications

Impact factor	9
average Impact Factor	2,1
Publications in 1st quartile....	0%
Publications in 1st decile.....	0%
Leadership	100%

The HSJD's Dental Department has over 45 years' experience in clinical care, teaching and research. In terms of clinical care, it is an integrated department within the structure of the Maternity and Paediatric Hospital, and is the only state-run tertiary hospital to have its own paediatric dentistry department. It is a centre of excellence in the following areas of expertise: craniofacial malformations, care for patients with special needs, medically compromised patients, and those with syndromes across all dental specialities. Furthermore, our Department is affiliated with the Dental School – Faculty of Medicine and Health Sciences – UB.

The group has three lines of research:

- Patients with special needs or at high risk: Hospital dentistry and paediatric oral surgery
- Periodontal medicine: the relationship between periodontal diseases and systemic diseases, as well as adverse pregnancy
- Cranio-maxillofacial malformations and analysis of malocclusions with associated anatomical factors.

ACHIEVEMENTS 2025

We completed a study relating bone disease to oromaxillofacial disorders in two different populations. This study: "Dentomaxillofacial abnormalities associated with bone diseases in two pediatric populations: Southern Europe and Eastern Africa" has allowed to write two articles for the Orphanet Journal and Rare Diseases. The doctoral thesis was awarded the highest grade of "Excelent cum laude" and granted the International Doctorate mention.

We have given continuity to the research line: "Periodontal disease in pregnant women associated with preterm delivery". At present, research is being conducted in the domain of periodontal medicine on a study entitled 'Antenatal study of periodontitis in pregnant women with threatened preterm labour and/or preterm premature rupture of membranes: periodontal inflammatory biomarkers and their influence on foetal development'. This project is being carried out as part of the competitive call 'àrees singulars' (UB-AS-2025), led by Professor Jaume Miranda-Rius in collaboration with the Obstetrics Department.

FUTURE CHALLENGES

We currently have three doctoral theses in progress, two of which have already been registered and approved by the UB's Doctoral Committee in Medicine: CEIm - PIC-187-21. Gingival enlargement induced by orthodontics, CEIm - PIC-01-23. Prognostic factors of traumatized and transplanted teeth.

Other projects: CEIm - PIC-208-24. Three-dimensional analysis of long-term stability in orthognathic surgery and maxillary distraction in patients with cleft lip and palate, CEIm - PIC-127-25. Parental anxiety during paediatric dental treatment under conscious sedation, CEIm - PIC-50-26. Analysis of acute oral complications and their clinical implications during cancer treatment.

Continue with the Competitive Project: Erasmus+ KA 171 Staff Credit Mobility – 2023-2027 / 2023-1-ES01-KA171-000138096 awarded to UB includes Sub-Saharan Africa region. A competitive European academic project approved to facilitate staff exchanges between the UB and the Consortium of New Tanzanian Dental Schools (Tanzania). Prof. Jaume Miranda-Rius has participated and created the academic content of this sub-project.

SELECTED PUBLICATIONS

- Mashala EI, Brunet LL, Lapitskaya A, Balsells S, Mrina O, Miranda J et al. Bone disease and oromaxillofacial disorders: a cross-sectional study in a Tanzanian pediatric population. Orphanet J. Rare Dis. 2025;20(1):77-77. IF:3,500. [Q2].
- Brunet LL, Mashala EI, Lapitskaya A, Robassa J, Rocha MD, Miranda J. Dentomaxillofacial abnormalities associated with rare bone disease in two pediatric populations from southern Europe and East Africa. Orphanet J. Rare Dis. 2025;20(1). IF:3,500. [Q2].
- Robassa J, Cahuana P, González Y, María Dolores Rocha E, Ramírez A, Mashala EI et al. Efficacy of Midazolam in Outpatient Pediatric Dentistry: A Systematic Review. Spec. Care Dent. 2025;45(5). IF:1,000. [Q4].
- Cahuana P, Brunet LL, Robassa J, González Y, Dolores Rocha M, Ramírez A et al. Spontaneous Osteonecrosis of the Jaw in the Presence of Periodontal Disease in an Adolescent with Cyclic Neutropenia. J. Dent. Child. 2025;92(1):44-47. IF:0,500. [Q4].

SELECTED PROJECTS

- SGR 2022-2024 — Hospital Dentistry & Periodontal Medicine Research Group. (PFP00283). Agaur - Agència de Gestió d'Ajuts Universitaris i de Recerca. 2022-2025. IP: Lluís Brunet Llobet.

Pediatric Ophthalmology

Advancing Vision Research Through Subspecialized Ophthalmology and Innovation

Joan Prat Bartomeu, PhD



RESEARCHER

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M^aDolores Rocha Eiroa
Pau Cahuana Bartra
Judit Rabassa Blanco
Yndira González Chópita

5 Projects

COMPETITIVE: 3

NON COMPETITIVE: 2

4 Clinical Trial & Observational Studies

6 Publications

Impact factor **20**
average Impact Factor **3,3**
Publications in 1st quartile..... **50%**
Publications in 1st decile..... **17%**
Leadership **17%**

The ophthalmology group is highly compartmentalized into subspecialties, with several lines of research and innovation. Studies in retinoblastoma, retinal dystrophies, uveitis, and optic nerve diseases are particularly noteworthy. Research is also being conducted on the genetics of diseases affecting both the anterior and posterior segments of the eye. Innovation efforts focus on computer vision (AI) detection of retinopathies and virtual reality systems for documenting visual function.

ACHIEVEMENTS 2025

Among the achievements obtained during 2025, the following stand out:

- 1) Improvements in the treatment of severe cases of retinoblastoma
- 2) Contributions to the genetic categorization and gene therapy of retinal dystrophies
- 3) Optimization of the monitoring of uveitis due to juvenile idiopathic arthritis
- 4) Preliminary results of AI-assisted diagnosis of retinal images in retinopathy of prematurity (ROP)
- 5) Improvements in the interpretation of optical coherence tomography (OCT) in optic nerve glioma associated with neurofibromatosis type 1 (NF1)

FUTURE CHALLENGES

Looking ahead to the coming years, a degree of continuity is planned for the following projects:

- 1) Further results in the diagnosis and treatment of retinal dystrophies
- 2) Consolidation of artificial vision (AI) in the diagnosis of ophthalmological pathologies
- 3) Genetic categorization of congenital ophthalmological diseases
- 4) Review of results of innovative treatments for retinoblastoma

SELECTED PUBLICATIONS

- Tomar AS, Finger PT, Gallie B, Kivelä TT, Mallipatna A, Zhang CY et al. Diffuse infiltrating retinoblastoma: a multicentre, international, data-sharing study. Br. J. Ophthalmol. 2025;109(12):1409-1416. IF:3,500. (Q1).
- Esteve A, Padró A, Català J, Sau C, Yubero D, Corradi Z et al. Personalised genomic strategies improve diagnostic yield in inherited retinal dystrophies: a stepwise, patient-centred approach. Eye. 2025;39(16):2899-2911. IF:3,400. (Q1).
- Foeldvari I, Solebo A, Petrushkin H, Angeles ST, Bangsgaard R, Calzada J et al. Monitoring of Juvenile Idiopathic Arthritis-Associated Uveitis in Long-Term Disease Remission: Consensus-Based Recommendations From the Multinational Interdisciplinary Working Group for Uveitis in Childhood. Arthritis Care Res. 2025;77(9):1106-1111. IF:3,300. (Q2).
- Roig G, Alberto MM, Català J. Fingerprint Sign in Familial Microphthalmia Linked to Membrane Frizzled-Related Protein Mutation. Ophthalmol. Retina. 2025. IF:5,700. (Q1).

SELECTED PROJECTS

- ROP-KID: AI-Based Clinical Decision Support System for the Evaluation and Prediction of Retinopathy of Prematurity. (PCP00474). Fundació Institut de Recerca "la Caixa". 2025-2026. IP: Alicia Serra Castanera.
- Equip Realitat Virtual per l'avaluació de la visió funcional en pacients amb DHR pre i post-tractament amb teràpies intraoculars avançades. (PFP00347). Consorci de Salut i d'Atenció Social de Catalunya (CSC). 2025-2026. IP: Jaume Català Mora.

SELECTED CLINICAL STUDIES

- A Phase 3, multicenter, randomized, evaluator-blinded clinical trial to assess the safety and efficacy of Clobetasol propionate ophthalmic nanoemulsion, 0.05% compared to Prednisolone acetate, 1% in the treatment of inflammation after cataract surgery in pediatric population 0 to 3 years of age (CLOSE-3). (CLOB0F3-17IA03). Laboratorios Salvat, S.A. Phase III. 2022. IP: Marta Morales Ballús.
- Global Patient Registry of Inherited Retinal Diseases: IRD Registry. (NOPRODRPG0002). Janssen-Cilag International NV. 2024. IP: Jaume Català Mora.
- Estudio postautorización, multicéntrico, multinacional, longitudinal y observacional para el registro de la seguridad en pacientes tratados con voretigén neparovvec. (CLTW888A12401). Novartis Farmacéutica, S.A. 2020. IP: Jaume Català Mora.

Nursing Research

Nursing Science: Knowledge at the Service of Patient Care.

Montserrat Gutiérrez Juárez



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Carmen Yoldi-Vergara

2 Projects

COMPETITIVE: 2
NON COMPETITIVE: 0

2 Publications

Impact factor 5
average Impact Factor 2,4
Publications in 1st quartile.... 50%
Publications in 1st decile..... 0%
Leadership 0%

Our research group focuses on advancing scientific knowledge in the field of nursing care. We work from the premise that investigating care requires evaluating how nursing interventions influence the abilities, attitudes, and knowledge of the people receiving care. In today's context of precision health and multidisciplinary collaboration, we incorporate environmental, social, cultural, economic, and lifestyle data as essential factors for understanding and improving health outcomes.

Our work promotes evidence-based clinical practice, the generation and dissemination of scientific knowledge, and the development of research competencies among nursing professionals. We view research as a transversal skill that enables the profession to adapt to social needs and ensure safe, high-quality care.

Through this approach, we foster studies that validate new hypotheses and translate them into clinical practices that enhance health results and improve the care experience of individuals and communities.

ACHIEVEMENTS 2025

During 2025, the development of nursing research was strongly promoted within the framework of the Nursing Directorate Strategic Plan 2024-2027. The Research Plan was implemented as a key component of the Plus Program, fostering a cross-cutting research culture aligned with evidence-based clinical practice.

One of the main achievements was the submission of the application to the ANDE-Nursing Research Challenge (2026 call), including the institutional project report. The proposal ranked 9th among the 15 finalist proposals. In parallel, the process of mapping and identifying nursing research leads by clinical units was initiated, and these were presented within the activities of the Nursing Research (NURE) group of the Nursing Directorate.

In the area of scientific dissemination, the 1st SJD Nursing Research Conference was organized, consolidating a space for visibility, knowledge exchange, and the promotion of nursing scientific output.

FUTURE CHALLENGES

Looking ahead to the coming years, the institution is steering its strategy toward the **consolidation and maturation of a nursing research ecosystem with tangible impact on patient care.**

- **To strengthen the governance and sustainability of nursing research** by integrating it into strategic planning, decision-making processes, and clinical workflows, supported by continuous evaluation and monitoring mechanisms.
- **To develop and recognize the role of unit-based nursing research leads** through structured training pathways, methodological support, and collaborative spaces that foster research grounded in clinical practice.
- **To promote applied research and knowledge translation**, prioritizing projects aligned with real clinical needs and aimed at improving quality, safety, and health outcomes.
- **To reinforce external visibility and scientific dissemination**, consolidating participation in initiatives such as the Nursing Research Challenge and ensuring continuity of research conferences as platforms for visibility and institutional maturity.

SELECTED PUBLICATIONS

- Roldan J, Jerez C, Mestres O, Muñoz L, Gutierrez M, Biurrun A et al. Adaptation and validation of Spanish version of the Inpatient Dignity Scale in hospitalized patients: a psychometric study. Int. J. Nurs. Stud. Adv. 2025;9:100423-100423. IF:2,700. [Q1].
- Roig AR, de Oliveira E, Borràs C, Adame A, Espinosa A, Miguel S et al. Purpura Fulminans in an Extremely Premature Infant: A Case Report. Children (Basel). 2025;12(11). IF:2,100. [Q2].

SELECTED PROJECTS

- Influencia de las intervenciones enfermeras en la adherencia terapéutica del paciente con artritis idiopática juvenil durante el programa de transición a adultos. (PCP00436). Sociedad Española de Reumatología Pediátrica (SERPE). 2024-2026. IP: Patricia Ramírez Rodríguez.
- Post-acompanyam: comunitats de suport per a una transició sostenible dels/les joves amb problemes de Salut Mental cap a la vida adulta. (PFP00304). Generalitat de Catalunya. 2023-2025. IP: Eva Maria Luján Luján; María Ribas Siñol.

Innovation in Medical Assistance Devices (IDAM)

Digital health, artificial intelligence and patient safety innovation for infections, chronic conditions and vulnerable populations.

Vicens Diaz de Brito Fernandes, MD, PhD



RESEARCHER

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RESEARCH MANAGEMENT

Gemma Donaire Sansó

5 Projects

COMPETITIVE: 4

NON COMPETITIVE: 1

8 Clinical Trial & Observational Studies

8 Publications

Impact factor	37
average Impact Factor	4,6
Publications in 1st quartile.....	50%
Publications in 1st decile.....	13%
Leadership.....	25%

IDAM is a multidisciplinary research group focused on person-centred care, wellbeing and patient safety, with a strong commitment to improving healthcare for vulnerable populations. Its research addresses key challenges such as infections and antimicrobial resistance, ageing, chronic conditions, mental health, women's health and patient safety.

The group develops innovative solutions, including digital health tools, medical devices, artificial intelligence and decision-support systems, through co-creation with patients, families and healthca-

re professionals. With expertise in antimicrobial stewardship, HIV, healthcare-associated infections, predictive models and implementation science, IDAM has produced over 100 publications since 2022, with more than two-thirds in Q1 journals.

ACHIEVEMENTS 2025

In 2025, IDAM strengthened its strategic research lines in digital health and artificial intelligence. The AppATB platform reached MVP 1.0 and was deployed as a proof of concept in four Catalan hospitals, integrating clinical and microbiological data to support antimicrobial prescribing and patient safety.

The group also secured funding for new AI-driven solutions, including App-Devices for vascular catheter safety and a multicentre HIV project focused on patient-reported outcomes. IDAM further advanced research in perinatal mental health, chronic disease management and digital monitoring, while reinforcing its translational profile through technology transfer initiatives, Living Lab certification and national collaborations.

FUTURE CHALLENGES

IDAM aims to become a leading translational group in digital health, clinical artificial intelligence and patient safety within public healthcare systems. Future priorities include advancing AppATB and App-Devices towards higher technology readiness levels, multicentre validation and wider implementation. The group will continue integrating real-world clinical data, predictive modelling and interoperable digital ecosystems to improve antimicrobial stewardship, healthcare-associated infection prevention, chronic disease management and patient safety. Additional priorities include expanding research in HIV, women's health and ageing, with a stronger focus on vulnerable populations, person-centred care and equity.

SELECTED PUBLICATIONS

- Ryan P, Blanco JL, Masia M, Garcia L, Crusells MJ, Domingo P et al. Maintenance therapy with dolutegravir and lamivudine versus bictegravir, emtricitabine, and tenofovir alafenamide in people with HIV (PASO-DOBLE): 48-week results from a randomised, multicentre, open-label, non-inferiority trial. *Lancet HIV*. 2025;12(7):473-484. IF:13,000. [Q1].
- Gonzalez MA, Peguero A, Meler E, Camprubi M, Rovira C, Gómez MD et al. Treatment of early-onset fetal growth restriction with low molecular weight heparin does not prolong gestation: a randomized clinical trial. *Am. J. Obstet. Gynecol*. 2025;232(6):5521-55210. IF:8,400. [Q1].

- Fernandez M, Batista S, Narváez S, Román A, San Nicolás L, Martínez D et al. Microbiological profile of slow-growing non-tuberculous mycobacteria species other than *Mycobacterium avium* complex. *Front. Microbiol*. 2025;16. IF:4,500. [Q1].
- Arroyo M, Fontanet NP, Cordoní CT, Simonetti AF, Pérez C, Abelenda G et al. Clinical characteristics and predictors of complications and mortality in hospitalized octogenarian patients with COVID-19: an ambispective study. *Eur. Geriatr. Med*. 2025;16(4):1559-1559. IF:3,600. [Q2].

SELECTED PROJECTS

- Adaptación y validación de cuestionarios de calidad de vida y satisfacción con el tratamiento antirretroviral en PVVIH y trastornos mentales graves mediante ePROMs y ePREMs (HIV-PROPSIQ). [PCP00483]. Gilead Sciences, S.L.U. 2026-2027. IP: Vicens Diaz de Brito Fernandez.
- Desarrollo de una base de datos nacional de bacteriemias y app e-health, automatizada y multiplataforma, para mejorar la prescripción antimicrobiana al adecuarla al ecosistema microbiano regional. [PFIS0296]. Instituto de Salud Carlos III (ISCIII). 2021-2025. IP: Vicens Diaz de Brito Fernandez.
- Desarrollo e implementación de una plataforma de salud digital asistida por inteligencia artificial y de una base de datos multicéntrica para fortalecer la seguridad del paciente portador de catéter vascular [AppDevices]. [PFIS0434]. Instituto de Salud Carlos III (ISCIII). 2026-2028. IP: Vicens Diaz de Brito Fernandez.

SELECTED CLINICAL STUDIES

- DTG/3TC frente a BIC/FTC/TAF como terapia de mantenimiento en personas que viven con VIH: ensayo clínico abierto y aleatorizado [GESIDA 11720]. Fundación SEIMC-GESIDA. Phase IV. 2021. IP: Vicens Diaz de Brito Fernandez.
- Ensayo clínico aleatorizado de no inferioridad que investiga la eficacia y la seguridad de un dispositivo médico innovador en la reducción de las complicaciones mecánicas de los catéteres intravenosos periféricos (SAFE-Infusion Study). Interlinked AB. 2023-2025. IP: Ramón Mir Abellón.
- Estudio de fase 3b, abierto, aleatorizado, controlado con tratamiento estándar, multicéntrico, de superioridad para evaluar la eficacia, la seguridad y la tolerabilidad de CAB AP + RPV AP inyectable en participantes víremicos que viven con VIH-1 [CROWN]. [221611]. ViiV Healthcare. Phase III. 2025. IP: Vicens Diaz de Brito Fernandez.

Clinical Groups and Innovation

Driving clinical research and innovation to transform healthcare practice.

Rosana Hernando Salvador, MD, PhD



RESEARCHER

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Sandra Perez Perez
Sandra Torra Alsina
Sebastià Josep Santaeugènia González
Sergio Romero Tello
Pilar Santo Panero

8 Projects

COMPETITIVE: 7
NON COMPETITIVE: 1

6 Clinical Trial & Observational Studies

3 Publications

Impact factor 30
average Impact Factor 10,1
Publications in 1st quartile.... 67%
Publications in 1st decile..... 33%
Leadership 100%

The Clinical Groups and Innovation Research Group conducts applied and translational research integrated into routine clinical practice across multiple medical specialties. The group leads and participates in clinical trials, observational studies and investigator-initiated projects in areas including respiratory and rheumatologic diseases, gastroenterology, ageing, neurology, rehabilitation, allergy, surgery and complex wounds.

Its research evaluates pharmacological and non-pharmacological interventions, including surgical, digital and organizational innovations, generating high-quality evidence to support the translation of results into clinical practice. Through collaboration with national and international partners, healthcare institutions and industry, the group aims to drive innovation and improve patient outcomes.

ACHIEVEMENTS 2025

In 2025, the Clinical Groups and Innovation Research Group strengthened its translational research activity through competitive projects, clinical trials and observational studies across multiple medical areas. The group maintained a strong scientific output, with publications in international indexed journals, including Q1 articles, addressing topics such as post-COVID pulmonary fibrosis, digital health interventions and chronic disease management.

The group also secured competitive funding at regional, national and European levels, including support for research staff and digital health initiatives. Four doctoral theses were supported by the group's research activity, with one successfully defended and three ongoing. These achievements reinforce its multidisciplinary capacity and integration within national and international research networks.

FUTURE CHALLENGES

In the coming years, the Clinical Groups and Innovation Research Group aims to strengthen its role in applied clinical research and healthcare innovation, with a focus on digital health, artificial intelligence and high-impact clinical areas, particularly ageing research. Key priorities include increasing leadership in national and European competitive projects and expanding participation as a coordinating centre in multicentre clinical trials.

The group will also promote the attraction and development of clinical research talent, new doctoral theses and multidisciplinary collaborations with healthcare services, research groups and external partners. Through these actions, it aims to enhance scientific excellence, clinical impact and the development of more efficient, innovative and patient-centred healthcare models.

SELECTED PUBLICATIONS

- Bermudo G, Del Rio B, Vicens V, Bordas J, Hernández M, Valenzuela C et al. Pirfenidone in post-COVID-19 pulmonary fibrosis (FIBRO-COVID): a phase 2 randomised clinical trial. Eur. Resp. J. 2025;65(4). IF:21,200. [Q1].
- Cuerpo S, Hernandez-Gonzalez F, Benegas M, Albacar N, Lopez-Giraldo A, Cobo I et al. Organizing pneumonia in hospitalized COVID-19 patients: risk factors and long-term outcomes. Pneumonia [Nathan]. 2025;17(1):18. IF:6,200. [Q1].
- Brunet E, Selva A, Bas F, Brujats A, Caballol B, Font R et al. Asymptomatic Inflammatory Bowel Disease Diagnosed During Colorectal Cancer Population Screening in Catalonia: Characteristics and Natural History. Clin. Transl. Gastroenterol. 2025;16(2). IF:3,000. [Q2].
- Berrocal N, Molina P, Macau MA, Escrig A, Cambra MR, Albuixech M et al. Abdominal clonic seizures: A rare form of vascular focal motor status epilepticus. Epileptic Disord. 2025. IF:2,700. [Q2].

SELECTED PROJECTS

- Monitorización a tiempo real del paciente asmático y su exposición a la contaminación atmosférica mediante una plataforma digital clínica. [AR202303]. Parc Sanitari de Sant Joan de Déu - Serveis de Salut Mental. 2023-2026. IP: Rosana Hernando Salvador.
- Eficacia analgésica y seguridad clínica de la aplicación tópica de sevoflurano en el tratamiento de heridas crónicas. [AR202401]. Parc Sanitari de Sant Joan de Déu - Serveis de Salut Mental. 2024-2025. IP: Pere Coca Alves.
- AISN: Integrating AI in Stroke Neurorehabilitation. [PFE00105]. European Commission [HORIZON-HLTH-2021-DISEASE-04-04]. 2022-2026. IP: Raffaele Fiorillo.

SELECTED CLINICAL STUDIES

- PHRASE Feasibility Study. [PHRASE-2023]. Eodyne Systems S.L. 2024. IP: Raffaele Fiorillo.
- Estudio observacional retrospectivo para evaluar la eficacia analgésica y seguridad clínica de la aplicación tópica de sevoflurano en el tratamiento de heridas crónicas. [SESHC]. Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 2024. IP: Pere Coca Alves.
- Establecimiento de un algoritmo mitocondrial para predecir el riesgo de progresión a la enfermedad de Alzheimer en pacientes con deterioro cognitivo leve. [PIC-122-14]. 2015. IP: Antonio Callen Soto.

2. Mental Health Area

2.1. Mental Health and Society

Impact and Prevention of Mental Disorders

Advancing mental health through evidence, prevention and real-world impact

Josep M. Haro Abad, MD, PhD



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Rachid El Hafi Elmokhtari
Tania Del Cerro Vilalta

RESEARCH MANAGEMENT

Daniele Porricelli

22 Projects

COMPETITIVE: 16
NON COMPETITIVE: 6

1 Clinical Trial & Observational Studies

93 Publications

Impact factor 591
average Impact Factor 6,4
Publications in 1st quartile.... 71%
Publications in 1st decile..... 26%
Leadership 27%

Future challenges in the epidemiology of mental disorders and in mental health promotion and prevention are substantial and multifaceted. First, there is a need to improve the accuracy and comparability of prevalence estimates across countries and over time, especially in rapidly changing social contexts. Second, integrating data from multiple sources (e.g., surveys, electronic health records, and digital phenotyping) while ensuring data quality, privacy, and ethical standards remains a major challenge. Third, identifying early risk and protective factors across the life course is essential to design effective, scalable preventive interventions. Fourth, reducing the treatment gap requires not only better detection but also accessible, culturally sensitive, and evidence-based care. Finally, translating epidemiological findings into real-world policies and interventions continues to be difficult, particularly in low-resource settings. Addressing these challenges will require interdisciplinary collaboration, methodological innovation, and sustained investment in mental health research and systems.

ACHIEVEMENTS 2025

Our research group in mental health and psychiatric epidemiology has achieved significant progress through high-impact projects and scientific contributions. We lead innovative studies such as IMPROVA, a large European initiative developing digital interventions to enhance adolescent mental health. And (EM)POWER-YOU(TH) promotes non-discrimination and social inclusion through co-created models across Europe.

Our recent publications provide robust evidence on key public health challenges. We have examined the incidence and recurrence of depression over nine years, identifying differentiated risk factors for prevention. We also demonstrated reduced life expectancy associated with mental disorders, highlighting the role of physical health conditions. Furthermore, our work has linked physiological markers, such as nocturnal heart rate, with depression severity, and clarified the impact of psychiatric comorbidity on COVID-19 mortality.

Finally, we contributed to clinical innovation through the EDIT-B study, advancing biomarker-based diagnosis of bipolar disorder.

FUTURE CHALLENGES

Future challenges in mental health epidemiology and prevention are complex and pressing. Improving the accuracy and cross-national comparability of prevalence estimates remains essential, particularly in rapidly evolving social contexts. Integrating diverse data sources—such as surveys, electronic health records, and digital phenotyping—poses methodological, ethical, and privacy challenges. A key priority is the identification of early-life risk and protective factors to inform scalable and effective preventive

interventions. Reducing the treatment gap will require not only improved detection but also accessible, culturally sensitive, and evidence-based care systems. Additionally, translating epidemiological evidence into real-world policies and practice continues to be difficult, especially in low-resource settings. Addressing these issues demands strong interdisciplinary collaboration, methodological innovation, and sustained investment in mental health research and public health systems.

SELECTED PUBLICATIONS

- Félez M, Giné I, Monistrol A, Melchior M, Hecker I, Mittendorfer E et al. Identifying psychiatric morbidity and comorbidity patterns associated with COVID-19 mortality. A register-based cohort study from Catalonia. Eur Psychiatry. 2025;68[1]. IF:6,700. [Q1].
- Condominas E, Sánchez A, Domènech J, Haro JM, Bailon R, Giné I et al. Exploring the dynamic relationships between nocturnal heart rate, sleep disruptions, anxiety levels, and depression severity over time in recurrent major depressive disorder. J. Affect. Disord. 2025;376:139-148. IF:4,900. [Q1].
- Olaya B, de Miquel C, Francia L, Rodríguez C, Dolz Del Castellar B, Ayuso JL et al. Understanding the incidence and recurrence of depression and associated risk factors in 9 years of follow-up: Results from a population-based sample. Psychiatry Res. 2025;345:116375-116375. IF:3,900. [Q1].
- Moneta MV, Haro JM, Oleguer R, Olaya B. Life expectancy associated with specific mental disorders and the contribution of causes of death: a population-based study in the region of Catalonia. Psychiatry Res. 2025;348:116480-116480. IF:3,900. [Q1].

SELECTED CLINICAL STUDIES

- Clinical validation study for EDIT-B test: an aid for differential diagnosis of bipolar disorder, based on RNA editing blood biomarkers. (EDIT-B). Alcediag. 2022-2025. IP: Josep Maria Haro Abad.

Group for Research in Health Services and Health Outcomes (PRISMA)

Advancing health and social care through health technology assessment to drive efficiency, evidence-based policy, and quality of care.

**Antoni Serrano Blanco, MD, PhD and
Maria Rubio Valera, PhD**



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RESEARCH MANAGEMENT

Sandra Martinez Mudarra

15 Projects

COMPETITIVE: 12
NON COMPETITIVE: 3

20 Publications

Impact factor	74
average Impact Factor	3,7
Publications in 1st quartile.....	50%
Publications in 1st decile.....	20%
Leadership.....	55%

PRISMA is a consolidated research group dedicated to advancing health and social care systems through the evaluation of health technologies and services. Established in 2003, the group generates evidence to drive efficiency, promote evidence-based policy implementation, and improve quality of care across mental and physical health settings. PRISMA's research focuses on the evaluation of complex interventions and community-based programmes, health economics, health and social care planning, medication adherence, mental health, and patient participation and experience. These areas are supported by a strong methodological framework combining quantitative and qualitative approaches, including real-world data analysis, clinical and observational studies, economic evaluations, and qualitative research. Recognised by AGAUR, PRISMA actively participates in national research networks such as CIBERESP and RICAPPS and collaborates with public administrations, non-profit organisations and key stakeholders, providing applied research, technical support and decision-oriented evidence through reports and analytical tools such as the ECONOS database.

ACHIEVEMENTS 2025

In 2025, the PRISMA research group published >25 peer-reviewed scientific articles, including one publication in The Lancet (impact factor 13), reflecting its international relevance and methodological quality. In addition, PRISMA was awarded the competitive research project Drug adherence in pregnant women (ADHEMB): Mixed methods assessment, strengthening its research portfolio in health services evaluation and policy-relevant evidence generation. During the same year, the group successfully completed the IMA-cRCT – Effectiveness and cost-effectiveness of the Initial Medication Adherence intervention: cluster randomized controlled trial and economic model. Additionally, two doctoral theses supervised and completed within the group were defended with the highest distinction (summa cum laude) and international mention. We hosted student interns, and a postdoctoral researcher from the University of Naples came to conduct a research stay with us. Furthermore, three pre-doctoral students and one postdoctoral researcher undertook research stays abroad. The group also consolidated the ECONOS database, which is registered with the European Trademark.

FUTURE CHALLENGES

PRISMA's future challenges focus on expanding its international visibility and maximising the policy and societal impact of its research. A key priority is to strengthen the evaluation of innovative, integrated and community-based care models addressing highly prevalent and costly conditions in mental and

physical health, while supporting sustainable health and social care planning. A strategic challenge for the coming years is the consolidation of Patient Participation and Experience as a new research line. PRISMA aims to advance participatory and co-creation approaches by actively involving patients, families and communities throughout the research process to ensure that interventions and policies are meaningful, equitable and context-sensitive. The group will continue to enhance the use of real-world evidence and mixed methods to support evidence-based decision-making, reinforce collaboration within national and international research networks, and contribute to reducing inequalities and stigma in mental health through impactful, person-centred research.

SELECTED PUBLICATIONS

- Corral C, Sanchez A, Peñarrubia MT, Gil MM, Aznar I, Palma CM et al. Implementation of a patient-centred complex intervention to improve Initial Medication Adherence to cardiovascular disease and diabetes treatments in primary care (the IMA-cRCT study): a mixed-methods process evaluation. *BMJ Qual. Saf.* 2025. IF:6,700. [Q1].
- Soler M, Ribera A, Aznar I, Sanchez A, Sfor J, Vela E et al. Costs during the first year after stroke by degree of functional disability: A societal perspective. *Eur. Stroke J.* 2025;10(2):513-523. IF:4,500. [Q1].
- Rubio M, Carbonell C, Peñarrubia MT, Pacheco E, Gabriela P, Aznar I, Gil-Girbau M. Insights on pediatric medication initiation: perceptions of caregivers and children. *Front. Pharmacol.* 2025;16:1612169-1612169. IF:4,800. [Q1].
- Besoain AM, Gil MM, Alouali M, Baladon L, Sáez J, Rubio M. Exploring lived experiences in home-based psychiatric care: a qualitative study of service users, families, and professionals in Spain. *Front Psychiatry.* 2025;16:1670470-1670470. IF:3,200. [Q2].

SELECTED PROJECTS

- IMA-cRCT: Effectiveness and cost-effectiveness of the Initial Medication Adherence intervention: cluster randomized controlled trial and economic model. (PFE00072). European Commission (H2020-ERC-SIG). 2021-2025. IP: Maria Rubio Valera.
- SALVOVAR: A European multi-disciplinary clinical project meant to improve the management of patients with poor prognostic ovarian cancer after neoadjuvant chemotherapy: restoring hope, salvaging lives. (PFE00109). European Commission (HORIZON-MISS-2022-CAN-CER-01). 2023-2028. IP: Alexandra Lelia Dima.
- Adherencia farmacológica en mujeres embarazadas (ADHEMB): Evaluación con métodos mixtos. (PFIS0435). Instituto de Salud Carlos III (ISCIII). 2026-2028. IP: Maria Montserrat Gil Girbau; Ignacio Aznar Lou.

Psychological Research in Chronic Pain and Mental Health (ÀGORA)

Researching solutions for chronic pain and mental health

Juan Vicente Luciano Devis, PhD



- RESEARCHER**
Antoni Rozadilla Sacanell
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Xavier Borràs Hernández
- RESEARCH ASSISTANT**
Carla Rodríguez Freire
Paula Ponce López
Zachary Charles Zeiger

6 Projects

COMPETITIVE: 6
NON COMPETITIVE: 0

1 Clinical Trial & Observational Studies

17 Publications

Impact factor 74
average Impact Factor 4,3
Publications in 1st quartile.... 76%
Publications in 1st decile..... 29%
Leadership 82%

ÀGORA is a multidisciplinary, interinstitutional, research group that carries out patient-oriented research with high translational value for clinical practice. Specifically, the ÀGORA group is interested in studying which pharmacological and non-pharmacological treatments are effective and cost-effective for patients with chronic pain and the mental disorders commonly associated with pain, in identifying the specific clusters for which these treatments are most effective, and in understanding how these treatments act at cognitive, affective, and physiological levels. The ÀGORA is currently recognized as a consolidated research group by the Agency for Management of University and Research Grants (AGAUR). It is part of the Innovation Network "New Technologies in Mental Health (TECSAM)" also funded by AGAUR. The group joined the CIBER of Epidemiology and Public Health (CIBERESP; ISCIII) in 2023 (CB22/02/00052).

ACHIEVEMENTS 2025

In 2025, the ÀGORA research group consolidated its leadership in psychological and digital interventions for chronic pain and mental health through high-impact publications, competitive funding, and international collaborations. The group contributed to several Q1/D1 publications on multicomponent interventions, immune-inflammatory mechanisms in fibromyalgia, perioperative psychological treatments, and predictors of response to behavioral therapies. ÀGORA remained actively involved in major ongoing projects funded by ISCIII and Horizon Europe, including SMART-FM-Spain and GreenME, and participated in the new GenAI4EU initiative on multimodal virtual assistants for equitable chronic pain care. In parallel, the group strengthened its translational activity through the Spanish validation of the STANZA® digital therapeutic and continued contributing to national clinical practice resources such as the Spanish Pain Society assessment guide. ÀGORA also reinforced its role within CIBERESP and TECSAM networks, promoting innovation, implementation research, and scalable solutions to improve access to evidence-based treatments.

FUTURE CHALLENGES

Over the next years, ÀGORA aims to consolidate its position as a reference group in scalable, data-driven, and personalized interventions for chronic pain and mental health problems. The group will prioritize the development and evaluation of digital therapeutics, AI-assisted clinical tools, and nature-based interventions aligned with equitable and sustainable healthcare models. Strengthening international collaborations through Horizon Europe initiatives and expanding the integration of real-world data infrastructures such as PADRIS will support population-level research addressing long-term outcomes and health inequalities. ÀGORA will also advance implementation science

strategies to facilitate the integration of evidence-based psychological treatments into routine healthcare systems. A key priority is improving early identification of high-risk patient subgroups and optimizing treatment allocation through predictive modeling and health economics analyses. These efforts aim to increase accessibility, effectiveness, and sustainability of interventions targeting chronic pain and comorbid mental health conditions across the lifespan.

SELECTED PUBLICATIONS

- Ferrés S, Serrat M, Auer W, Royuela E, Almirall M, Lizama A et al. Immune-inflammatory effects of the multicomponent intervention FIBROWALK in outdoor and online formats for patients with fibromyalgia. *Brain Behav. Immun.* 2025;125:184-197. IF:7,600. [Q1].
- Montero J, Hinz V, Maloney S, van der Velden AM, Hayes R, Watkins ER et al. Examining what works for whom and how in mindfulness-based cognitive therapy (MBCT) for recurrent depression: moderated-mediation analysis in the PREVENT trial. *Br. J. Psychiatry.* 2025;226(4):213-221. IF:7,600. [Q1].
- Castañó JR, Barceló A, Royuela E, Sanabria JP, García V, Neblett R et al. Effectiveness of peri-operative psychological interventions for the reduction of postsurgical pain intensity, depression, anxiety and pain catastrophising. *Eur. J. Anaesth.* 2025;42(7):609-625. IF:6,800. [Q1].
- Sanabria JP, Navarrete J, Serrat M, Castañó JR, Alonso J, McCracken LM et al. Assessment of stigma in Spanish people with chronic pain using the 8-item Stigma Scale for Chronic Illnesses [SSCI-8]. *J Pain.* 2025;37:105538-105538. IF:4,000. [Q1].

SELECTED PROJECTS

- Effectiveness, cost-utility and neurobiological effects of low-dose naltrexone in patients with fibromyalgia (INNOVA project). (PFIS0304). Instituto de Salud Carlos III [ISCIII]. 2021-2025. IP: Juan Vicente Luciano Devis.
- Coste-utilidad y efectos fisiológicos de una aplicación digital para pacientes con fibromialgia basada en la Terapia de Aceptación y Compromiso [Proyecto SMART-FM-Spain]. (PFIS0343). Instituto de Salud Carlos III [ISCIII]. 2023-2027. IP: Juan Vicente Luciano Devis.
- Efectividad y coste-utilidad de la terapia cognitiva basada en mindfulness (MBCT) para prevenir la recaída o recurrencia depresiva en adultos españoles con trastorno depresivo recurrente: un ensayo controlado aleatorizado (estudio Bounce-Back from Depression). (PFIS0378). Instituto de Salud Carlos III [ISCIII]. 2024-2026. IP: Salvatore Aguilar Ortiz; Jesús Montero Marín.

2. Mental Health Area

2.2. Scientific Base and Approach to Mental Disorders

Etiopathogenesis and Treatment of Severe Mental Disorders (MERITT)

Research in psychosis

Judith Usall i Rodié, MD, PhD
and Susana Ochoa Güerre, MD, PhD



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Naomi Naidés Averard
Raquel Leal Pujol

40 Projects

COMPETITIVE: 34

NON COMPETITIVE: 6

1 Clinical Trial & Observational Studies

45 Publications

Impact factor 166
average Impact Factor 3,7
Publications in 1st quartile.... 49%
Publications in 1st decile..... 22%
Leadership..... 38%

The MERITT is a consolidated research group (SGR since 2014), focus on the study of people with severe mental disorders from a clinical and basic perspective and adopts a longitudinal, life-span approach, with a clear commitment to the transfer of knowledge into clinical practice.

MERITT conducts clinical trials to evaluate psychological, pharmacological and technology-assisted interventions for psychosis assessing clinical, social, neuropsychological and biological factors in early stages and special populations. MERITT also explores molecular and peripheral biomarkers. Gender perspective and the active involvement of people with lived experience are cross-cutting principles of research activities. Its main objective is to generate knowledge to address the needs of people with psychosis and their families. MERITT participates in several funded projects and international research consortia.

ACHIEVEMENTS 2025

MERITT has consolidated its research activity through funded projects and international consortia focused on mental health. Its work has centered on the clinical, cognitive and psychosocial characterization of severe mental disorders, with special attention to stress, childhood trauma and protective factors in first-episode psychosis and prison mental health.

The group has advanced in the evaluation of Metacognitive Training, including personalized approaches supported by machine learning, family interventions and physical activity. It has also developed innovative virtual reality interventions, such as AVATAR-VR and Virtual Scope, and strengthened participatory initiatives involving people with lived experience. Biomarker research has identified new therapeutic avenues in psychosis and cognitive deficits associated with COVID-19. MERITT has also reinforced its gender-sensitive perspective and led the organization of the 11th World Congress of Women's Mental Health.

FUTURE CHALLENGES

MERITT will deepen the understanding of severe mental disorders through integrated clinical, cognitive, psychosocial and biological research, with a focus on identifying risk, protective and recovery factors. The group will continue developing innovative interventions, including AI-, virtual reality- and data-driven tools, to improve clinical and cognitive outcomes.

MERITT will strengthen the translation of research into clinical practice by promoting evidence-based interventions and expanding national and international collaborations. The group will also consolidate its leadership in gender-sensitive mental health research and participatory methodologies, ensuring that people with lived experience remain at the centre of future research activities.

SELECTED PUBLICATIONS

- Colomer A, Vila R, Serra C, Corbella A, Manuel V, Tor J et al. The cumulative and individual effects of stressful life events on first-episode psychosis. *Asian J. Psychiatr.* 2025;108:104500-104500. IF:4,500. [Q1].
- Díaz L, Verdaguer M, García H, Ferrer M, López R, Palma C et al. Sex-based differences in Jumping to Conclusions: a multidimensional analysis of first-episode psychosis. *Schizophr.* 2025;11(1):60-60. IF:4,100. [Q1].
- Espinosa V, Bagaeva A, López R, Barajas A, Barrión ML, Birulés I et al. Neuropsychological profiles in first-episodes psychosis and their relationship with clinical, metacognition and social cognition variables. *Eur. Arch. Psych. Clin. Neurosci.* 2025;275(3):701-713. IF:3,700. [Q1].

SELECTED PROJECTS

- EU-VR-AT: A European Multi-Centre Trial Examining the Effect of Treating Auditory Hallucinations with Virtual Reality (VR)-Based Avatar Therapy. [PFE00128]. European Commission [HORIZON-HLTH-2024-DISEASE-03-08]. 2024-2025. IP: Susana Ochoa Güerre.
- Study of neuropsychological sequelae in patients affected by SARS-CoV-2 infection: relationship with inflammatory and blood brain barrier disruption biomarkers. [PFIS0326]. Instituto de Salud Carlos III [ISCIII]. 2022-2026. IP: Belén Ramos Jose Maria.
- Factores asociados con la remisión clínica y la recuperación funcional y personal al año de seguimiento en personas con un primer episodio de psicosis. [PFIS0436]. Instituto de Salud Carlos III [ISCIII]. 2026-2028. IP: Elena Rubio Abadal; Judith Usall i Rodié.

SELECTED CLINICAL STUDIES

- Farmacogenética aplicada para predecir la respuesta al tratamiento del primer episodio psicótico [FARMAPRED-PEP]. 2023. IP: Judith Usall i Rodié.

Advanced New Interventions for the Mind and Awareness (ANIMA)

Pioneering psychedelic-assisted therapy research to advance mental health care.

**Rosa María Dueñas Herrero, MD, PhD and
Debora Gonzalez Muñoz-Caballero, PhD**



POSTDOCTORAL RESEARCHER

Jesus M Gonzalez Mariscal

PREDOCTORAL RESEARCHER

Bianca Renau Minguez
Cristina Llagostera Yoldi
Fabio Fesce
Genis Oña Esteve
Georgina Vallejo Rius
Oscar David Alvarez Bobo
Óscar Soto Angona

3 Clinical Trial & Observational Studies

2 Publications

Impact factor	9
average Impact Factor	4,6
Publications in 1st quartile.....	100%
Publications in 1st decile.....	0%
Leadership.....	0%

ANIMA is a research group at the Institut de Recerca Sant Joan de Déu, part of SOMRISE, the new mental health innovation hub of Sant Joan de Déu. Our mission is to advance the therapeutic use of psychedelic substances through rigorous clinical research and innovation. We conduct clinical trials to evaluate the efficacy and safety of psychedelic-assisted therapies (PAT) for mental disorders, with a particular focus on treatment-resistant depression. We investigate the mechanisms of action and safety profiles of psychedelic compounds, and explore their combination with other evidence-based therapeutic approaches and emerging technologies. At this stage, our primary clinical focus is treatment-resistant depression, though our scope extends beyond it to include conditions such as prolonged grief and end-of-life distress. Beyond research, we are committed to training mental health professionals in PAT, developing clinical protocols, and contributing to ethical and regulatory frameworks for the responsible integration of these treatments into healthcare systems.

ACHIEVEMENTS 2025

In 2025, ANIMA completed several pivotal clinical trials demonstrating the efficacy and safety of psychedelic-assisted therapies in treatment-resistant depression (TRD): the GH001 Phase IIb trial with inhaled 5-MeO-DMT, the BPL-003 dose-finding study with intranasal 5-MeO-DMT, and the ayahuasca-assisted therapy trial for prolonged grief. The Phase III COMP006 trial (synthetic psilocybin COMP360 in TRD) was activated and is currently ongoing. Additionally, we advanced the cross-cultural validation of the 5D-ASC scale into Spanish, launched a multidisciplinary training programme in psychedelic-assisted therapy, and initiated compassionate use procedures for psilocybin in TRD.

FUTURE CHALLENGES

ANIMA aims to consolidate its position as a leading European centre for psychedelic medicine research. Key priorities for 2026 include the activation of multiple Phase III trials: BPL-003-301 (intranasal 5-MeO-DMT, Beckley Psytech), a parallel 5-MeO-DMT study by ATAI/Beckley, and a GH Research 5-MeO-DMT inhalation trial. We are pursuing compassionate use authorisation for psilocybin in treatment-resistant major depressive disorder. We will advance two EU-funded collaborative projects: ELEVATE (with Karolinska Institutet, examining psychotherapy as an independent therapeutic factor) and SYNERGIA (combining psilocybin with tDCS for TRD treatment and relapse prevention). Independent research lines include the BARD0 end-of-life PAT study, the Aya-SPAIN naturalistic ayahuasca cognition study, and group-format psychedelic therapy. We will also expand Spanish-language professional training programmes in PAT and strengthen our network of national and international collaborators.

SELECTED PUBLICATIONS

- Goodwin GM, Aaronson ST, Alvarez O, Carhart R, Chai J, Croal M et al. The role of the psychedelic experience in psilocybin treatment for treatment-resistant depression. J Affect Disord. 2025;372:523-532. IF:4,900. [Q1].
- Timmermann C, Sanders JW, Reydellet D, Barba T, Luan LX, Angona ÓS et al. Exploring 5-MeO-DMT as a pharmacological model for deconstructed consciousness. Neurosci. Conscious. 2025;2025[1]. IF:4,300. [Q1].

SELECTED CLINICAL STUDIES

- A Phase III, multicentre, randomised, double-blind, controlled study to investigate the efficacy, safety, and tolerability of two initial administrations of COMP360 in participants with treatment-resistant depression. (COMP 006). COMPASS Pathfinder Limited. Phase III. 2023. IP: Oscar Alvarez Bobo.

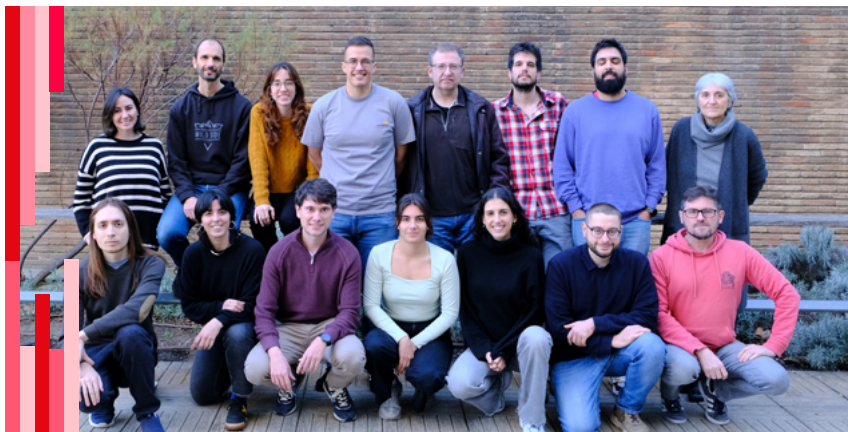
3. Transversal Program

3.1. Health Technologies and Innovation

Bioinformatics and biomedical signals

Bioinformatics and Biomedical Signals Laboratory

Alexandre Perera Lluna, PhD



RESEARCHER

Flavio Palmieri
Jesús Escrivá Muñoz
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Enric Xavier Martín Rull
Pedro Gomis Román

PREDOCTORAL RESEARCHER

Andreas Cardona
Blanca Alaejos
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Joana Gelabert
Sergio Gosálvez

RESEARCH ASSISTANT

Joshua Llano Viles

6 Publications

Impact factor	26
average Impact Factor	4,3
Publications in 1st quartile.....	67%
Publications in 1st decile.....	0%
Leadership.....	33%

The Bioinformatics and Biomedical Signals Laboratory (B2SLab) is a research group member of the Institut de Recerca i Innovació en Salut (IRIS) of the Universitat Politècnica de Catalunya (UPC). B2SLab researches and develops AI and data science methods for healthcare and life sciences.

Our central goal is building foundational models for health — large-scale AI models trained on real-world clinical data that serve as reusable infrastructure for clinical decision support and personalised medicine. Alongside this, we pursue research in rare diseases, metabolomics, climate-health applications, and sensor engineering.

Our main research goals are:

- Foundational Models in Health — transformer and multimodal models on electronic health records and emergency department data
- Rare Diseases — patient data platforms, computational phenotyping, and in silico disease modelling
- Metabolomics — biomarker discovery and feature annotation methods
- Climate Change & Sensors — AI for climate-health risk and low-cost environmental sensor networks
- Industrial Doctorates — applied research in partnership with hospitals and industry.

ACHIEVEMENTS 2025

In 2025 B2SLab consolidated its role as a UPC/IRIS lab developing AI and data science for health and life sciences. We advanced foundation models for clinical data, including longitudinal EHR modelling for diabetes, COPD, and multimodal emergency medicine (with Hospital Sant Joan de Déu). We published research outputs spanning neuropsychiatric biomarkers, colorectal cancer detection, COPD risk prediction, metabolomics for type 2 diabetes, and multivariate smart chemical sensing. We strengthened our rare-disease and metabolomics platforms, maintained Share4Rare, and progressed climate-health and sensor deployments, including SERVIC02 and air-quality work. Coordinated by our IPs, the lab also secured the 2025 XARTEC Salut competitive R&D&I network grant (2025 XARDI 00008, €1M) to accelerate transfer of health technologies across 130+ research groups representing 2000+ researchers in Catalonia area.

FUTURE CHALLENGES

B2SLab's future challenge is to turn strong computational research into trusted, deployable health impact. This means scaling foundation models for health from promising prototypes to clinically validated systems that are robust, interpretable, privacy-preserving and useful across hospitals, diseases and populations. A second challenge is integration: connecting hete-

rogeous clinical records, omics, patient-reported data, environmental exposure and sensor streams into models that remain scientifically sound and ethically governed. For rare diseases, the challenge is to generate insight from small, sparse and international datasets while keeping patients and clinicians engaged. In metabolomics and biomarkers, reproducibility, annotation quality and clinical translation remain central. Through Xartec Salut, B2SLab must also help bridge the gap between academic discovery and market-ready HealthTech innovation, supporting regulation, intellectual property, industry collaboration and adoption. Finally, the lab must attract talent and sustainable funding while keeping open, reproducible science at the core.

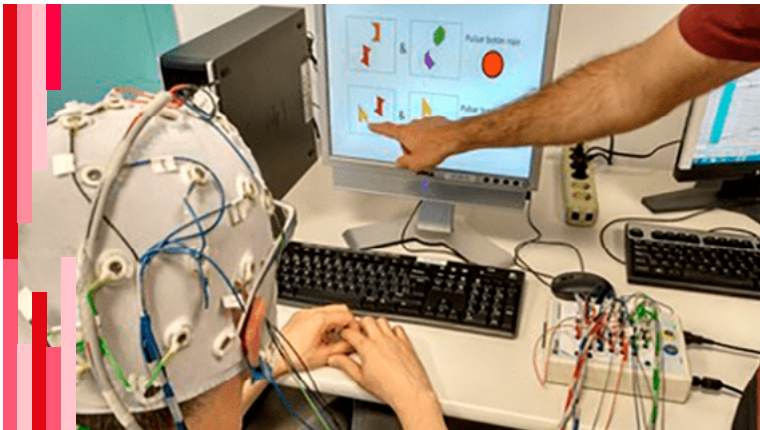
SELECTED PUBLICATIONS

- Rodríguez H, Nou L, Ormazabal A, Casado M, Arias AY, Pias LD et al. Cerebrospinal amino acid profiling in a large cohort of neuropsychiatric patients with epilepsy. *Neurobiol. Dis.* 2025;216:107098-107098. IF:5,600. [Q1].
- Barranco M, Granado M, Yanes O, Capellades J, Junza A, Franch J et al. Guanine and pregnenolone sulfate are associated with incident type 2 diabetes in two independent populations. *Front. Endocrinol.* 2025;16:1706886. IF:4,600. [Q1].
- Marín D, Alegria A, Casals LC, Macarulla M, Fonollosa J. The Reliability of CO2 Measurements Using Low-Cost Sensors: A Study of Sensor Positioning and Ventilation Strategies in Classrooms. *Indoor Air.* 2025;2025(1). IF:4,300. [Q1].
- Mancuso FM, Higareda JC, Canal P, Bertossi A, Perera A, Roehrl MHA et al. Colorectal Adenoma Subtypes Exhibit Signature Molecular Profiles: Unique Insights into the Microenvironment of Advanced Precancerous Lesions for Early Detection Applications. *Cancers.* 2025;17(4). IF:4,400. [Q2].
- Millat P, Mora A, Condeminas PE, Castelló M, Alsina C, Fiestas B et al. Exploring reported causes of vaccine hesitancy among European adolescents and parents: results of a citizen science project. *BMC Public Health.* 2025;25(1):1136-1136. IF:3,600. [Q1].
- Fernández L, Oller S, Fonollosa J, Garrido R, Arce L, Martín A et al. Signal Preprocessing in Instrument-Based Electronic Noses Leads to Parsimonious Predictive Models: Application to Olive Oil Quality Control. *Sensors.* 2025;25(3):737. IF:3,500. [Q2].

Biosignal Analysis for Rehabilitation and Therapy

Decoding Human Signals to Transform Rehabilitation

Miquel A. Mañanas Villanueva, PhD



PREDOCTORAL RESEARCHER

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Mónica Rojas Martínez
Saul José Ruiz Gomez

18 Publications

Impact factor	62
average Impact Factor	3,4
Publications in 1st quartile....	78%
Publications in 1st decile.....	0%
Leadership	44%

BIOART is a research group focused on biomedical signal processing, modelling, and simulation of biological systems for rehabilitation therapies. The group has 3 research verticals: brain activity signal analysis, high-density surface muscle activity analysis, mathematical models applied to cardio-respiratory prediction and artificial Intelligence applied to patient outcomes prediction and hospital management. The group's research focuses on analyzing patients' brain, muscular, and cardiorespiratory data to understand the body's behaviour in the presence of certain diseases and to design, improve, or modify rehabilitation therapies.

ACHIEVEMENTS 2025

BIOART team finished different projects focused on the technology MVOptimizer, a digital decision support system for managing mechanical ventilation in the Intensive Care Unit (ICU). "MV-Optimizer," aims to valorize and transfer a digital decision support system for managing mechanical ventilation in the Intensive Care Unit (ICU). The team generated a database from different hospitals to train and test the algorithm that will serve with intelligent tools to optimize ventilator settings, potentially reducing complications and improving patient recovery. The team received funding to support the technology transfer of the WomenUp project, a medical device to help women improve rehabilitation therapy for urinary incontinence. The team also received a grant in brain signal to discover biomarkers for refractory epilepsy. The project called EPISLEEP, in collaboration with the SJD and Vall d'Hebron are developing tools for the identification automatic detection of innovative biomarkers that can help to better locate the epileptogenic area and networks.

FUTURE CHALLENGES

The BIOART team has the commitment to continue with high-standard research in different projects. The group also focuses its efforts on training new postdoctoral students and continuing its teaching duties. However, BIOART also strategically focused its efforts in the Technology Transfer & Commercialization activities to bring the research developed to create societal impact.

BIOART has developed four flagship technologies — MV-Optimizer (mechanical ventilation decision support), MyoSleeve (HD-sEMG wearable for neuromuscular rehabilitation), WomenUp (pelvic floor biofeedback device), and AI-SHIELD (Hospital resources management). The main challenge is bridging the gap between academic prototypes and market-ready medical devices.

SELECTED PUBLICATIONS

- Zhu N, Altuna M, Arranz J, Rodríguez Í, Sanchez MB, Videla L et al. Sleep-related changes in astrocytic biomarkers are modulated by APOE e4 genotype in cognitively unimpaired adults. *Brain Commun.* 2025;7(6). IF:4,500. [Q1].
- Molina V, Fernández I, de la Sierra RB, Osorio E, Roig A, Arjona A et al. Lower perturbational complexity index after transcranial magnetic stimulation in schizophrenia patients. *Prog. Neuro-Psychopharmacol. Biol. Psychiatry.* 2025;137:111254-111254. IF:3,900. [Q1].
- Molina V, Ruiz SJ, Fernández I, Beño RM, Osorio E, Roig A et al. Effect of transcranial magnetic pulses on cortical network connectivity in schizophrenia. *Prog. Neuro-Psychopharmacol. Biol. Psychiatry.* 2025;141:111471-111471. IF:3,900. [Q1].
- Nejat M, Marateb HR, Farahani MA, Rajabi MZ, Nasirian M, Mañanas MA et al. Proactive recognition and early detection in communities through targeted HIV screening. *Sci Rep.* 2025;15(1):27275-27275. IF:3,900. [Q1].
- Mijancos G, Bachiller A, Fernández I, Romero S, Serna LY, Molina V et al. Individualized time windows enhance TMS-EEG signal characterization and improve assessment of cortical function in schizophrenia. *Eur. Arch. Psych. Clin. Neurosci.* 2025;275(3):785-797. IF:3,700. [Q1].
- Tost A, Bachiller A, Medina IF, Romero S, Serna LY, Rojas M et al. Repetitive active and passive cognitive stimulations induce EEG changes in patients with Rett syndrome. *Pediatr. Res.* 2025;97(2):751-762. IF:3,100. [Q1].
- Borràs M, Romero S, Serna LY, Alonso JF, Bachiller A, Mañanas MA et al. Assessing Motor Cortical Activity: How Repetitions Impact Motor Execution and Imagery Analysis. *Psychophysiology.* 2025;62(6). IF:2,800. [Q1].

Instrumentation and eHealth

Design of new methods and systems for a less intrusive medical diagnosis.

Xavier Rosell Ferrer, PhD



RESEARCHER

Giovani Vescio
Juan Ramos Castro
Miguel Angel García Gonzalez
Mireya Fernández Chimeno
Pere Joan Riu Costa
Ramon Bragós Badia

5 Publications

Impact factor	17
average Impact Factor	3,3
Publications in 1st quartile.....	80%
Publications in 1st decile.....	0%
Leadership.....	60%

The aim of the group is to design new equipment and instrumentation systems in the fields of Automatic Test Equipment (ATE), Electromagnetic Compatibility (EMC), medicine and biotechnology. A further aim is to design new measurement methods, especially for medical diagnosis, biotechnological processes and electromagnetic field measurements in the near-field region.

ACHIEVEMENTS 2025

The Instrumentation and eHealth group has continued its collaboration with several hospitals on the following topics: with SJD Barcelona Children's Hospital and the Autonomous University of Barcelona for the development of a point-of-care system for the evaluation of ammonium, with the Cardiology service of the Hospital de Sant Pau i la Santa Creu on issues of diagnosis of cardiac arrhythmias and in the same hospital with the pulmonology service for the evaluation of a Minimally invasive method for distinguishing tumor tissues in the lung. We also participate in the European project: European Training Network on Electromagnetic Risks in Medical Technology.

FUTURE CHALLENGES

We obtained an industrialization grant to advance one step more in the commercialization of the results of a previous European Research project: Empowering Women with Urinary Incontinence by an Innovative Home Technology with continuous medical supervision (WomenUp). We are also trying to develop a commercial version of the point-of-care for the measurement of ammonium and a portable device to be used as a monitoring system at home.

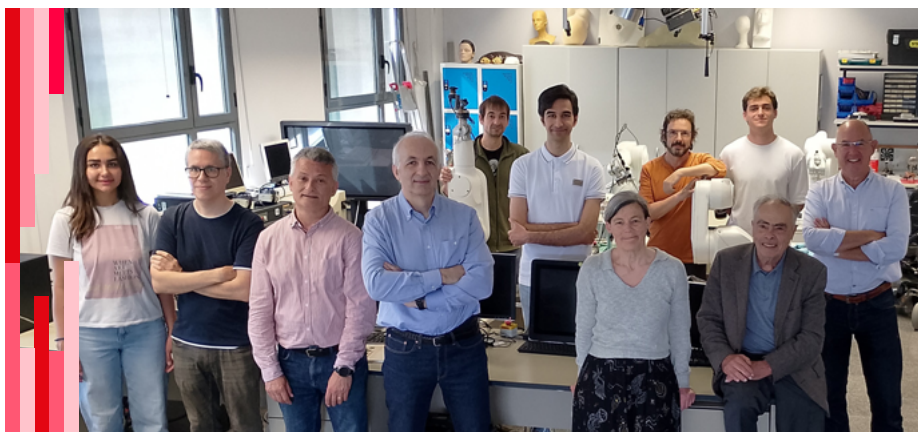
SELECTED PUBLICATIONS

- Company G, Pajares V, Rafecas A, Riu PJ, Rosell X, Bragós R et al. Machine learning allows robust classification of lung neoplasm tissue using an electronic biopsy through minimally-invasive electrical impedance spectroscopy. Sci Rep. 2025;15(1):9716-9716. IF:3,900. [Q1].
- Rebollo B, Calvo A, Ormazabal A, Artuch R, Rosell X, Alonso J et al. Testing of a novel automated point-of-care analyzer for blood ammonium monitoring in a clinical setting. Anal. Bioanal. Chem. 2025;417(15):3477-3485. IF:3,800. [Q1].
- Amorós G, Moreno Z, Méndez F, Soriano M, Bragós R, Rosell X et al. Local multifrequency impedance changes after radiofrequency ablation in human atria: potential use for tissue characterization. Front. Cardiovasc. Med. 2025;12. IF:2,900. [Q2].
- Riu P, Company G, Codern AR, Castany AF, Pajares V, Rosell X et al. Minimally-invasive electrical impedance spectroscopy in lung tissue: present and future trends. Journal of Physics: Conference Series. 2025;3014.

Robotics and Vision

Intelligent Robotics for the Future of Healthcare

Manel Frigola Boursol, PhD



RESEARCHER

Antonio Benito Martínez Velasco
Joan Aranda López
Josep Fernández Ruzafa
Narcís Sayols Baixeras

RESEARCH COLLABORATOR

Antonio Benedico Blanes

EXTERNAL RESEARCH COLLABORATOR

Carlos Morata

The goal of the GRINS research group is the study, evaluation and develop robotic systems based on the incorporation of perception capabilities for achieving more flexibility and more intelligent behavior.

The work of the group is oriented to three complementary lines: the design and development of image processing and computer vision systems, specially oriented to control, guidance and supervision of robotic systems; robotic systems adapted to specific environments, and multiagent systems (robots and persons) with cooperation capabilities. At present the main working fields are medical robotics: surgery, rehabilitation and assistance.

ACHIEVEMENTS 2025

The group developed a shared-control multifunctional wheelchair prototype. A gaze and head-tracking guided wheelchair with multi-axis operation: wheels and posture accommodation. The onboard monitoring system for user stress tracking and user workload to adapt wheelchair speed.

Design a monitoring and prevention of falls system during advanced gait neurorehabilitation based on biomechanical modeling and artificial intelligence methods. The proposed design aims at developing a methodology to prevent falls and investigating the patient's dynamic balance during gait rehabilitation. This will make walking safer when receiving gait neurorehabilitation for patients with neurological disorders (e.g. stroke), particularly in robotically assisted therapy.

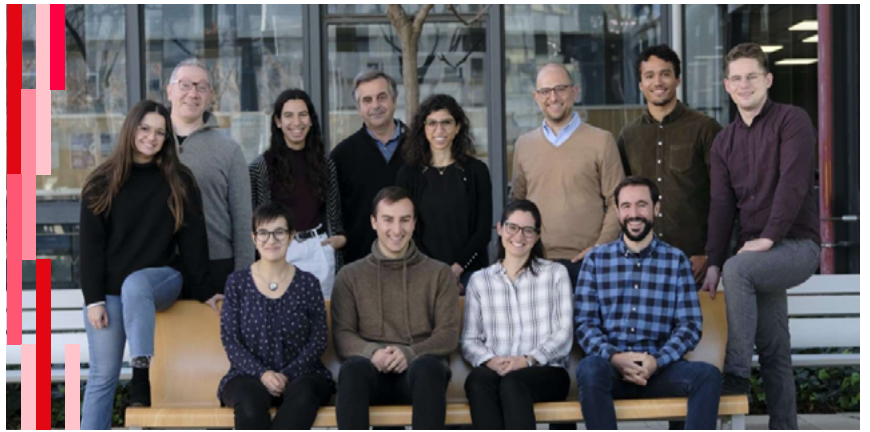
FUTURE CHALLENGES

Our short-term goals include developing new human-machine interfaces for driving control systems, specifically designed for users with severe physical limitations. Concurrently, we are enhancing wheelchair environmental awareness to facilitate more effective shared navigation. We are also optimizing onboard stress and workload monitoring systems to refine speed control adaptation policies. Looking further ahead, our long-term vision focuses on designing new strategies for AI-surgeon cooperation in minimally invasive robotic surgery.

Biomechanics

Simulating and enhancing human movement

Josep M. Font Llagunes, PhD



RESEARCHER

Rosa Pàmies Vilà

POSTDOCTORAL RESEARCHER

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Massimo Cenciarini
Miriám Febrer Nafria

PREDOCTORAL RESEARCHER

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Diana Quintana Bistriceanu
Filippo Maceratesi
Johannes Koennig
Laia Yébenes Serra
Xu Peng

5 Publications

Impact factor	14
average Impact Factor	2,7
Publications in 1st quartile.....	20%
Publications in 1st decile.....	20%
Leadership.....	80%

The lab's mission is to enhance the mobility and quality of life for individuals with neuromuscular disabilities through the development of innovative rehabilitation technologies and advanced simulation tools. To achieve this goal, the work of the lab is organized into the following research lines:

- Biomechanical analysis of human movement
- Neuromusculoskeletal modelling and simulation
- Wearable technologies for movement rehabilitation and monitoring
- Analysis of physical human-device interaction
- Clinical studies of medical technologies

Current research projects focus on developing wearable monitoring systems for assessing upper and lower limb motor function, predictive tools for simulating assisted gait and rehabilitation, and a modular lower limb exoskeleton for diagnostic purposes. The group also participates in a clinical study to assess safety and performance of a lower limb exoskeleton for daily living and home use. Lab members, including mechanical and biomedical engineers, collaborate closely with clinical and industrial partners to translate these technologies into real-world solutions.

ACHIEVEMENTS 2025

In 2025, the BIOMECH research group consolidated its leadership in biomechanics simulation and rehabilitation engineering through significant scientific, funding, and training achievements. Research advanced in the ongoing NIMBLE project on neuromusculoskeletal modelling for improving motor function recovery after robot-assisted therapy in individuals with spinal cord injury, as well as in the ABLE Daily Exo project, developed in close partnership with the group's spin-off ABLE Human Motion. The group was awarded a prestigious BBVA Leonardo grant for a project on understanding gait progression in SCI patients. In addition, BIOMECH secured two new national research projects under the PID2024 call, reinforcing its competitive position at the state level. The MSCA Doctoral Network TAILOR was successfully launched, with three PhD candidates beginning their work under joint supervision with leading European institutions. Scientific output and participation in innovation networks continued to be strong throughout the year. BIOMECH's PI was awarded with the ICREA Academia fellowship 2025.

FUTURE CHALLENGES

As a research group, we are driving toward a more precise, personalized, and technology-enabled approach to restoring human movement. Our goal is to develop scientific knowledge and translational tools that improve rehabilitation outcomes for people with neurological and neuromuscular impairments. We are advancing neuromusculoskeletal modelling, wearable sensing, and intelligent exoskeletons so they can be used seamlessly in both clinical and real-world environments. At the same time, we are strengthening our international collaborations and multidisciplinary training capacity, ensuring that the next generation of researchers is equipped to push the field forward. Through our competitive projects, strategic partnerships, and emerging clinical studies, we aim to close the gap between advanced biomechanical research and daily clinical practice. Ultimately, we are driving toward a future where objective movement assessment, predictive simulation, and smart assistive technologies enable more effective, tailored rehabilitation for each individual.

SELECTED PUBLICATIONS

- Favata A, Gallart R, van L, Exposito JM, Medina J, Torras C et al. IMU-based kinematic analysis to enhance upper limb motor function assessment in neuromuscular diseases. *J. NeuroEng. Rehabil.* 2025;22(1):63-63. IF:5,200. [Q1].
- Rodríguez A, Lobo J, Talrà M, Pérez F, Font JM, Guirao L. Randomized, crossover clinical trial on the safety, feasibility, and usability of the ABLE exoskeleton: A comparative study with knee-ankle-foot orthoses. *PLoS One.* 2025;20(5). IF:2,600. [Q2].
- Maceratesi F, Febrer M, Font JM. Calibrated muscle models improve tracking simulations without enhancing gait predictions. *PLoS One.* 2025;20(7). IF:2,600. [Q2].
- Monguillot M, Rodríguez A, Lecumberri C, Mirabet R. La innovación docente en los grados de ciencias del deporte en Cataluña. *Profesorado.* 2025;29(2):1-19. IF:0,700. [Q3].

Patients Engagement in Research

Involving patients and families in research enhances the relevance of research by ensuring it focuses on what matters to them.

Begoña Nafria Escalera, MSc
and Joana Claverol Torres, MSc



RESEARCH ASSISTANT

Júlia Giner Gràcia

RESEARCH MANAGEMENT

Claudia Alsina Steinemann
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Helena Martinez Lopez-Amor
Rebeca Ribas Aguilar

10 Projects

COMPETITIVE: 7
NON COMPETITIVE: 3

2 Publications

Impact factor 7
average Impact Factor 3,5
Publications in 1st quartile...100%
Publications in 1st decile..... 0%
Leadership 50%

The Patient Engagement in Research group promotes the meaningful involvement of patients, children, adolescents, and families throughout the entire research lifecycle. The group supports researchers in co-designing studies, reviewing protocols, informed consent and assent materials, and developing patient-facing resources to improve clarity, accessibility, and relevance. Its activities include the organization of focus groups, advisory panels, and participatory methodologies that integrate lived experience into biomedical and clinical research. The group also leads national and international initiatives to generate evidence on patient engagement and collaborates closely with clinical teams, patient organizations and other stakeholders. Through these activities, the group aims to strengthen the quality, ethical standards, and real-world impact of pediatric research by ensuring that studies address outcomes that truly matter to patients and families.

ACHIEVEMENTS 2025

In 2025, the Patient Engagement in Research group consolidated patient and family involvement as a core, measurable component of research practice. The group integrated caregivers' perspectives into the design of clinical trials, notably through different commercial and academic clinical trials, leading to clear improvements in study design and materials, and also in the informed consent. Throughout the year, the team delivered patient engagement activities at scale, supporting more than 30 research projects and services, engaging over 2,000 patients, families, and young people, and contributing to peer-reviewed publications. The group also expanded participatory approaches beyond clinical trials, including high-realistic clinical trial simulations, and educational collaborations with secondary schools. Its work received a national recognition for promoting ethical, transparent, and patient-centred research.

FUTURE CHALLENGES

The main challenges that the research group will address in 2026 are related to the study of the patient journey of paediatric patients participating in a gene therapy clinical trial. In addition, an analysis of the return on investment associated with the participation of international patients in clinical trials will be conducted, highlighting its positive impact on reducing recruitment timelines. Finally, the group plans to continue designing educational and informational resources aimed at paediatric patients to improve the information process and support informed decision-making when considering participation in a clinical trial.

SELECTED PUBLICATIONS

- Wams J, van EC, den JG, Otth M, Costa T, Gorter JW et al. Health-care transitions for young people living beyond childhood and adolescent cancer: recommendations from the EU-CAYAS-NET consortium. *Lancet Oncol.* 2025;26(10). IF:35,900. [Q1].
- Quintillá JM, de la Gala C, Berrueto R, Claverol J, Figueres B, Bergós A et al. High-Fidelity Clinical Simulation to Improve a Pediatric Clinical Trial Design: Lessons Learned and Conceptualization of the Return on Investment (ROI) and Return on Engagement (ROE) Analysis. *Pediatr. Drugs.* 2025;27(1):73-84. IF:3,300. [Q1].
- Baba A, Smith M, Preston J, Nafria B, Gaillard S, Dicks P et al. Experiences, impact, and enablers of involving young people and family caregivers in developing reporting guidelines for paediatric randomised trials: a case study. *Res Involv Engagem.* 2025;11(1).
- Wams J, den J, Mathot C, te J, Gubi MT, Krotten-dorfer K et al. Transition needs and preferences identified during peer visits to three European best-practice CAYA cancer Long-Term Follow-Up care centres: An EU-CAYAS-NET project. *EJC Paediatr. Oncol.* 2025;6.

SELECTED PROJECTS

- Juga i aprèn sobre recerca biomèdica al vestíbul de Sant Joan de Déu. [PCP00443]. Fundació Institució Catalana per a la Recerca i la Innovació (FCRI). 2025. IP: Begoña Nafria Escalera.
- READI: Research in Europe and Diversity Inclusion. [PFE00139]. European Commission (HORIZON-JU-IHI-2023-04). 2025-2030. IP: Begoña Nafria Escalera.
- Project-COMFORT: Patient-Centric biOod saMpling FOo impRoved healThcare. [PFE00140]. European Commission (HORIZON-JU-IHI-2023-04). 2024-2028. IP: Begoña Nafria Escalera; Joana Claverol Torres.

Innovation in Health Technologies

We foster the development and transfer into the market of innovative products for pediatrics and maternity health.

Arnau Valls Esteve



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Marina Romero Saez
Marta Grau Buisan
Raquel Fucho Salvador

14 Projects

COMPETITIVE: 13
NON COMPETITIVE: 1

7 Publications

Impact factor	24
average Impact Factor	3,4
Publications in 1st quartile.....	57%
Publications in 1st decile.....	14%
Leadership.....	57%

The Sant Joan de Déu Health Technologies and Innovation group aims to transform excellence in research and clinical practice into new products, services and processes that enhance patient experience and public health while at the same time decrease per capita spending in health services.

With a multidisciplinary team and an open innovation model in collaboration with other professionals, research groups and companies, the group investigates, develops and supports the development and transfer of technological solutions to meet the needs detected by patients or their families, by professionals at our hospital or other centres, and any other external persons.

We form part of some of the main innovation ecosystems in paediatrics and work in collaboration with companies and centres in other sectors including ITEMAS (Medical Technology Innovation Platform), Kids Cluster, BIB (Bioinformatics of Barcelona) and i4KIDS-Europe. Furthermore, we collaborate with national and international institutions and programmes dedicated to promoting innovation and entrepreneurship in healthcare.

ACHIEVEMENTS 2025

In 2025, the group's activity continued to consolidate, with strong international engagement through participation in European projects such as PHEMS, now in its third year, focused on advancing the creation of a European Health Data Space in pediatrics, led and coordinated by leading pediatric hospitals across Europe. The Innovation Department has continued working to accelerate the development and market uptake of pediatric solutions in coordination with members of the i4KIDS Hub, coordinated by HSJD. Within this framework, the ADD4KIDS project was successfully completed, promoting the adoption of healthcare technologies in pediatrics across Europe, including the presentation of a White Paper in Brussels in February. Additionally, the i4KIDS4RARE project was awarded and launched, aimed at accelerating solutions for rare diseases. The 3D and Simulation group expanded significantly, with four new publications, the creation of a JointLab with IQS for bioprinting, and the development of two medical devices and 210 training simulators. The Pediatric Computational Imaging Center also progressed, completing four master's theses, two publications, and contributing to the Spiomet clinical trial led by Dr. Lourdes Ibáñez and in collaboration with her group.

FUTURE CHALLENGES

Looking ahead, the main challenges focus on consolidating the group's activity, ensuring long-term sustainability, and retaining talent, thereby maintaining the growth achieved in recent years. Strategic priorities include further development of key initiatives such as the Bioengineering JointLab with IQS, as well as strengthening the valorization and transfer of results in 3D technologies and simulation. Continued growth and consolidation within the i4KIDS-Europe project will remain essential to

accelerate the market adoption of pediatric and maternal health solutions having always patients and families at it core thanks to the PERA group led by Begonya. The Pediatric Computational Imaging Center will continue to foster strategic collaborations with leading universities and institutions within the national and international ecosystem, including UPC, UB, UPF, BSC, and centers such as GOSH. In parallel, the center will expand into emerging fields such as ophthalmology and pathological anatomy, complementing its already well-established expertise in neurology and radiology.

These efforts aim to position the group as a leading reference in translational pediatric innovation.

SELECTED PUBLICATIONS

- Adell NE, Buj I, Domingo M, Llumà J, Travieso JA, Rubio J et al. Characterization of 3D-Printed Glass Fiber-Filled and Calcium Carbonate-Filled Polypropylene Components for Surgical Planning. *Polymers*. 2025;17(19):2684. IF:4,900. [Q1].
- Bernaus S, Romagosa J, Mata C, Stephan C, Benítez R, Valls A et al. Novel classification of brain vascular tortuosity measures: A systematic review. *Comput. Biol. Med.* 2025;190:109990-109990. IF:6,300. [Q1].
- Quintillá JM, de la Gala C, Berruero R, Claveral J, Figueres B, Bergós A et al. High-Fidelity Clinical Simulation to Improve a Pediatric Clinical Trial Design: Lessons Learned and Conceptualization of the Return on Investment (ROI) and Return on Engagement (ROE) Analysis. *Pediatr. Drugs*. 2025;27(1):73-84. IF:3,300. [Q1].
- Rubio J, Escrigas F, Valls A, Alfons C, Becerra MV, Muchart J et al. Multidisciplinary management of intracranial migration of a fractured dental needle through the foramen ovale: a case report. *J. Surg. Case Rep.* 2025;2025(9). IF:0,500. [Q4].

SELECTED PROJECTS

- PHEMS: Pediatric Hospitals as European drivers for multi-party computation and synthetic data generation capabilities across clinical specialties and data types. [PFE00117]. European Commission (HORIZON-HLTH-2022-IND-13). 2023-2026. IP: Arnau Valls Esteve.
- i4KIDS 4RARE: From challenge to adoption: acceleration of paediatric orphan medical devices. [PFE00134]. European Commission (EU4H-2023-PJ-11). 2024-2026. IP: Arnau Valls Esteve.
- 3DCartiBone: Desarrollo de biotintas formuladas con sustancias de origen humano para su uso en bioimpresión-3D osteocondral. [PFP00337]. Ministerio de Ciencia e Innovación. 2024-2027. IP: Josep Rubio Palau.

Biomaterials and Tissue Engineering

Developing biomaterials for tissue and organs functional repair by transferring the generated knowledge to bio companies and hospitals

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31 Publications

Impact factor **258**
average Impact Factor **8,3**
Publications in 1st quartile.... **74%**
Publications in 1st decile..... **52%**
Leadership **45%**

The BBT's main scientific goal requires the design of materials which can modulate the response of the receiving tissue, leading in some cases to the regeneration and neof ormation of the degraded tissues and, in others, to a perfect integration of the biomaterial and to the recovery of the lost functionality.

This interdisciplinary approach requires knowledge and the physico-chemical and mechanical characterization of the materials, as well as the study of the interactions of the materials with the biological entities that will constitute the boundary conditions in service at different levels: proteins, cells and tissues. The use of techniques of surface characterization of the materials and the study of the effect of these properties in the biological response is particularly relevant in a multidisciplinary scenario that ranges from materials science to biomedicine.

BBT aims to cover basic science but also technological aspects to be transferred to companies in the biomedical sector.

ACHIEVEMENTS 2025

The group brings together a multidisciplinary team of researchers with complementary backgrounds, such as engineers, chemists, physicists and biologists, which ensures the capacity to tackle its scientific challenges from a global and an integrated perspective.

During 2025, members of the BBT have published 37 papers in JCR indexed peer-reviewed journals and have presented their work in 59 Plenary, Keynote, Invited, Oral and Poster presentations in international conferences and workshops.

The BBT has executed 6 international projects (including an ERC Advanced Grant), 16 projects funded by the AEI, 1 by ISCIII and 4 by ACCIÓ, was awarded a l'Oréal-UNESCO for Women in Science award, and is part of 2 "Xarxa I+D+i" AGAUR and 3 Redes Investigación AEI.

Moreover, the group has carried several R+D+i projects for national and international companies, and the implementation of studies and specific services of analysis and/or experimental characterization, with a focus on biomedical applications.

FUTURE CHALLENGES

We aim to continue leading technology transfer, to be able to reach the patients with the new biomaterials and technologies developed.

SELECTED PUBLICATIONS

- Kumar A, McNally KE, Zhang Y, Haslett A, Wang X, Guillem J et al. Multispectral live-cell imaging with uncompromised spatiotemporal resolution. *Nat. Photonics*. 2025;19(10):1146-1156. IF:32,900. [Q1].
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- Mateu M, Varela P, del L, Lodoso I, Jimenez E, Franch J et al. Mechanically Tunable Bone Scaffolds: In Vivo Hardening of 3D-Printed Calcium Phosphate/Polycaprolactone Inks. *Adv. Funct. Mater*. 2025;36(12). IF:19,000. [Q1].
- Garcia N, Müller DW, Mücklich F, Ginebra MP, Jiménez E, Mas C. Tailoring Cell Behavior and Antibacterial Properties on Zirconia Biomaterials through Femtosecond Laser-Induced Micropatterns and Nanotopography. *ACS Appl. Mater. Interfaces*. 2025;17(20):29082-29099. IF:8,200. [Q1].





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