



SJD

Sant Joan de Déu
Institut de Recerca 

ANNUAL SCIENTIFIC REPORT

2024

SJD

Sant Joan de Déu
Institut de Recerca 

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Sant Joan de Déu, Parc Sanitari Sant
Joan de Déu & Institut de Neurociències -
Universitat de Barcelona

Sant Joan de Déu



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Letter from the director

2024 Annual Report – IRSJD

Dear all,

At the Institut de Recerca Sant Joan de Déu, we work with a very clear purpose: to drive research that is both excellent and innovative. We do so with an international outlook and with one goal that guides all our work: improving people's health, especially in the fields of pediatric biomedicine and mental health.

People —and especially children and adolescents— are our reason for being and the driving force behind the research we lead. Their courage and participation remind us every day that science only makes sense when we place them at the center.

The year 2024 has been one of significant scientific achievements. High-impact publications, as well as the competitive projects we have launched, reflect the talent and dedication of our research team. Yet beyond the figures, what truly matters is how these results bring us closer to our mission: advancing towards medicine that transforms lives.

Health research, collaborative science, and talent are the key engines driving today's medical transformation. Thanks to them, we are opening new paths of hope for diseases that still have no cure and gaining a deeper understanding of their natural history.

What seemed like the future just a few years ago is now the present. Advanced and personalized diagnosis, precision medicine, multi-omics technologies, and gene and cell therapies are already part of this new reality. Our commitment, therefore, is to remain at the forefront of this transformation, with the determination to turn scientific advances into treatments that improve people's lives.

That is why I invite our patients, families, professionals, and the entire community around us to continue placing your trust in us. Only with your support and collaboration can we build a future full of progress, opportunities, and hope.

Thank you for walking this path alongside us.

Sincerely,

Dr. Joan Comella Carnicé

**Director of the Institut de Recerca
Sant Joan de Déu**





1

FOREWORD

Governance and structures

Global numbers 2024

Global numbers 2015-2024

Recognition

Governance and structures

Governing council

Gmà. Jesús Pineda Sánchez
President

Excm. i Mgfc. Dr. Joan Guàrdia Olmos
Vicepresident primer, Rector de la Universitat de Barcelona (UB)

Dr. Climent Molins Borrell, Vocal
Universitat Politècnica de Catalunya (UPC)

Dr. Manuel Del Castillo Rey
Vocal, Director Gerent Hospital Sant Joan de Déu Barcelona (HSJD)

Dr. Sebastià Santaeugènia Gonzalez
Vocal, Director Gerent del Parc Sanitari Sant Joan de Déu (PSSJD)

Sra. Natàlia Pérez Neira
Secretària, Directora d'Economia i Finances Hospital Sant Joan de Déu

Dr. Miquel Pons Serra
Vocal, Director Mèdic de l'Hospital Sant Joan de Déu Barcelona

Sra. Marta Garcia Martínez
Vocal, Directora Financera del Parc Sanitari Sant Joan de Déu

Fundació La Caixa
Representada en primer lloc per Isidre Fainé Casas, President

Scientific advisory board

Dr. Antonio L. Andreu
Scientific Director. European Infrastructure for Translational Medicine (EATRIS)

Dr. Montserrat Vendrell i Rius,
Partner. Alta Life Sciences

Dra. Ana Buj-Bello,
Head of Laboratory in Gene Therapy, Inserm, Genethon

Dr. Philippe Courtet,
Professor of Psychiatry at the Université de Montpellier and Head of Department of Emergency care Psychiatry at the University Hospital, Montpellier

Dra. 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 and Johns Hopkins University's Department of Psychiatry

Dra. Maithe Tauber,
Hospital Paediatric endocrinologist. Institut des Sciences du Cerveau, de la Cognition et du Comportement de Toulouse (ISC3T)

Governance and structures

Internal scientific committee

President

Dr. Joan Comella Carnice

First Vice-presidency

Dr. Josep M Haro Abad

Second Vice-presidency

Dra. Marta Camprubí Camprubí

Secretary

Dr. Marçal Pastor Anglada

Vocals

Coordinators of Research Programmes and Representatives of Universities:

- Dra. Alexandra Avgustinova
- Dra. Susanna Balcells Comas
- Dra. Alícia Casals Gelpi
- Dra. Francesca Crovetto
- Dra. Montserrat Dolz Abadia
- Dr. Josep M Font Llagunes
- Dra. M^a Àngels Jurado Luque
- Dr. Jaume Mora Graupera
- Dra. Susana Ochoa Güerre
- Dra. Beatriz Olaya Guzman
- Dr. Francesc Palau Martínez
- Dra. Maria Rubio Valera
- Dra. Judith Usall Rodie
- Dra. Esther Via Virgili

Representatives R1-R2:

- Dra. Lara Cantarero Abad
- Sra. María Cisneros Pérez
- Dra. Andrea Miranda Mendizabal
- Sra. Marina Verdaguer Rodríguez



Global numbers 2024

887

RESEARCH STAFF



- 62 Group leaders
- 370 Staff researchers
- 83 Postdoc & associate researchers
- 101 PhD Students
- 271 Assistant researcher & Technicians

And 116 staff in corporate services

483

ACTIVE PROJECTS



- 77 Competitive autonomic
- 185 Competitive national
- 62 Competitive international
- 7 Non Competitive autonomic
- 118 Non Competitive national
- 34 Non Competitive international

102

NEW PROJECTS

- 22 Competitive autonomic
- 45 Competitive national
- 15 Competitive international
- 2 Non Competitive autonomic
- 17 Non Competitive national
- 1 Non Competitive international



25.71 M

BUDGET*



- 68 % Private
- 32 % Public

397

ACTIVE CLINICAL TRIALS & OBSERVATIONAL STUDIES



- 35 Phase I
- 81 Phase II
- 161 Phase III
- 13 Phase IV
- 19 Other
- 88 Observational studies

675

PUBLICATIONS



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

- 3931 Impact factor
- 5,8 Average impact factor
- 71% Publications in JCR first quartile journals
- 43% Publications with main contributing authors

72

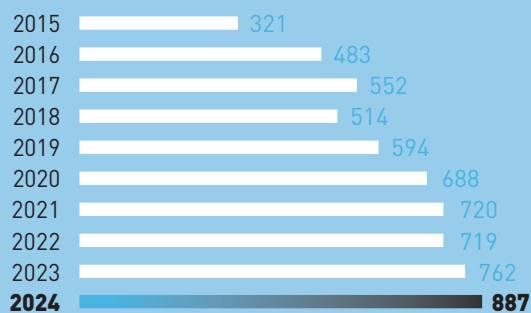
NEW CLINICAL TRIALS & OBSERVATIONAL STUDIES

- 5 Phase I
- 16 Phase II
- 34 Phase III
- 1 Phase IV
- 4 Other
- 12 Observational studies

Global numbers 2015-2024

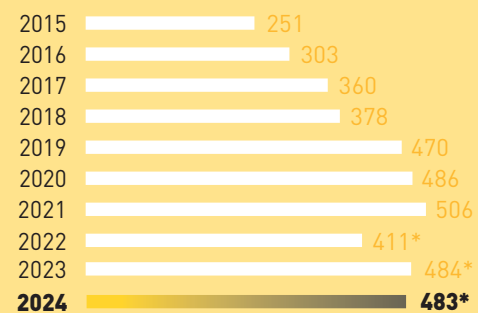
1003

RESEARCH STAFF



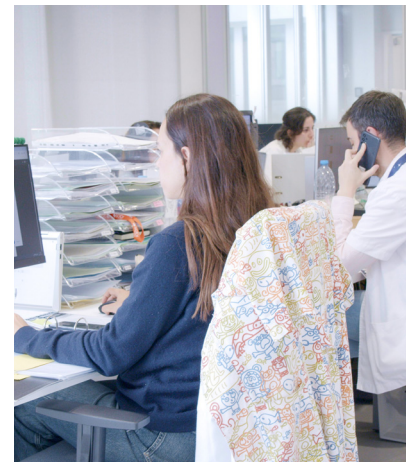
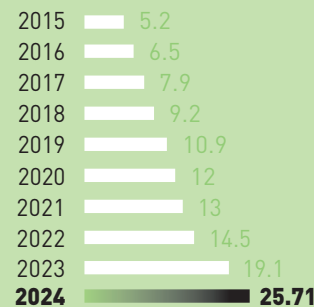
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PROJECTS



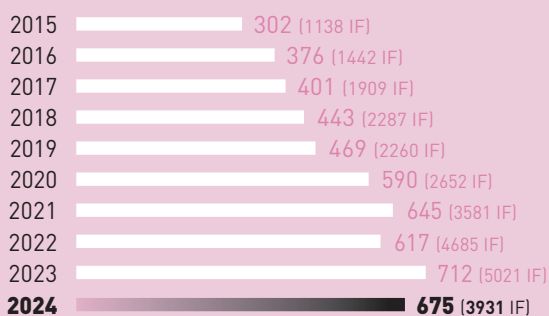
25.71 M

BUDGET**



675

PUBLICATIONS



72

CLINICAL TRIALS & OBSERVATIONAL STUDIES



* Only the projects managed by the Fundació de Recerca Sant Joan de Déu have been accounted for.

** Millions of euros

Recognition

HRS4R award

HRS4R Human Resources Strategy for Researchers

<https://www.irsjd.org/en/research/hrs4r-hr-excellence-research/>

Fundació de Recerca Sant Joan de Déu is awarded with the logo "HR Excellence in research" since 2018. Thus, it has acquired a commitment to implement the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers (Charter & Code) in their policies and practices.

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

This award involves the development of a 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 in order to increase and ease knowledge transfer in the business sector and general public, promoting the involvement of these agents in the field of research.





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STAFF

Research staff



Research staff


887
286 men (32%) **601** women (68%)

62 GROUP LEADER

32 men (52%) **30** women (48%)

370 STAFF RESEARCHER

131 men (35%) **239** women (65%)

83 POSTDOC ASSOCIATE RESEARCHER

22 men (27%) **61** women (73%)

101 PhD STUDENT

28 men (28%) **73** women (72%)

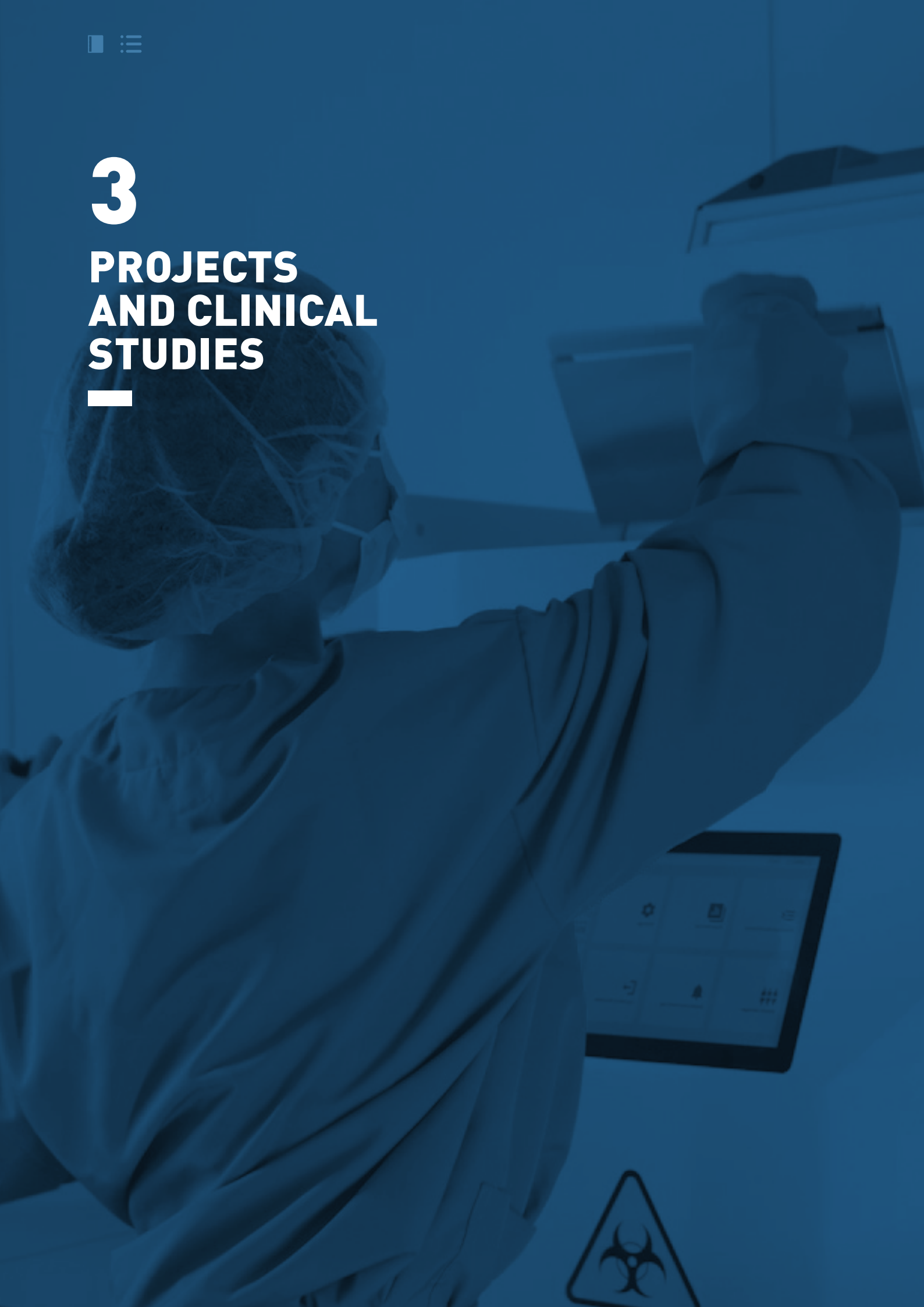
271 TECHNICIAN AND ASISTANT RESEARCHERS

73 men (27%) **198** women (73%)

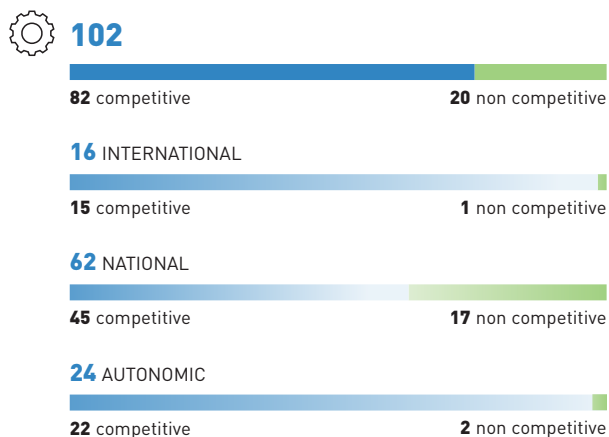



3

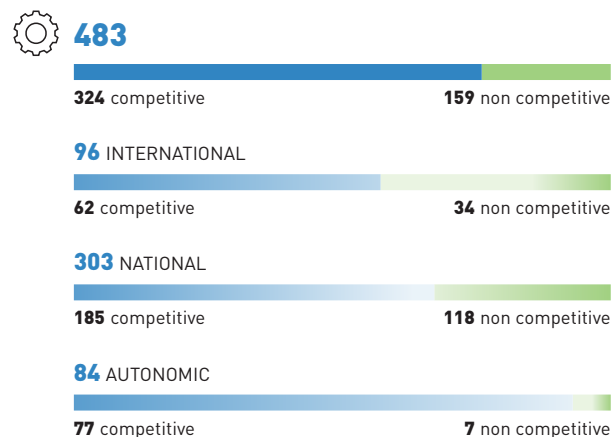
PROJECTS AND CLINICAL STUDIES



New projects

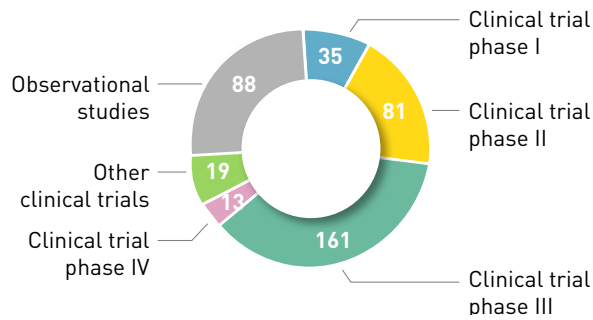


Active projects

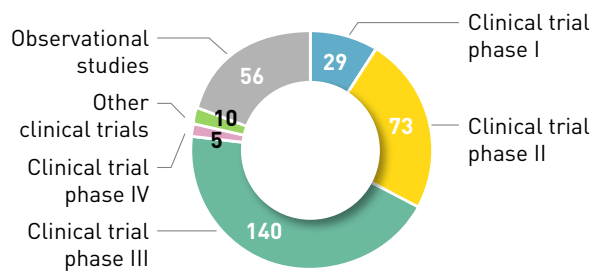


Active clinical studies

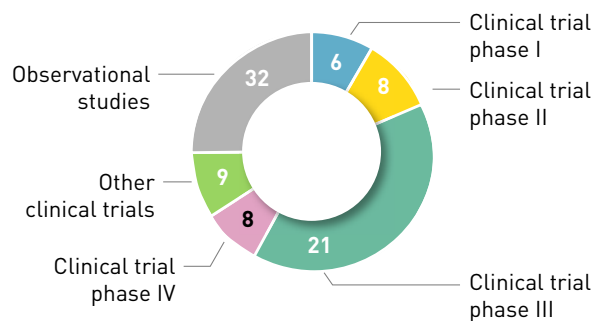
All clinical studies by type



Only commercial clinical studies



Only academic clinical studies



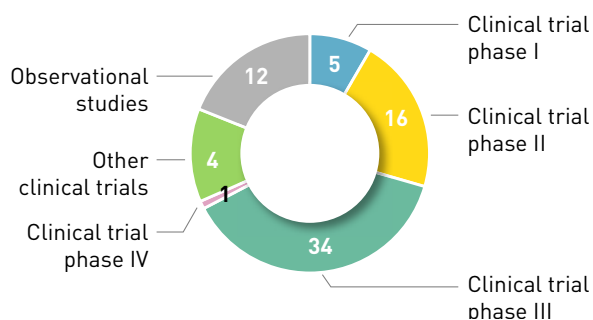
Total active per service



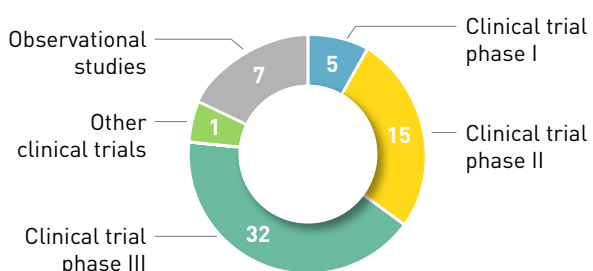
	Clinical Trials	Observational Studies	Other
Allergy and clinical immunology	12	6	0
Cardiology	7	0	1
Surgery	1	0	1
Orthopaedics and traumatology	1	1	0
Dermatology	28	4	0
Endocrinology	9	8	0
Gastroenterology, hepatology and nutrition	13	5	1
Gynaecology and obstetrics	4	2	1
Clinical haematology	10	9	0
Infectious diseases	15	4	1
Internal medicine	1	0	0
Nephrology	14	6	0
Neonatology	3	0	2
Neurology	76	13	1
Ophthalmology	3	1	1
Oncology	49	12	0
Orthopaedics and traumatology	1	0	0
Otorhinolaryngology	2	0	0
Pneumology	9	0	0
Psychiatry and psychology	7	2	1
Rehabilitation and physical medicine	1	0	1
Rheumatology	18	9	0
Intensive care unit	4	0	0
Emergency room	1	0	1
Emergency and internal medicine	1	0	0
Anesthesia	0	2	1
Nursing	0	0	2
Neurosurgery	0	0	1
Neurophysiology	0	0	2
Traumatology	0	0	1
TOTAL	290	88	19

New clinical studies

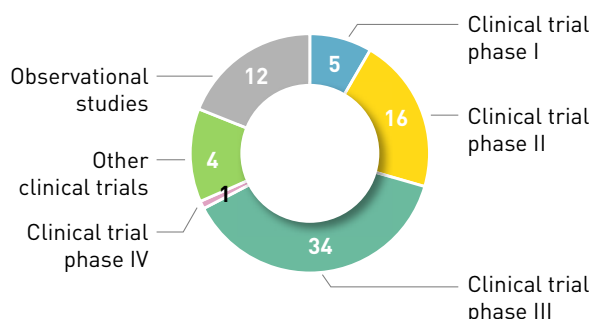
All clinical studies by type



Only commercial clinical studies



Only academic clinical studies



Total new per service



	Clinical Trials	Observational Studies	Other
Allergy and clinical immunology	3	2	0
Cardiology	2	0	1
Surgery	1	0	0
Dermatology	8	0	0
Endocrinology	1	0	0
Gastroenterology, hepatology and nutrition	6	0	0
Infectious diseases	2	1	0
Internal medicine	1	0	0
Nephrology	5	1	0
Neurology	12	3	1
Ophthalmology	1	0	0
Oncology	6	1	0
Pneumology	2	0	0
Psychiatry and psychology	1	1	0
Rehabilitation and physical medicine	0	0	1
Rheumatology	4	1	0
Emergency room	1	0	0
Nursing	0	0	1
Laboratory	0	1	0
Complex wound unit	0	1	0
Total	56	12	4



4

SCIENTIFIC PRODUCTION AND RESULTS



Scientific publications

Publications (Original articles & reviews)

Number 675	Impact Factor 3.931	Average IF 5,8	% Q1 71%	% D1 28%	% Leadership 43%
% D1 in leadership 17%	% Female leadership 52%	Normalized Impact (2019-2024) 2,72	Highly Cited Papers 10% (2019-2024) 24,1%	% Open Access 73%	% International collaboration 53%

All publications by type

	Number	Impact Factor	Average IF	% Q1	% D1	% Leadership
Original articles	629	3690	5,9	71%	28%	43%
Review	46	241	5,2	70%	24%	46%
Scientific Letters	24	209	8,7	71%	29%	67%
Editorial material (editorials and letters to the editor)	29	204	7,1	52%	24%	55%
Total*	675	3931	5,8	76%	30%	48%

* Include 23 clinical guidelines, consensus documents and recommendations

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 2023 (SCIE & SSCI)
- 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 2020 to 2024, and are calculated using Clarivate's ESI (Essential Science indicators) baseline citation rates and baseline percentiles from its 08/05/2025 update.
- Citations to calculate the CROWN and HCP10% indicators were downloaded from Clarivate WoS (Web of Science) Core Collection via Fundanet, on 13/05/2025. 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

Original articles & reviews in first decile (D1) journals

Journal	Total articles and reviews	Journal's impact Factor (JCR 2023)
Lancet	4	98,4
BMJ	1	93,7
Cancer Cell	1	48,8
Lancet Infect. Dis.	1	36,4
Circulation	2	35,6
Nat Genet	1	31,8
Lancet Psychiatry	1	30,8
Cancer Discov.	1	30,6
Lancet Digit. Health	1	23,8
Gut	1	23,1
Nat Hum Behav	1	22,3
J. Am. Coll. Cardiol.	1	21,7
Blood	1	21,1
Ann. Rheum. Dis.	2	20,3
Lancet Child. Adolesc. Health	2	19,9
Ann Intern Med	1	19,6
Adv. Funct. Mater.	1	18,5
Sci. Immunol.	1	17,8
Neuro Oncol	1	16,4
Am. J. Psychiat.	1	15,1
Diabetes Care	1	14,8
Kidney Int.	1	14,8
Nat. Commun.	4	14,7
Autophagy	1	14,6
Trends Biotechnol	1	14,3
Lancet Reg Health Eur	1	13,6
Protein Cell	1	13,6
J. Clin. Invest.	1	13,3

Journal	Total articles and reviews	Journal's impact Factor (JCR 2023)
Hepatology	1	13,0
Blood Cancer J.	1	12,9
Allergy	2	12,6
Brain	3	11,9
Hemasphere	2	11,9
Cell Rep. Med.	2	11,7
JAMA Dermatol.	1	11,5
Arthritis Rheumatol.	1	11,4
J Adv Res	1	11,4
J. Allergy Clin. Immunol.	1	11,4
Trends Endocrinol. Metab.	1	11,4
Med. Res. Rev.	1	10,9
Metab.-Clin. Exp.	2	10,9
Thorax	1	10,8
Carbohydr. Polym.	1	10,7
JAMA Netw. Open	1	10,5
Clin. Cancer Res.	1	10,4
Environ. Int.	1	10,3
J. Immunother. Cancer	1	10,3
Adv Healthc Mater	1	10,0
Eurosurveillance	2	9,9
Mol Psychiatry	1	9,6
Acta Biomater.	2	9,4
J Am Acad Child Adolesc Psychiatry	2	9,2
Circ.-Arrhythmia Electrophysiol.	1	9,1
J. Travel Med.	1	9,1
Pharmacol. Res.	1	9,1

High Influence Journals

Journal	Total articles and reviews	Journal's impact Factor (JCR 2023)
EMBO Mol. Med.	2	9,0
Rev. Med. Virol.	1	9,0
Br J Psychiatry	1	8,8
Crit. Care	1	8,8
Am. J. Obstet. Gynecol.	2	8,7
Cardiovasc. Diabetol.	1	8,5
J. Eur. Acad. Dermatol. Venereol.	1	8,5
Neurology	4	8,4
Neurol.-Neuroimmunol. Neuroinflammation	2	8,3
Clin Infect Dis	1	8,2
J. Allergy Clin. Immunol.-Pract.	1	8,2
Sci. Total Environ.	1	8,2
Am J Hum Genet	1	8,1
Europace	1	7,9
Int. J. Biol. Macromol.	1	7,7
Neurosci. Biobehav. Rev.	3	7,6
Mov Disord	3	7,4
BMJ Glob. Health	1	7,1
Clin. Chem.	1	7,1
Biomed. Pharmacother.	1	6,9
J. Med. Virol.	4	6,8
Int. J. Nanomed.	1	6,7
J. Build. Eng.	1	6,7
Am. J. Clin. Nutr.	1	6,5
eLife	1	6,4
Int. J. Epidemiol.	1	6,4
Travel Med. Infect. Dis.	1	6,3
Acta Neuropathol. Commun.	1	6,2

Journal	Total articles and reviews	Journal's impact Factor (JCR 2023)
MOL AUTISM	1	6,2
Pediatrics	1	6,2
Artif. Intell. Med.	1	6,1
Eur Neuropsychopharmacol	3	6,1
Ultrasound Obstet. Gynecol.	1	6,1
Eur. Child Adolesc. Psych.	2	6,0
Eur. Stroke J.	1	5,9
Psychol. Med.	5	5,9
J. Med. Internet Res.	5	5,8
Transl Psychiatry	3	5,8
Biomacromolecules	1	5,5
J. Adolesc. Health	3	5,5
Emergencias	1	5,4
Biochem. Pharmacol.	2	5,3
Int. J. Pharm.	3	5,3
J Neuroeng Rehabil	3	5,2
Obstet. Gynecol. Surv.	2	5,2
Ceram. Int.	2	5,1
Invest. Ophthalmol. Vis. Sci.	1	5,0
Polym Test	1	5,0
Intensive Crit. Care Nurs.	3	4,9
Med. Educ.	1	4,9
BJOG	1	4,8
J Gerontol B Psychol Sci Soc Sci	1	4,8
Neuroimage	1	4,7
Dent Mater	1	4,6
J. Res. Adolesc.	1	4,6
J Clin Psychiatry	1	4,5
J. Consult. Clin. Psychol.	1	4,5
EFORT Open Rev	1	4,3

High Influence Journals

Journal	Total articles and reviews	Journal's impact Factor (JCR 2023)
Pediatr. Allergy Immunol.	2	4,3
Sports Med Open	1	4,1
Ann. Phys. Rehabil. Med.	1	3,9
Arch. Dis. Child.-Fetal Neonatal Ed.	1	3,9
J. Pediatr.	2	3,9
Dev. Med. Child Neurol.	4	3,8
J Nurs Manag	1	3,7
World Journal of Pediatrics	2	3,6
Nurse Educ. Pract.	1	3,3
Nurs. Crit. Care	1	3,0
Patient Educ Couns	1	2,9
Res. Dev. Disabil.	1	2,9

High Influence Journals

Originals articles D1 with IRSJD main contribution: 51

Reference	Journal	Journal's impact Factor (JCR 2023)
Sanchez E, Muiños F, Pinheiro M, González V, Rodríguez CJ, Avgustinova A et al. Origins of Second Malignancies in Children and Mutational Footprint of Chemotherapy in Normal Tissues. <i>Cancer Discov.</i> 2024;14(6):953-964. IF:30,600. (Q1).	Cancer Discov.	30,6
Zivanic M, Espona A, Verswyvel H, Smits E, Bogaerts A, Lin A et al. Injectable Plasma-Treated Alginate Hydrogel for Oxidative Stress Delivery to Induce Immunogenic Cell Death in Osteosarcoma. <i>Adv. Funct. Mater.</i> 2024;34(14)IF:18,500. (Q1).	Adv. Funct. Mater.	18,5
Mateu M, Fuenteslópez CV, Uribe J, Haugen HJ, Pandit A, Ginebra MP et al. Redefining biomaterial biocompatibility: challenges for artificial intelligence and text mining. <i>Trends Biotechnol.</i> 2024;42(4):402-417. IF:14,300. (Q1).	Trends Biotechnol.	14,3
Ousingsawat J, Talbi K, Gómez H, Koy A, Fernández A, Tekgül H et al. Broadening the clinical spectrum: molecular mechanisms and new phenotypes of ANO3-dystonia. <i>Brain.</i> 2024;147(6):1982-1995. IF:11,900. (Q1).	Brain	11,9
Julià NA, Olivella M, Sigatullina M, Ibáñez S, Muñoz B, Alonso O et al. L-serine treatment in patients with GRIN-related encephalopathy: a phase 2A, non-randomized study. <i>Brain.</i> 2024;147(5):1653-1666. IF:11,900. (Q1).	Brain	11,9
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. <i>JAMA Dermatol.</i> 2024;161(2):203-207. IF:11,500. (Q1).	JAMA Dermatol.	11,5
Barroso E, Jurado J, Wahli W, Palomer FX, Vazquez M. Increased hepatic gluconeogenesis and type 2 diabetes mellitus. <i>Trends Endocrinol. Metab.</i> 2024;35(12):1062-1077. IF:11,400. (Q1).	Trends Endocrinol. Metab.	11,4
Palomer FX, Salvador JM, Griñán C, Barroso E, Pallàs M, Vazquez M. GADD45A: With or without you. <i>Med. Res. Rev.</i> 2024;44(4):1375-1403. IF:10,900. (Q1).	Med. Res. Rev.	10,9
Jurado J, Barroso E, Bernard M, Zhang M, Peyman M, Rada P et al. GDF15 activates AMPK and inhibits gluconeogenesis and fibrosis in the liver by attenuating the TGF-β1/SMAD3 pathway. <i>Metab.-Clin. Exp.</i> 2024;152:155772-155772. IF:10,900. (Q1).	Metab.-Clin. Exp.	10,9
Colombi S, Sáez I, Borrás N, Estrany F, Pérez MM, García JM et al. Glyoxal crosslinking of electro-responsive alginate-based hydrogels: Effects on the properties. <i>Carbohydr. Polym.</i> 2024;337:122170-122170. IF:10,700. (Q1).	Carbohydr. Polym.	10,7
Piñera D, Buxadera J, Delint RC, Dalby MJ, Burgess KV, Ginebra MP et al. Gallium and silver-doped titanium surfaces provide enhanced osteogenesis, reduce bone resorption and prevent bacterial infection in co-culture. <i>Acta Biomater.</i> 2024;180:154-170. IF:9,400. (Q1).	Acta Biomater.	9,4
del Mazo L, Johansson L, Tampieri F, Ginebra MP. Toughening 3D printed biomimetic hydroxyapatite scaffolds: Polycaprolactone-based self-hardening inks. <i>Acta Biomater.</i> 2024;177:506-524. IF:9,400. (Q1).	Acta Biomater.	9,4
Rostami A, Palomer FX, Pizarro J, Barroso E, Valenzuela BI, Crispi F et al. PPARβ/d prevents inflammation and fibrosis during diabetic cardiomyopathy. <i>Pharmacol. Res.</i> 2024;210:107515-107515. IF:9,100. (Q1).	Pharmacol. Res.	9,1

High Influence Journals

Reference	Journal	Journal's impact Factor (JCR 2023)
Montero J, Hinze 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. 2024;226(4):1-9. IF:8,800. (Q1).	Br J Psychiatry	8,8
Bermúdez L, Mayordomo J, Miñambres M, Reyes S, Valencia J, Lopez YM et al. Implications of sedation during the use of noninvasive ventilation in children with acute respiratory failure (SEDANIV Study). Crit. Care. 2024;28(1):235-235. IF:8,800. (Q1).	Crit. Care	8,8
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. 2024;IF:8,700. (Q1).	Am. J. Obstet. Gynecol.	8,7
Barranco M, Alonso N, Weber RJM, Lloyd GR, Hernandez M, Yanes O et al. Lipidome characterisation and sex-specific differences in type 1 and type 2 diabetes mellitus. Cardiovasc. Diabetol. 2024;23(1):109-109. IF:8,500. (Q1).	Cardiovasc. Diabetol.	8,5
Almeida L, Navarro E, Sebastiani G, Ferrero SI, Ferrer P, Garcia O et al. Effect of prenatal phthalate exposure on fetal development and maternal/neonatal health consequences: A systematic review. Sci. Total Environ. 2024;950:175080-175080. IF:8,200. (Q1).	Sci. Total Environ.	8,2
Espona A, Tampieri F, Canal C. Engineering alginate-based injectable hydrogels combined with bioactive polymers for targeted plasma-derived oxidative stress delivery in osteosarcoma therapy. Int. J. Biol. Macromol. 2024;257:128841-128841. IF:7,700. (Q1).	Int. J. Biol. Macromol.	7,7
Ortigoza JD, Zamani M, Dorison N, Sadeghian S, Azizimalamiri R, Alvi JR et al. Biallelic <i>ZBTB11</i> Variants: A Neurodevelopmental Condition with Progressive Complex Movement Disorders. Mov Disord. 2024;39(9):1624-1630. IF:7,400. (Q1).	Mov Disord	7,4
Rodriguez H, Ormazabal A, Casado M, Arias AY, Oliva C, Barranco M et al. Cerebrospinal Fluid Homovanillic and 5-Hydroxyindoleacetic Acids in a Large Pediatric Population; Establishment of Reference Intervals and Impact of Disease and Medication. Clin. Chem. 2024;70(12):1443-1451. IF:7,100. (Q1).	Clin. Chem.	7,1
Zhang M, Barroso E, Peña L, Rada P, Valverde ÁM, Wahli W et al. PPARβ/d attenuates hepatic fibrosis by reducing SMAD3 phosphorylation and p300 levels via AMPK in hepatic stellate cells. Biomed. Pharmacother. 2024;179:117303-117303. IF:6,900. (Q1).	Biomed. Pharmacother.	6,9
Henares D, Monsalvez V, Brotons P, Machado ML, Capilla S, Gomila A et al. Human gut microbiota composition associated with international travels. Travel Med. Infect. Dis. 2024;61:102747-102747. IF:6,300. (Q1).	Travel Med. Infect. Dis.	6,3
Hernansanz A, Parra JA, Sayols N, Eixarch E, Gratacós E, Casals A. Robot assisted Fetoscopic Laser Coagulation: Improvements in navigation, re-location and coagulation. Artif. Intell. Med. 2024;147:102725-102725. IF:6,100. (Q1).	Artif. Intell. Med.	6,1

High Influence Journals

Reference	Journal	Journal's impact Factor (JCR 2023)
Dolz M, Tor J, Puig O, de la Serna E, Muñoz D, Pardo M et al. Clinical and neurodevelopmental predictors of psychotic disorders in children and adolescents at clinical high risk for psychosis: the CAPRIS study. Eur. Child Adolesc. Psych. 2024;33(11):3925-3935. IF:6,000. (Q1).	Eur. Child Adolesc. Psych.	6,0
Soler M, Ribera A, Aznar I, Sanchez A, Slob J, Vela E et al. Costs during the first year after stroke by degree of functional disability: A societal perspective. Eur. Stroke J. 2024;IF:5,900. (Q1).	Eur. Stroke J.	5,9
Monistrol A, Félez M, Byrne EM, Lind PA, Hickie IB, Martin NG et al. The effect of polygenic liability to mental disorders on COVID-19 outcomes in people with depression: the mediating role of anxiety. Psychol. Med. 2024;54(15):4140-4149. IF:5,900. (Q1).	Psychol. Med.	5,9
González L, Monistrol A, Vindrola C, Aguilar S, Carreras B, Haro JM et al. Long-Term Emotional Impact of the COVID-19 Pandemic and Barriers and Facilitators to Digital Mental Health Tools in Long-Term Care Workers: Qualitative Study. J. Med. Internet Res. 2024;26IF:5,800. (Q1).	J. Med. Internet Res.	5,8
Antón E, Adel MR, García J, Leggieri A, López L, Irimia M et al. Pleiotropic contribution of <i>to psychiatric and neurodevelopmental phenotypes in two zebrafish models. Transl Psychiatry. 2024;14(1):99-99. IF:5,800. (Q1).</i>	Transl Psychiatry	5,8
Malandrino A, Zhang HJ, Schwarm N, Böhringer D, Kah D, Kuster C et al. Plasticity of 3D Hydrogels Predicts Cell Biological Behavior. Biomacromolecules. 2024;25(12):7608-7618. IF:5,500. (Q1).	Biomacromolecules	5,5
Smith L, López GF, Hans OH, Jacob L, Kostev K, Rahmati M et al. Temporal Trends of Physical Fights and Physical Attacks Among Adolescents Aged 12-15 years From 30 Countries From Africa, Asia, and the Americas. J. Adolesc. Health. 2024;74(5):996-1005. IF:5,500. (Q1).	J. Adolesc. Health	5,5
Smith L, López GF, Pizzol D, Hans OH, Barnett Y, Schuch F et al. Global Trends in the Prevalence of Alcohol Consumption Among School-Going Adolescents Aged 12-15 Years. J. Adolesc. Health. 2024;74(3):441-448. IF:5,500. (Q1).	J. Adolesc. Health	5,5
Algarrada L, Martínez L, Baena I, Benito C, Rodríguez A, López V et al. Multicenter study of adolescent suicide attempts by poisoning: social, epidemiological, and clinical characteristics. Emergencias. 2024;36(6):438-446. IF:5,400. (Q1).	Emergencias	5,4
Quesada T, Cereijo R, Blasco A, Mestres A, Prieto P, Domingo JC et al. Divergent effects of the antiretroviral drugs, dolutegravir, tenofovir alafenamide, and tenofovir disoproxil fumarate, on human adipocyte function. Biochem. Pharmacol. 2024;220:116010-116010. IF:5,300. (Q1).	Biochem. Pharmacol.	5,3
Castellá M, Mestres A, Gavalda A, Blasco A, Quesada T, Romero I et al. The splicing factor SF3B1 is involved in brown adipocyte thermogenic activation. Biochem. Pharmacol. 2024;220:116014-116014. IF:5,300. (Q1).	Biochem. Pharmacol.	5,3
Rodríguez A, den AV, Cucinella SL, Lobo J, Font JM, Marchal L. Immersive virtual reality for learning exoskeleton-like virtual walking: a feasibility study. J Neuroeng Rehabil. 2024;21(1):195-195. IF:5,200. (Q1).	J Neuroeng Rehabil	5,2

High Influence Journals

Reference	Journal	Journal's impact Factor (JCR 2023)
del Mazo L, Gómez J, Martínez L, Pérez OS, Bou E, Ginebra MP. In vitro degradation of 3D-printed polycaprolactone\biomimetic hydroxyapatite scaffolds: Impact of the sterilization method. Polym Test. 2024;139IF:5,000. (Q1).	Polym Test	5,0
Cancela MB, Winter U, Zugbi S, Dinardi M, Alves da Quinta D, Aschero MR et al. Mimicking Retinoblastoma Treatment With Repeated Topotecan or Melphalan Develops Cross-Resistance to Classic Agents But Not to Repurposed Drugs. Invest. Ophthalmol. Vis. Sci. 2024;65(14):14-14. IF:5,000. (Q1).	Invest. Ophthalmol. Vis. Sci.	5,0
Bosch A, Hofheinz SB, Alegre JC, Pinero JMG, Dominguez SG, Rocío L et al. Prevalence of use of physical restraints in pediatric intensive care units and correlated variables: A Spanish multicenter study. Intensive Crit. Care Nurs. 2024;85IF:4,900. (Q1).	Intensive Crit. Care Nurs.	4,9
Bosch A, Alegre JC, Domínguez SG, Castaño PL, Rodríguez PP, Hofheinz SB et al. Intention to use physical restraint in paediatric intensive care units and correlated variables: A multicentre and cross-sectional study. Intensive Crit. Care Nurs. 2024;83IF:4,900. (Q1).	Intensive Crit. Care Nurs.	4,9
Kajee N, Montero J, Saunders K, Myall K, Harriss E, Kuyken W. Mindfulness training in healthcare professions: A scoping review of systematic reviews. Med. Educ. 2024;58(6):671-686. IF:4,900. (Q1).	Med. Educ.	4,9
Smith L, López GF, Soysal P, Veronese N, Jacob L, Kostev K et al. Mild Cognitive Impairment and Suicidal Ideation Among Adults Aged 65 Years or Older From Low- and Middle-Income Countries. J Gerontol B Psychol Sci Soc Sci. 2024;79(9)IF:4,800. (Q1).	J Gerontol B Psychol Sci Soc Sci	4,8
Dos SJ, Soares FC, Gaoua N, Rangel JFLB, Antunes R, de Barros MVG. Development and validation of a scale to measure social isolation in adolescents. J. Res. Adolesc. 2024;34(3):1069-1077. IF:4,600. (Q1).	J. Res. Adolesc.	4,6
Garcia N, Ginebra MP, Jimenez E, Roa JJ, Mas C. Influence of nanosecond laser surface patterning on dental 3Y-TZP: Effects on the topography, hydrothermal degradation and cell response. Dent Mater. 2024;40(1):139-150. IF:4,600. (Q1).	Dent Mater	4,6
Cuñat O, Arranz B, Vila R, Serra C, del Cacho N, Butjosa A et al. Relationship Between Exposure to Emotional Neglect and the Inflammatory Biomarkers Neutrophil-to-Lymphocyte, Monocyte-to-Lymphocyte, and Platelet-to-Lymphocyte Ratios in Patients With First-Episode Psychosis. J Clin Psychiatry. 2024;85(2)IF:4,500. (Q1).	J Clin Psychiatry	4,5
Agüera M, Soler A, Alejandre C, Moussalam S, Sala P, Pons G et al. Nirsevimab immunization's real-world effectiveness in preventing severe bronchiolitis: A test-negative case-control study. Pediatr. Allergy Immunol. 2024;35(6)IF:4,300. (Q1).	Pediatr. Allergy Immunol.	4,3
Antunes R, Condominas E, Sánchez A, Olaya B, Koyanagi A, de Miquel C et al. Physical Activity Participation Decreases the Risk of Depression in Older Adults: The ATHLOS Population-Based Cohort Study. Sports Med Open. 2024;10(1):1-1. IF:4,100. (Q1).	Sports Med Open	4,1
Jacob L, Lasbleiz S, Sanchez K, Morchoisne O, Lefèvre MM, Nguyen C et al. Arthrodistension with early and intensive mobilization for shoulder adhesive capsulitis: A randomized controlled trial. Ann. Phys. Rehabil. Med. 2024;67(6):101852-101852. IF:3,900. (Q1).	Ann. Phys. Rehabil. Med.	3,9

High Influence Journals

Reference	Journal	Journal's impact Factor (JCR 2023)
Alarcon A, de Vries LS, Parodi A, Arnáez J, Cabañas F, Steggerda SJ et al. Neuroimaging in infants with congenital cytomegalovirus infection and its correlation with outcome: emphasis on white matter abnormalities. Arch. Dis. Child.-Fetal Neonatal Ed. 2024;109(2):151-158. IF:3,900. (Q1).	Arch. Dis. Child.-Fetal Neonatal Ed.	3,9
Bosch A, Rodríguez PP, Alegre JC, Piñero JMG, Hofheinz SB, Domínguez SG et al. Adaptation and validation of the Physical Restraint-Theory of Planned Behaviour Questionnaire to the paediatric context. Nurs. Crit. Care. 2024;29(5):1086-1099. IF:3,000. (Q1).	Nurs. Crit. Care	3,0
Tost A, Romero S, Alonso JF, Bachiller A, Serna LY, Medina IF et al. EEG connectivity patterns in response to gaming and learning-based cognitive stimulations in Rett syndrome. Res. Dev. Disabil. 2024;150:104751-104751. IF:2,900. (Q1).	Res. Dev. Disabil.	2,9

Clinical guidelines, consensus documents & recommendations

Reference	Journal
Mortamet G, Milesi C, Baudin F, Yalindag N, Kneyber M, Pons M. Weaning from noninvasive respiratory support in children in acute settings: Expert consensus statement using modified Delphi methodology. <i>Pediatr. Pulmonol.</i> 2024;59(2):348-354. IF:2,700. (Q1).	<i>Pediatr. Pulmonol.</i>
Smith L, Keon D, Butler L, Kostev K, Brayne C, Barnett Y et al. Factors That Influence Meeting the Recommended Weekly Physical Activity Target Among Older People With Physical Multimorbidity: Evidence From 6 Low- and Middle-Income Countries. <i>J Phys Act Health.</i> 2024;21(3):1-9. IF:2,900. (Q2).	<i>J Phys Act Health.</i>
Benito N, Martinez JC, Lora J, Ariza J, Baeza J, Belzunegui J et al. Executive summary: Guidelines for the diagnosis and treatment of septic arthritis in adults and children, developed by the GEIO (SEIMC), SEIP and SECOT. <i>Enferm. Infec. Microbiol. Clin.</i> 2024;42(4):208-214. IF:2,600. (Q3).	<i>Enferm. Infec. Microbiol. Clin.</i>
Foeldvari I, Torok KS, Anton J, Blakley M, Constantin T, Cutolo M et al. Best clinical practice in the treatment of juvenile systemic sclerosis: expert panel guidance - the result of the International Hamburg Consensus Meeting December 2022. <i>Expert Rev. Clin. Immunol.</i> 2024;20(4):387-404. IF:3,900. (Q2).	<i>Expert Rev. Clin. Immunol.</i>
Leruez M, Chatzakis C, Lilleri D, Blazquez D, Alarcon A, Bourgon N et al. Consensus recommendation for prenatal, neonatal and postnatal management of congenital cytomegalovirus infection from the European congenital infection initiative (ECCI). <i>Lancet Reg Health Eur.</i> 2024;40:100892-100892. IF:13,600. (Q1).	<i>Lancet Reg Health Eur.</i>
Tokatly I, Bertoldi M, Blau N, DiBacco ML, Elsea SH, Garcia A et al. Consensus guidelines for the diagnosis and management of succinic semialdehyde dehydrogenase deficiency. <i>Mol. Genet. Metab.</i> 2024;142(1):108363-108363. IF:3,700. (Q2).	<i>Mol. Genet. Metab.</i>
Revencu N, Eijkelenboom A, Bracquemart C, Alhopuro P, Armstrong J, Baselga E et al. Assessment of gene-disease associations and recommendations for genetic testing for somatic variants in vascular anomalies by VASCERN-VASCA. <i>Orphanet J Rare Dis.</i> 2024;19(1):213-213. IF:3,400. (Q2).	<i>Orphanet J Rare Dis.</i>
Saavedra J, Slocker M, Fresán E, Grasa C, Pedraz LM, Ruiz AM et al. Consensus document of the Spanish Society of Paediatric Infectious Diseases (SEIP) and the Spanish Society of Paediatric Intensive Care (SECIP) for the diagnosis and treatment of central venous catheter-related infections in paediatric care. <i>An. Pediatr.</i> 2024;100(6):448-464. IF:1,500. (Q2).	<i>An. Pediatr.</i>
Caux F, Patsatsi A, Karakioulaki M, Antiga E, Baselga E, Borradori L et al. S2k guidelines on diagnosis and treatment of linear IgA dermatosis initiated by the European Academy of Dermatology and Venereology. <i>J. Eur. Acad. Dermatol. Venereol.</i> 2024;38(6):1006-1023. IF:8,500. (Q1).	<i>J. Eur. Acad. Dermatol. Venereol.</i>

Clinical guidelines, consensus documents & recommendations

Reference	Journal
Adang LA, Bonkowsky JL, Boelens JJ, Mallack E, Ahrens R, Bernat JA et al. Consensus guidelines for the monitoring and management of metachromatic leukodystrophy in the United States. <i>Cytotherapy</i> . 2024;26(7):739-748. IF:3,700. (Q1).	Cytotherapy
Mancuso M, Papadopoulou MT, NGYS, Ardissonne A, Bellusci M, Bertini E et al. Management of seizures in patients with primary mitochondrial diseases: consensus statement from the InterERNs Mitochondrial Working Group. <i>Eur J Neurol</i> . 2024;31(7) IF:4,500. (Q1).	Eur J Neurol.
López ID, Cernada M, Galán L, Boix H, Ibañez L, Couce ML. Small for gestational age: concept, diagnosis and neonatal characterization, follow-up and recommendations. <i>An. Pediatr</i> . 2024;101(2):124-131. IF:1,500. (Q2).	An. Pediatr.
Fufa D, Mdoka C, Ayalew M, Khofi H, Amankwah E, Chokwenda N et al. Effectiveness of a Wilms tumour treatment guideline adapted to local circumstances in sub-Saharan Africa: A report from Wilms Africa Phase II-CANCaRe Africa. <i>Pediatr Blood Cancer</i> . 2024;IF:2,400. (Q1).	Pediatr Blood Cancer.
Luque S, Mendoza N, Aguilera D, Garrido B, Miarons M, Piqueras AI et al. Spanish Society of Hospital Pharmacy and the Spanish Society of Pediatric Infectious Diseases (SEFH-SEIP) National Consensus Guidelines for therapeutic drug monitoring of antibiotic and antifungal drugs in pediatric and newborn patients. <i>An. Pediatr</i> . 2024;101(3):190-207. IF:1,500. (Q2).	An. Pediatr.
Metry D, Copp HL, Rialon KL, Iacobas I, Baselga E, Dobyns WB et al. Delphi Consensus on Diagnostic Criteria for LUMBAR Syndrome. <i>J. Pediatr</i> . 2024;272IF:3,900. (Q1).	J. Pediatr.
Zuberbier T, Muraro A, Nurmatov U, Arasi S, Stevanovic K, Anagnostou A et al. GA²LEN ANACARE consensus statement: Potential of omalizumab in food allergy management. <i>Clin. Transl. Allergy</i> . 2024;14(11)IF:4,600. (Q2).	Clin. Transl. Allergy.
Lengvári L, Takács K, Lengyel A, Pálkás A, Wouters CH, Koné I et al. Mevalonate kinase deficiency: an updated clinical overview and revision of the SHARE recommendations. <i>Front. Immunol</i> . 2024;15:1466844-1466844. IF:5,700. (Q1).	Front. Immunol.
Garcia P, Banzi R, Fosse V, Gerardi C, Glaab E, Haro JM et al. The PERMIT guidelines for designing and implementing all stages of personalised medicine research. <i>Sci Rep</i> . 2024;14(1):27894-27894. IF:3,800. (Q1).	Sci Rep.
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> . 2024;80(1):238-241. IF:2,400. (Q1).	J Pediatr Gastroenterol Nutr.
de Las Heras J, Almohalla C, Blasco J, Bourbon M, Couce ML, de Castro MJ et al. Practical Recommendations for the Diagnosis and Management of Lysosomal Acid Lipase Deficiency with a Focus on Wolman Disease. <i>Nutrients</i> . 2024;16(24)IF:4,800. (Q1).	Nutrients

Clinical guidelines, consensus documents & recommendations

Reference

Journal

Zeng XF, Varady KA, Wang XD, Targher G, Byrne CD, Tayyem R et al. The role of dietary modification in the prevention and management of metabolic dysfunction-associated fatty liver disease: An international multidisciplinary expert consensus. Metab.-Clin. Exp. 2024;161:156028-156028. IF:10,900. (Q1).

Metab.-Clin. Exp.

Fautrel B, Mitrovic S, De Matteis A, Bindoli S, Anton J, Belot A et al. EULAR/PReS recommendations for the diagnosis and management of Still's disease, comprising systemic juvenile idiopathic arthritis and adult-onset Still's disease. Ann. Rheum. Dis. 2024;83(12):1614-1627. IF:20,300. (Q1).

Ann. Rheum. Dis.

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. J. Clin. Immunol. 2024;45(1):57-57. IF:7,200. (Q1).

J. Clin. Immunol.

Patents, utility models and spin-offs

2024

NEW PATENT FAMILIES

3 APPLICATIONS

15 GRANTED

Up to 2024

PATENT FAMILIES

45 APPLICATIONS

21 LICENSES

NATIONAL PATENTS

448 APPLICATIONS

330 ACTIVE

UTILITY MODEL FAMILIES

7 APPLICATIONS

6 ACTIVE

New patents, license agreements and utility models

Combinación nutracéutica y su uso para el tratamiento de Trastornos neurológicos

Date: 17/04/2024

Country: EP

Number: EP435326

Inventors: García Cazorla Ángeles; De
Oyarzábal Sanz Alfonso Luis;

Altafaj Tardío Xavier

Proprietors: Sant Joan De Deu
Hospital; Univ Barcelona

Peptidic conjugates of sn38 useful in the treatment of cancer

Date: 29/08/2024

Country: US

Number: US2024285784

Inventors: Sanchez Navarro Macarena
[ES]; Teixidó Turá Meritxell [ES]; Gené
Olaciregui Nagore [ES]; Giralt Lledó
Ernest [ES]; Montero Carcaboso Angel
[ES]

Proprietors: Fundacio Inst De Recerca
Biomedica Irb Barcelona [ES]; Univ
Barcelona [ES]; Sant Joan de Déu
Hospital [ES]

Respirator Valve

Date: 03/05/2024

Country: ES

Number: ES2967741T3

Inventors: Palau Forte Enric; Valls

Esteve Arnau; Pons Odena Martí;

Alaez Vasconcellos Carlos; Font

Vizcarra Lluís; Bermudez Castel

Adrian; Pena Perez Xoel; Murcia

Laguna Marc

Proprietors: Sant Joan De Deu Hospital

ANTI-GD2 administration regimen

Date: 06/06/2024

Country: AU

Number: AU2022404522

Inventors: Mora Graupera Jaume;

Cheung Nai-Kong; Modak Shakeel;

Rajah Vignesh; J Møller

San-Pedro Claus

Proprietors: Y Mabs Therapeutics Inc

[US]; Sant Joan de Déu Hospital [ES];

Memorial Sloan

Kettering Cancer Center [US]; Sloan

Kettering Inst Cancer Res [US];

Memorial Hospital

For The Treat Of Cancer And Allied

Diseases [US]

ANTI-GD2 Administration regimen

Date: 12/07/2024

Country: CN

Number: CN118339186

Inventors: Mora Graupera Jaume;
Cheung Nai-Kong; Modak Shakeel;
Rajah Vignesh; J Møller San-Pedro
Claus

Proprietors: Y Mabs Therapeutics Inc
[US]; Sant Joan de Déu Hospital [ES];
Memorial Sloan Kettering Cancer
Center [US]; Sloan Kettering Inst
Cancer Res [US]; Memorial Hospital
For The Treat Of Cancer And Allied
Diseases [US]

ANTI-GD2 administration regimen

Date: 26/12/2024

Country: JP

Number: JP2024546660

Inventors: Mora Graupera Jaume;
Cheung Nai-Kong; Modak Shakeel;
Rajah Vignesh; J Møller San-Pedro
Claus

Proprietors: Y Mabs Therapeutics Inc
[US]; Sant Joan de Déu Hospital [ES];
Memorial Sloan Kettering Cancer
Center [US]; Sloan Kettering Inst
Cancer Res [US]; Memorial Hospital
For The Treat Of Cancer And Allied
Diseases [US]

ANTI-GD2 administration regimen

Date: 16/10/2024

Patents, utility models and spin-offs

Country: EP
Number: EP4444755
Inventors: Mora Graupera Jaume;
Cheung Nai-Kong; Modak Shakeel;
Rajah Vignesh; J Møller San-Pedro
Claus
Propietors: Y Mabs Therapeutics Inc
[US]; Sant Joan de Déu Hospital [ES];
Memorial Sloan Kettering Cancer
Center [US]; Sloan Kettering Inst
Cancer Res [US]; Memorial Hospital
For The Treat Of Cancer And Allied
Diseases [US]

ANTI-GD2 administration regimen

Date: 19/07/2024
Country: KR
Number: KR20240112966
Inventors: Mora Graupera Jaume;
Cheung Nai-Kong; Modak Shakeel;
Rajah Vignesh; J Møller San-Pedro
Claus
Propietors: Y Mabs Therapeutics Inc
[US]; Sant Joan de Déu Hospital [ES];
Memorial Sloan Kettering Cancer
Center [US]; Sloan Kettering Inst
Cancer Res [US]; Memorial Hospital
For The Treat Of Cancer And Allied
Diseases [US]

Dispositivo de simulación de operaciones quirúrgicas

Date: 27/05/2024
Country: ES
Number: ES2970264A
Inventor: Langdon Montero Cristobal
[Es]; Rojas Lechuga Maria Jesús [Es];
Caro Pinto Iván Alberto [Cl]; Adell
Gomez Nuria Esperanza [Es]; Valls
Esteve Arnau
Propietors: Sant Joan De Deu Hospital

Dispositivo de simulación de operaciones quirúrgicas

Date: 02/05/2024
Country: PCT
Number: WO2024089309
Inventors: Langdon Montero Cristobal
[Es]; Rojas Lechuga Maria Jesús [Es];
Caro Pinto Iván Alberto [Cl]; Adell
Gomez Nuria Esperanza [Es]; Valls
Esteve Arnau
Propietors: Sant Joan De Deu Hospital

Peptidic water-soluble delivery system of anticancer drugs

Date: 01/11/2024
Country: IL
IL315988
Inventor: Montero Carcaboso Ángel
[Es]; Dario Sosnik Alejandro [Il];
Resa Parés Clàudia [Es]; Teixidó Turá
Meritxell [Es]
Propietors: Sant Joan De Deu Hospital
[Es]; Technion Res & Dev Foundation
[Il]; Gate2brain S L [Es]

Peptidic water-soluble delivery system of anticancer drugs

Date: 06/12/2024
Country: MX
Number: MX2024011883
Inventors: Montero Carcaboso Ángel
[Es]; Dario Sosnik Alejandro [Il];
Resa Parés Clàudia [Es]; Teixidó Turá
Meritxell [Es]
Propietors: Sant Joan De Deu Hospital
[Es]; Technion Res & Dev Foundation
[Il]; Gate2brain S L [Es]

Peptidic water-soluble delivery system of anticancer drugs

Date: 27/12/2024
Country: CN
Number: CN119212729
Inventors: Montero Carcaboso Ángel
[Es]; Dario Sosnik Alejandro [Il];
Resa Parés Clàudia [Es]; Teixidó Turá
Meritxell [Es]
Propietors: Sant Joan De Deu Hospital
[Es]; Technion Res & Dev Foundation
[Il]; Gate2brain S L [Es]

Peptidic water-soluble delivery system of anticancer drugs

Date: 19/09/2024
Country: AR
Number: AR128900
Inventors: Montero Carcaboso Ángel
[Es]; Dario Sosnik Alejandro [Il];
Resa Parés Clàudia [Es]; Teixidó Turá
Meritxell [Es]
Propietors: Sant Joan De Deu Hospital
[Es]; Technion Res & Dev Foundation
[Il]; Gate2brain S L [Es]

Oligonucleotides for treating neuromuscular diseases

Date: 26/06/2024
Country: PCT
Number: WO2025003222A1
Inventors: Jimenez Mallebrera Cecilia
[Es]; López Márquez Arístides [Es];
Propietors: Zhou Haiyan [Gb]; Muntoni
Francesco [Gb]; Aguti Sara [Gb]
Sant Joan De Deu Hospital [Es]; Ucl
Business Ltd [Gb]

Patents, utility models and spin-offs

Portfolio of spin-offs

ITCC-P4

<https://itccp4.com/>

Deutsches Krebsforschungszentrum, Institut Gustave Roussy, The Institute of Cancer Research: Royal Cancer Hospital, IRCCS di diritto pubblico Istituto Ortopedico Rizzoli, Fondazione IRCCS Istituto Nazionale dei Tumori, IRCCS Ospedale Pediatrico Bambino Gesù, Zürich University, Medizinische Universitaet Wien, Fundacio Privada per la Recerca i la Docència Sant Joan de Déu Barcelona, Experimental Pharmacology & Oncology -Berlin-Buch GmbH, XenTech SAS, Institut Curie, Charité-Universitätsmedizin Berlin, Prinses Maxima Centrum voor Kinderoncologie B.V., Charles River Laboratories Germany GmbH, Universitaet ULM, University of Newcastle upon Tyne.

L'ITCC-P4 accelera el desenvolupament de fàrmacs contra el càncer infantil prioritzant les teràpies més rellevants. Ofereix el major repertori mundial de models tumorals pediàtrics derivats de pacients, amb dades moleculars i farmacològiques completes.

Neuroprotect

Xavier Martí Mas, Montserrat Joaquina Martí Mas, Fernando Jorge Alesanco, Alfonso Luis de Oyarzábal Sanz, Ángeles García Cazorla, Impulsa Iniciatives en Salut S.L, Jorge Herrera Fontanals.

Fabricació, composició, destil·lació, compravenda, distribució, comercialització, representació, importació i exportació de tota classe de complementos alimentaris, farmacèutics i sanitaris.

Doctoral Theses

Thesis author	Title	University	Thesis directors	Month of lecture	Research
Yoldi-Vergara, Carmen	Análisis de la autogestión del cuidado de la Diabetes Tipo 1 en población infantil y adolescente	UNIVERSIDAD DE BARCELONA	Ramon Krauel, Marta; [Conget-Donlo I]	02/12/2024	Nursing research
Toro Pérez, Daniel	Avaluació del patiment en nens, nenes i adolescents amb necessitats d'atenció pal•liativa	UNIVERSIDAD AUTÓNOMA DE BARCELONA	Camprodon Rosanas, Ester; [Limonero JT]	10/10/2024	Paediatric Chronicity and Palliative Care
Burgueño Sandoval, Víctor	Boosting the infection and oncolysis of adenovirus VCN-01 with topotecan	UNIVERSIDAD DE BARCELONA	Montero Carcaboso, Angel	04/11/2024	Paediatric Cancer Treatment
César Diaz, Sergio	Cambios de remodelado ventricular en enfermedades neuromusculares	UNIVERSIDAD DE BARCELONA	Sarquella Brugada, Georgia	27/11/2024	Cardiovascular Diseases and Child Development
García-Arroyo R	CERKL as a modulator gene of mitochondrial dynamics and stress response in the retina	UNIVERSIDAD DE BARCELONA	Marfany Nadal, Gemma; Mirra, Serena	19/04/2024	Human Molecular Genetics II
Tost-Abadias A	Cognitive function evaluation in pediatric patients with neurodevelopmental disorders by means of EEG data	UNIVERSIDAD POLITÉCNICA DE CATALUNYA	Mañanas Villanueva, Miquel A.; Bachiller A	22/11/2024	Medical Technologies Biosignal Analysis for Rehabilitation and Therapy
Sayols Baixeras, Narcís	Cognitive robot control strategies for complex surgical environments	UNIVERSIDAD POLITÉCNICA DE CATALUNYA	Casals Gelpi, Alicia; Hernansanz Prats, Albert	04/06/2024	Medical Technologies Robotics and Vision
Piñera Avellaneda, David	Development of antibacterial, antiresorptive and osteogenic gallium and silver doped titanium implants	UNIVERSIDAD POLITÉCNICA DE CATALUNYA	Manero Planella, Jose María; [Buxadera Palomero, Judit]	05/07/2024	Medical Technologies Biomaterials and Tissue Engineering
Serra M	Efecto de la administración posnatal de epigallocatequina-3-galato sobre la función cardíaca y la respuesta psicomotora y cognitiva alteradas por la exposición prenatal a alcohol	UNIVERSIDAD DE BARCELONA	Gómez Roig, Maria Dolores	14/05/2024	Environment and Complications during Pregnancy

Doctoral Theses

Thesis author	Title	University	Thesis directors	Month of lecture	Research
Colomer Carbonell, Ariadna	Efectos fisiológicos y predictores de respuesta al tratamiento de la Terapia de Aceptación y Compromiso y la Terapia de Activación Conductual en pacientes con dolor crónico y depresión mayor comórbida (Proyecto IMPACT-Biomarkers)	UNIVERSIDAD DE BARCELONA	Luciano Devis, Juan Vicente; (Borràs Hernández, Xavier); Feliu Soler, Albert	01/01/2024	Psychological Research in Fibromyalgia and Chronic Pain (AGORA Group)
Ferrés Puigdevall, S.	Efectos inmuno-inflamatorios de la terapia multicomponente 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; (Serrat Lopez, Mayte); Feliu Soler, Albert	01/01/2024	Psychological Research in Fibromyalgia and Chronic Pain (AGORA Group)
Beatriz Olaya Guzmán	Effectiveness of e-mental health interventions for the prevention of mental health problems in the workplace	UNIVERSIDAD DE BARCELONA	Haro Abad, Josep Maria; Olaya Guzmán, Beatriz	25/10/2024	Impact and Prevention of Mental Disorders
Auer W	Eficacia y coste-utilidad de la terapia multicomponente FIBROWALK en formato online o al aire libre en fibromialgia: un ensayo controlado aleatorizado (The On&Out project)	UNIVERSIDAD AUTÓNOMA DE BARCELONA	(Borràs Hernández, Xavier); (Serrat Lopez, Mayte); Feliu Soler, Albert	01/01/2024	Psychological research in Fibromyalgia and Chronic Pain (AGORA Group)
Diaz Cutraro, Luciana Beatriz	El biaix de saltar a conclusions i la metacognició en persones amb psicosi	UNIVERSIDAD RAMÓN LLULL	Ochoa Güerre, Susana; (Palma Sevillano, Carolina); García Mieres, Helena	30/10/2024	Etiopathogenesis and Treatment of Severe Mental Disorders (MERITT)
Blanché Gil-Ortega A	El concepto de persona en el pensamiento de Diego Gracia	UNIVERSIDAD RAMÓN LLULL	Esquerda Areste, Montserrat; Torralba F	18/12/2024	Immune and Respiratory Dysfunction in Critically Children
Brunet Garcia, Laia	Estandardització i protocol. lització del seguiment i tractament de la patologia òrtica en Edat Pediàtrica	UNIVERSIDAD DE BARCELONA	Sánchez de Toledo, Joan	18/10/2024	Cardiovascular Diseases and Child Development

Doctoral Theses

Thesis author	Title	University	Thesis directors	Month of lecture	Research
Walter, Carin Cristina	Estudio de la función cardíaca en niños con cardiopatía congénita estructural. Impacto de la cirugía durante el primer año de vida sobre la función cardíaca	UNIVERSIDAD DE BARCELONA	Sánchez de Toledo, Joan; (Martínez Franco, Eva Maria)	14/12/2024	Cardiovascular Diseases and Child Development
Sanabria Mazo, Juan Pablo	Evaluación clínica y económica de la Terapia de Aceptación y Compromiso y de la Terapia de Activación Conductual en pacientes con dolor lumbar crónico y síntomas de depresión	UNIVERSIDAD AUTÓNOMA DE BARCELONA	Luciano Devis, Juan Vicente; (Edo, Silvia); (Sanz, Antoni)	23/02/2024	Psychological Research in Fibromyalgia and Chronic Pain (AGORA Group)
Vega-Puyal L	Factores Postnatales y Prequirúrgicos Predictivos de Alteraciones en el Neurodesarrollo Temprano en Cardiopatía Congénita	UNIVERSIDAD DE BARCELONA	Sánchez de Toledo, Joan	10/12/2024	Cardiovascular Diseases and Child Development
Jurado-Aguilar J	GDF15, AMPK, PPARb/d: Estudio de su relación en el control de la glucemia	UNIVERSIDAD DE BARCELONA	Vázquez Carrera, Manuel	01/01/2024	Pharmacological Targets in Inflammation and Metabolic Diseases
Puddu G	Genetic and Environmental Modulators of Neural Encoding Associated to Speech Processing and Their Relationship with Auditory Skills	UNIVERSIDAD DE BARCELONA	Via Garcia, Marc	16/07/2024	Cognitive Neuroscience
Luo, Yiyi	Immune system profile of newborns born to mothers treated with anti-TNF- α through pregnancy.	UNIVERSIDAD DE BARCELONA	Alsina Manrique de Lara, Laia; Esteve Solé, Ana	19/03/2024	Study of Immune Deficiency Diseases in Pediatrics (GEMDIP)
Pascal Capdevila, Rosalia	Impact of stress on pregnancy mental health	UNIVERSIDAD DE BARCELONA	Crovetto, Francesca; Gómez Roig, Maria Dolores	15/03/2024	Environment and Complications during Pregnancy
Armero Campos, Georgina	Impacte dels factors epidemiològics i ambientals en les infeccions víriques respiratòries dels pacients pediàtrics	UNIVERSIDAD DE BARCELONA	Jordán García, Iolanda; Launes Montaña, Cristian	25/09/2024	Infectious Diseases and Microbiome

Doctoral Theses

Thesis author	Title	University	Thesis directors	Month of lecture	Research
Salas-Garcia S	Impacto de la utilización de leche humana de donante en los resultados hospitalarios de los recién nacidos muy prematuros	UNIVERSIDAD DE BARCELONA	Izquierdo Renau, Montserrat; Iglesias Platas, Isabel	26/01/2024	Neonatology Research Group (GReN)
Battle Boada, Astrid	Implantació d'un Programa d'Hospitalització a Domicili en el Pacient Pediàtric Agut. Descripció Clínica i Social, Anàlisi de Costos i Millora d'Eficiència	UNIVERSIDAD DE BARCELONA	Fernández de Sevilla Estrach, Maria; García García, Juan José	27/06/2024	Infectious Diseases and Microbiome
Balaguer Lluna, Leire	Inhibition of the PI3K/Akt pathway as a therapeutic strategy for pediatric-type diffuse high-grade gliomas	UNIVERSIDAD DE BARCELONA	Montero Carcaboso, Angel	29/11/2024	Paediatric Cancer Treatment
Aparicio-Terres R	Neural correlates of the altered states of consciousness induced by acoustic stimulation	UNIVERSIDAD DE BARCELONA	(Díaz-Andreu M); Escera Micó, Carles	20/11/2024	Cognitive Neuroscience
Arenillas Alcón, Sonia	Neural encoding of speech in newborns: voice pitch, formant structure and the effects of prenatal acoustic environment	UNIVERSIDAD DE BARCELONA	Escera Micó, Carles; Costa Faidella, Jordi	12/01/2024	Cognitive Neuroscience
Shirzadi, Mehdi	Neuromuscular function assessment through EMG in using hybrid learning in real-time	UNIVERSIDAD POLITÉCNICA DE CATALUNYA	Mañanas Villanueva, Miquel A.	15/11/2024	Medical Technologies. Biosignal Analysis for Rehabilitation and Therapy
del Cacho Ortega, Núria	Nivells de prolactina i funcionament sexual en persones que pateixen un primer episodi psicòtic no afectiu i que no han rebut tractament antipsicòtic previ	UNIVERSIDAD DE BARCELONA	Usall i Rodié, Judith	18/01/2024	Etiopathogenesis and Treatment of Severe Mental Disorders (MERITT)
García Galant, María	Parálisis cerebral en la infancia: Eficacia de una intervención computarizada en funciones ejecutivas y cognición social	UNIVERSIDAD DE BARCELONA	Pueyo Benito, Roser	14/06/2024	Neuropsychology
García Beltran, Cristina	Polycystic Ovary Syndrome in adolescent girls: therapeutics oriented to pathophysiology and new markers of efficiency	UNIVERSIDAD DE BARCELONA	Ibañez Toda, Lourdes	12/12/2024	Metabolic Endocrinology

Doctoral Theses

Thesis author	Title	University	Thesis directors	Month of lecture	Research
Garcia-Balcaza V	PyMCGPU-IR, a computational Monte Carlo application for occupational dosimetry in interventional radiology procedures	UNIVERSIDAD POLITÉCNICA DE CATALUNYA	Duch Guillen, Maria Amor; Ginjaume Egido, Mercè	18/09/2024	Medical Technologies. Computer Graphics and gamification
Fernández-Bosman D	PyMCGPU-IR: a new tool for patient dose monitoring in interventional radiology procedures	UNIVERSIDAD POLITÉCNICA DE CATALUNYA	Ginjaume Egido, Mercè; Duch Guillen, Maria Amor	24/04/2024	Medical Technologies. Computer Graphics and gamification
Lopez-Mochales S	Rock art soundscapes: Perception and emotions evoked by singular acoustic spaces	UNIVERSIDAD DE BARCELONA	Escera Micó, Carles; (Díaz-Andreu M)	13/05/2024	Cognitive Neuroscience
Font-Alaminos M	Self-generation effects: beyond sensory processing	UNIVERSIDAD DE BARCELONA	San Miguel Insúa, Iria; Costa Faidella, Jordi	19/01/2024	Cognitive Neuroscience
Gabarrell Pascuet, Aina	Social determinants of major depressive disorder: exploring the interplay of age, loneliness, and the COVID-19 pandemic	UNIVERSIDAD DE BARCELONA	Domènech Abella, Joan; Haro Abad, Josep Maria	24/05/2024	Impact and Prevention of Mental Disorders
Peyman M	Study of new strategies for steatotic liver disease: SIRT1-mediated modulation of VLDLR levels and evaluation of a soluble epoxyde hydrolase-targeted PROTAC	UNIVERSIDAD DE BARCELONA	Vázquez Carrera, Manuel; Barroso Fernández, Emma	31/05/2024	Pharmacological Targets in Inflammation and Metabolic Diseases
Zhang M	Study of the effects of PPAR- β /d activators in the treatment of MASH	UNIVERSIDAD DE BARCELONA	Vázquez Carrera, Manuel; Barroso Fernández, Emma	19/07/2024	Pharmacological Targets in Inflammation and Metabolic Diseases
Prunell Castañe, Anna	The Neurocognitive Phenotype of Excess Weight in Adolescents and Young Adults: Biological, Genetic, and Psychosocial Factors	UNIVERSIDAD DE BARCELONA	Jurado Luque, Maria Angeles; (Garolera i Feixa, Maite)	26/07/2024	Neuropsychology
Sturm S	The sense of agency and its role for sound processing and learning	UNIVERSIDAD DE BARCELONA	Costa Faidella, Jordi; San Miguel Insúa, Iria	18/01/2024	Cognitive Neuroscience

Doctoral Theses

Thesis author	Title	University	Thesis directors	Month of lecture	Research
Gabarrell Pascuet, Aina	The social determinants of depression: social support, loneliness, and the impact of the COVID-19 pandemic.	UNIVERSIDAD DE BARCELONA	Domènech Abella, Joan	24/05/2024	Impact and Prevention of Mental Disorders
Baulenas Farrés, Mercè	Tumor secretome-mediated pro-tumoral microenvironment in diffuse intrinsic pontine glioma	UNIVERSIDAD DE BARCELONA	Montero Carcaboso, Angel	05/12/2024	Paediatric Cancer Treatment
Monistrol Mula, Anna	Understanding the impact of COVID-19 pandemic on individuals with pre-existing mental disorders: Mental health burden and biological insights	UNIVERSIDAD DE BARCELONA	Haro Abad, Josep Maria; Félez Nóbrega, Mireia	08/10/2024	Impact and Prevention of Mental Disorders
Cuervas Oliveras, Irene	Unveiling the role of the Mediator complex in Ewing sarcoma tumorigenesis	UNIVERSIDAD DE BARCELONA	Mora Graupera, Jaume; Hernandez Muñoz, Maria Inmaculada	17/12/2024	Sarcomas and Histiocytosis
Vidal-Domenech F	Vías moleculares implicadas en la formación de gotas lipídicas en psicosis	UNIVERSIDAD DE VIC- UNIVERSIDAD CENTRAL DE CATALUNYA	Ramos Jose Maria, Belen	24/05/2024	Etiopathogenesis and Treatment of Severe Mental Disorders (MERITT)



5

CORE FACILITIES



Core facilities

The Core Facilities of the Institut de Recerca Sant Joan de Déu (IRSJD) comprise a set of shared scientific and technical platforms that offer specialized services, state-of-the-art equipment, and expert support to both internal research groups and external users. Their primary objective is to optimize resources, promote research excellence, and support the development of competitive scientific projects. These units are fundamental to driving innovation, fostering knowledge transfer, and enabling interdisciplinary collaboration at both national and international levels.

In 2024, a **dedicated Core Facilities Manager** was appointed to lead the coordination and strategic development of these platforms, reinforcing their role and impact within the broader research ecosystem.

The IRSJD plays a pivotal role in the study of rare diseases, advancing translational research directly linked to the Pediatric Hospital, and providing a solid foundation for scientific innovation. Research activities benefit from access to a wide range of clinical services and specialized laboratories in **biochemistry, hematology, genetics, and pathology**, as well as the **Confocal Microscopy and Cellular Imaging Unit**. These resources foster a collaborative environment in which clinical expertise and cutting-edge research converge, ensuring high-quality and impactful outcomes. Additionally, the **Pediatric Biobank** has managed 1,829 samples (78% from internal users, 22% external—89% national and 11% international) and recently joined EuroBiobank, the first European network of biobanks exclusively dedicated to rare diseases. This affiliation underscores IRSJD commitment to advancing research in this area.

In 2024, a new **Immunotherapy Platform** was established in collaboration with Hospital Clínic. This

facility spans 1,280 m² and includes a GMP-certified advanced therapy production area with four cleanrooms, enabling the production of innovative therapies and research in pediatric populations under one roof. This platform has obtained certification from the Spanish Agency of Medicines and Medical Devices (AEMPS), is integrated into the Biocat Advanced Therapies Network of Catalonia and is a member of the national consortia CERTERA and TERA-V, both supported by the Carlos III health institute.

The cross-disciplinary **3D Unit** supports complex surgical planning through virtual and printed 3D technologies. It contributes to research projects with expert technical support and participates in simulation and training activities through the creation of customized, advanced simulation models. The unit is officially licensed by the Government of Catalonia as a custom manufacturer of medical devices and is integrated into ISCIII's Biobanks and Biomodels Platform.

Directly linked to the Pediatric Hospital, the **Pediatric Computational Imaging Center (PeCIC)** supported five clinical services and participated in 17 research projects, including two clinical trials and the development of two patents.

The **Methodological and Statistical Support Unit** collaborated on approximately 200 distinct research projects, the vast majority of which were internal (98%). The unit provided statistical consultation on study design and sample size calculations, developed databases to support data collection, conducted statistical analyses, and assisted researchers in the dissemination and publication of their study findings. All activities were carried out in accordance with applicable regulations and legal standards.

The **Microbial Genomics Design**,

Analysis and Interpretation

Unit brings together specialized expertise in clinical microbiology, next-generation sequencing, and bioinformatics to offer tailored support throughout all stages of microbial genomics studies—ranging from experimental design and sample processing to data analysis and interpretation—within the context of biomedical research. In 2024, the unit actively contributed to **13 research projects**, providing both scientific and technical support in the field of microbial genomics. A total of **5,226 samples** have been processed, the majority of which originated from internal projects at **Sant Joan de Déu**.

As part of its collaboration with the University of Barcelona, the IRSJD operates a 270 m² **Animal House Facility**. This facility includes a dedicated area designed to accommodate various animal species under strictly controlled conditions of temperature, humidity, and light/dark cycles. It also features a specialized housing zone for immunosuppressed animals. In 2024, the facility housed a total of 1,883 animals, comprising 98% mice and 2% sheep.

Several specialized facilities located at Parc Sanitari Sant Joan de Déu (PSSJD) are dedicated to supporting mental health research projects, including:

- **Neuropsychological Evaluation Services**
- **Neuroimaging service**
- **Neurological Tissues Biobank**
- **Biological Sample Processing and Molecular Analysis Unit**

In total, 211 samples were analyzed and registered, with 78% from internal users and 22% from national external users. Additionally, the Neurological Tissues Biobank has recently acquired new molecular analysis equipment, aimed at enhancing the efficiency and capacity of the service.

6

TRAINING, COMMUNICATION AND PARTICIPATION



Seminars

27

SEMINARS

Relation of research seminars and IRSJD day of debates

9/01/2024

Evaluación de la atención psicológica para pacientes con enfermedades raras en España

Share4Rare and FEDER

24/01/2024

First-hand experience of start-ups in pediatric innovation

Meritxell Teixidó (Gate2Brain) and Marius Rus (Tully)

13/02/2024

EBrains, an European initiative for Brain-related research

Luisa Martínez, Christian Stephan-Otto, Enrico Castroflorio and Àngels García-Cazorla (IRSJD)

14/02/2024

Taula rodona: Les dones STEAM a l'Institut de Recerca Sant Joan de Déu.

Dr Luciana Díaz (IRSJD) Dr Meritxell Teixidó (Gate2Brain) and Dr Dani Tost (IRSJD).

23/02/2024

Incorporació de la perspectiva de gènere en infermeria: implicacions en l'àmbit assistencial i de la recerca.

Dolors Rodríguez, UB

28/02/2024

Jornada sobre la recerca en malalties rares: Rare disease day

IRSJD and UB

13/03/2024

Setmana del Cervell 2024: L'epilèpsia en joves, descobrint l'origen de la seva causa

Dr Anna López (IRSJD)

19/03/2024

Biophysical modelling of non-invasive neuroscience

Marc Schwartz Pallejà (Pompeu Fabra)

22/03/2024

Asociación del género y la edad en el diagnóstico y tratamiento del infarto agudo de miocardio

Gemma Berga Congost (Hospital Sant Pau and UB)

09/04/2024

Data Science in BRAIN

Júlia Romagosa (IRSJD).

17/04/2024

Barcelona Medical Photonics Network 2024

Multiple speakers

22/04/2024

Jornada Únicas SJD Talks: Malalties minoritàries, rares però no invisibles

Multiple speakers.

26/04/2024

Investigación y evaluación del uso de terminologías normalizadas de enfermería en la práctica clínica

Dr. Claudio Alberto Rodríguez Suárez (Departamento de Enfermería Universidad las Palmas de Gran Canaria)

07/05/2024

Telemedicine & Digital Health

Multiple speakers

14/05/2024

Mitochondrial Medicine - Therapeutic Development

Uliana Musokhranova (IRSJD)

15/05/2024

Pint of science: El metabolisme d'un cervell en desenvolupament

Uliana Musokhranova and Yaiza Díaz Osorio (IRSJD)

31/05/2024

Inteligencia artificial como herramienta en la investigación y clínica enfermera

Carlos Valdespina Aguilar (SalusPlay)

13/06/2024

Why is health economics & HTA important in projects?

Oriol Solà-Morales (HiTT)

28/06/2024

Adaptación y validación del cuestionario "Quality of life tool specific to children with bladder dysfunction"

Rosa María Carmona Jiménez (HSJD)

10/07/2024

3D and Biomaterials in Health

Multiple speakers

27/09/2024

Unitat d'Atenció Integral Pal·liativa Pediàtrica del Hospital Universitario Infantil Niño Jesús

Blanca Montero Sánchez and Nieves López Anta (Hospital Universitario Infantil Niño Jesús)

08/10/2024

Desenvolupament i plasticitat primerenca dels circuits sensorials en models animals

Guillermina López Bendito (CSIC)

25/10/2024

Rol de la infermera a l'educació per a la salut a través de l'Escola de Salut SJD

Marc Fortes Bordas (HSJD)

12/11/2024

Engineering neuronal diversity in the brain

Jorge García Marqués (CSIC)

14/11/2024

3D in Pediatric Oncology: Transforming Cancer Care through Innovation

Multiple speakers

29/11/2024

Disseny d'un dispositiu de contenció neonatal: Innovació infermera

Sílvia Vicente Pérez (Hospital Sant Pau)

11/12/2024

How paediatric start-ups can navigate the current funding landscape?

David Cole, Kerstin Papenfuss, John Parker and Marc Ramis

Training programme

11**COURSES IN 2024****744****ATTENDEES IN 2024**

To promote the development of the different competence dimensions, four types of training modalities are established:

- Knowledge and techniques
- Soft Skills
- Organization and Governance
- Institutional training (Values)

Courses

January/February

Development and Engagement
Conversations

March

How to Read a Paper Using Common
Sense and AI

April

Leadership and Team Management:
Time Management and Productivity

April

Leadership and Team Management:
NOW WHAT? FOLLOW-UP AND
APPLICABILITY SESSION

July

Scientific Writing: Putting Why? Before
How?

May

Oral Presentations: Beyond Slides

June/July

CARING FOR THE CAREGIVER.
MINDFULNESS AND VIRTUAL
REALITY

June

Basic and Advanced Statistics

September

Patient Involvement in Research and
Ethical/Legal Aspects

October

Relational Conflict Management

October

Bridge Model of Relational Styles

Communication and public engagement

Activities

17
ACTIVITIES ORGANIZED

65
RESEARCHERS

Participation in:

- International Day of Clinical Trials
- Festa de la Ciència de Barcelona
- Science week
- European Resercher's Night
- Pint of Science
- Agora de la Ciència
- Escolab
- Visita la recerca de La Marató

Internet and Social media

LINKEDIN
22253 FOLLOWERS

TWITTER
1893 FOLLOWERS

WEBSITE
57333 USERS
188000 NUMBER OF VISITS TO PAGES

- LinkedIn (followers, engagement) **24.597 // 53.43%**
- Twitter (followers, impressions) **1.952 // 51.945**
- Instagram (followers, reach) **901 // 28.576**



News



El Institut de Recerca Sant Joan de Déu incorpora nous grups de recerca en pediatria i salut materna



An ultrasound test at the end of pregnancy detects at-risk babies and prevents severe complications



An early diagnosis and some diet changes can decrease the risk of severe symptoms in children with BCKDK metabolic deficiency

News



L'Institut de Recerca Sant Joan de Déu commemora el Dia Internacional de la Dona i la Nena en la Ciència



Nou impuls solidari per a la recerca en malalties minoritàries infantils



Nanomedicine to tackle rare diseases

News



S'inicia la construcció d'un centre monogràfic dedicat a la recerca i l'assistència de les malalties minoritàries



Flu-Copilot wins the first "Paediatric Innovation Challenge" by AstraZeneca and i4KIDS



The first clinical trial of a gene therapy for Duchenne in children under 4 years old is initiated

News



Researchers from IRSJD and IRB Barcelona unveil the origin of second pediatric cancers and chemotherapy-induced mutations in healthy tissues



The amino acid L-serine shows efficacy in treating patients with mutations in GRIN genes



Discussing photonics tools for pediatrics in the 3rd BMPN annual meeting

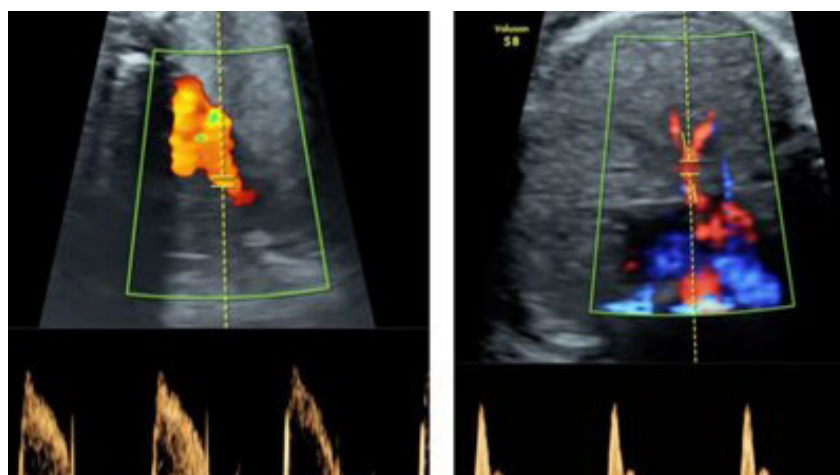
News



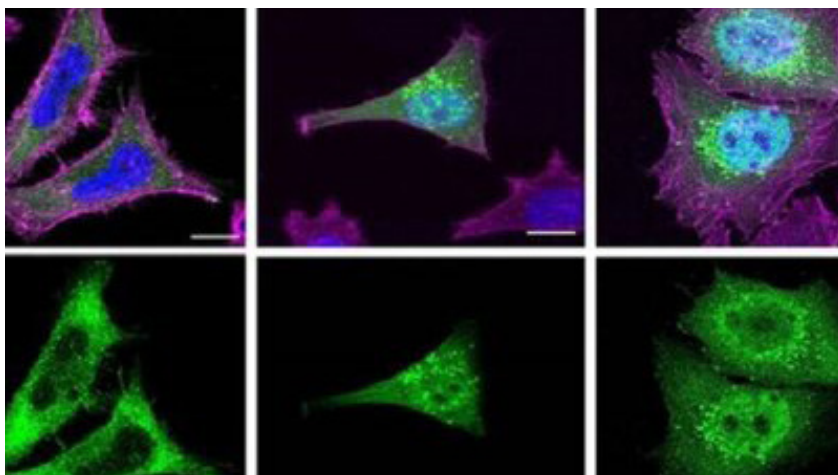
Sant Joan de Déu celebra la primera jornada Únicas SJD Talks, centrada en el coneixement de les malalties minoritàries



Identifiquen noves variants patogèniques associades a la síndrome ultrarrara TRAF7



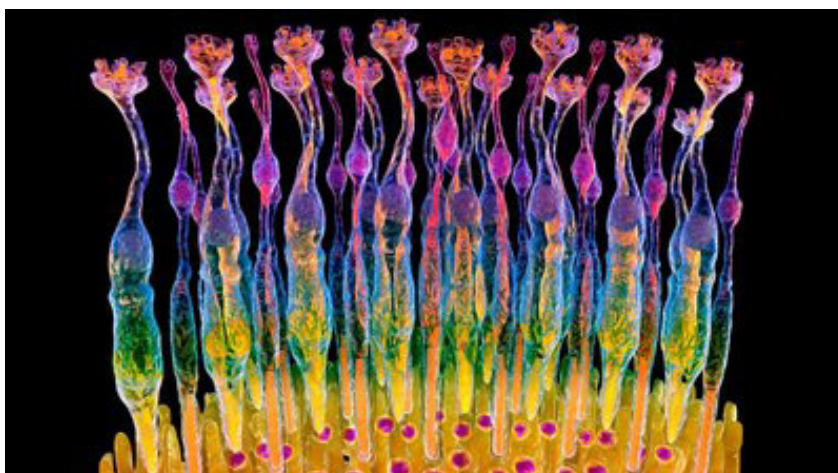
Un estudi obre la porta al disseny de teràpies per millorar el desenvolupament pulmonar de fetus massa petits



New advances in Schaaf-Yang syndrome research

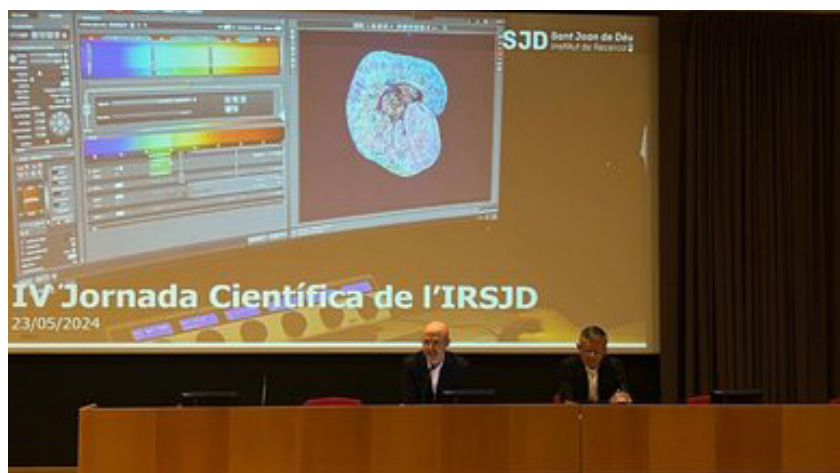


L'IRSJD celebra una jornada sobre la conscienciació de les pandèmies i les vacunes en els centres educatius



Genetic mutations are identified as causing two types of hereditary blindness

News



L'Institut de Recerca Sant Joan de Déu celebra la seva IV Jornada Científica



23% of adolescents at risk of psychosis end up developing the disorder



Research into treatments to combat obesity and excessive sleepiness in children with Prader-Willi syndrome

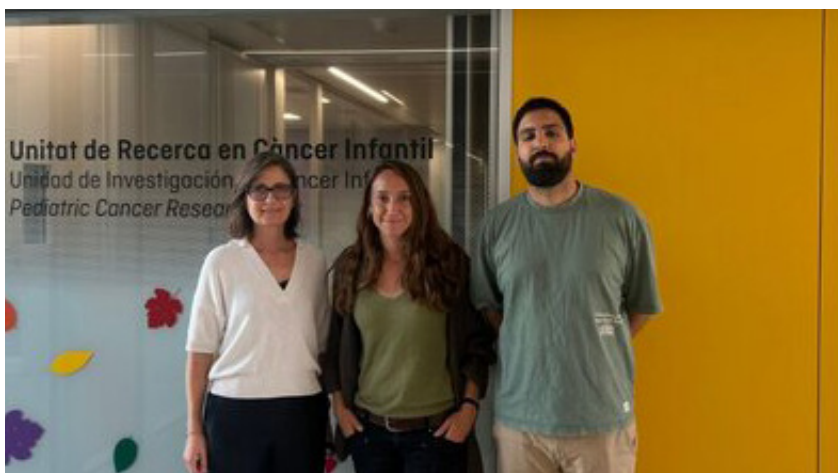
News



Genetic basis of ADHD and autism spectrum disorder impacts on children's school performance



The first living pediatric patients brain tissue laboratory in Europe



Automated learning app improves accessibility to medulloblastoma classification

News



New Therapeutic Targets to Fight Type 2 Diabetes



Cinquena participació de l'IRJSD a la Festa de la Ciència



Sant Joan de Déu i la Fundación Amancio Ortega signen un conveni col•laboratiu per la creació d'un centre de recerca en malalties rares

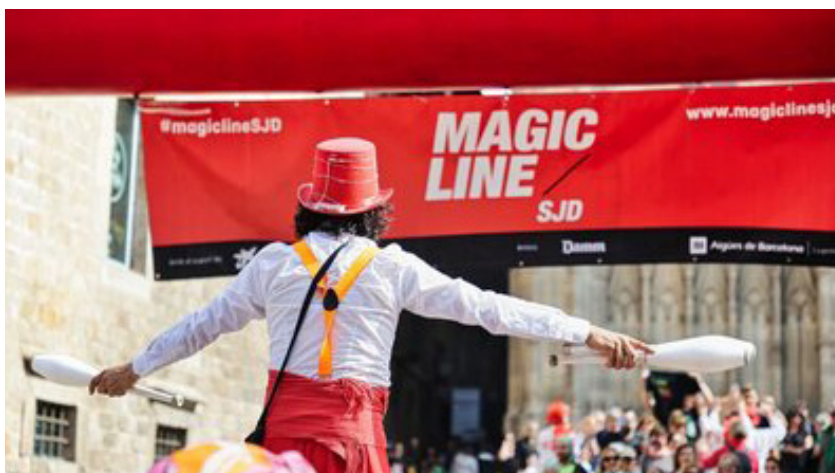
News



El Xeroderma Pigmentós i la plataforma Share4Rare



Preg-MEDAS questionnaire: questions for a healthier pregnancy



L'edició 2024 de la Magic Line finança dos projectes de recerca

News



New discoveries about the EWS-FLI oncogene involved in the development of Ewing's tumor

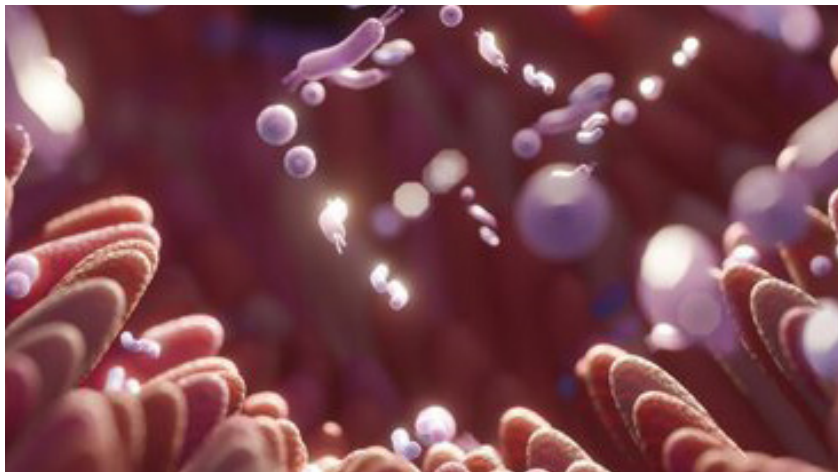


Nou centre de Recerca i Innovació en Salut Mental al Parc Sanitari Sant Joan de Déu



A Predictive Tool for Personalizing Psychosis Treatment

News



International travel affects gut microbiota



Research in Pitt-Hopkins at Sant Joan de Déu, a neurodevelopmental disorder



Researchers discover a new promising strategy to halt the progression of liver fibrosis

News



A drug capable of simultaneously targeting three different therapeutic targets is designed



Més de 300 alumnes de Batxillerat i FP de Barcelona s'acosten a la investigació biomèdica de la mà de l'Institut de Recerca Sant Joan de Déu i Farmaindustria

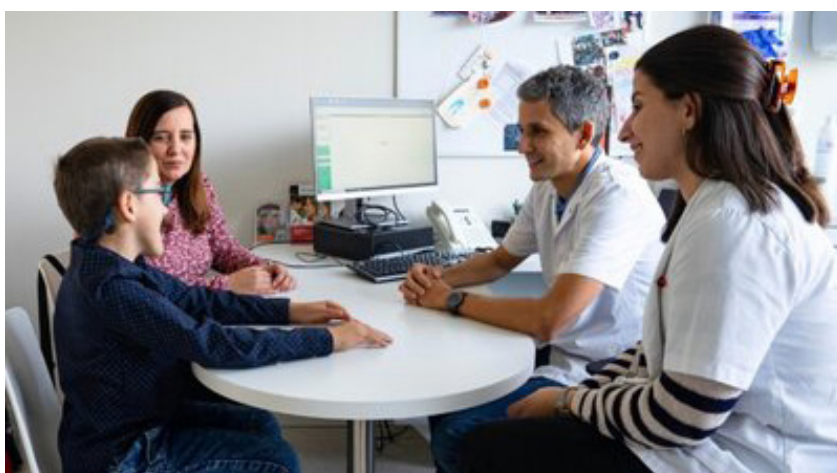


SJD Barcelona Children's Hospital and Institut de Recerca Sant Joan de Déu (IRSJD) consolidate their participation in the ISCiii Biomedicine and Health platforms

News



Gate2Brain Receives EMA Orphan Drug Designation for Its Groundbreaking Pediatric Cancer Treatment



An innovative genetic analysis by Sant Joan de Déu and CNAG successfully diagnoses 23 children with neuromuscular diseases



La Marató del 2023 finança 2 projectes de l'Institut de Recerca Sant Joan de Déu en salut sexual i reproductiva

News



L'Institut de Recerca Sant Joan de Déu aconsegueix dos projectes guanyadors i tres finalistes en els Premis CSC Impulsa 2024



7

SCIENTIFIC ACTIVITY

7.1. Medicine and pediatric science area

7.2. Mental health area

7.3. Transversal program





7.1

MEDICINE AND PEDIATRIC SCIENCE AREA

7.1.1 Neuroscience

Applied Research in Neuromuscular Diseases

Paediatric Neurometabolic Disorders: Neural Communication
Mechanisms and Personalised Therapies

Neonatal Brain

Neuropsychology

Cognitive Neuroscience

Attention, Perception and Language Acquisition (APAL)

Research in Child and Adolescent Mental Health

Epilepsy and Movement Disorders in Pediatrics



Applied Research in Neuromuscular Diseases

Cecilia Jiménez Malebrera, PhD



34

PROJECTS

116 competitive projects

18 non competitive projects



36

CLINICAL TRIALS &

OBSERVATIONAL STUDIES



27

PUBLICATIONS



120

IMPACT FACTOR

4,4 average impact factor



63%

PUBLICATIONS IN 1ST QUARTILE



26%

PUBLICATIONS IN 1ST DECILE



11%

LEADERSHIP

MEMBERS

ASSISTANT RESEARCHER

Mariona Arañó Loyo, Rocío García Uzquiano, Maria de los Angeles Botí González, Cristina Puig Ram, Jessica Maria Exposito Escudero, Laura Carrera García, Maria del Carmen Badosa Gallego

RESEARCHER

Julita Medina, Andrés Nascimento Osorio, Carlos Ignacio Ortez Gonzalez

POSTDOC ASSOCIATED RESEARCHERS

Arístides Lopez Marquez, Daniel Natera de Benito

PREDOC ASSOCIATED RESEARCHER

Cristina Jou Muñoz

TECHNICIAN

Ainhoa Estefania Romero Fernández, Ruth Lavilla Hidalgo, Anna Codina Bergadà

UNDEFINED

Lluís Enjuanes Ruiz

In 2024, our group achieved significant milestones in research, producing high-impact publications in top-tier journals (JCR 1st quartile).

Notable works were published in Nature Communications, Neurology, and Clinical Chemistry, highlighting advances in molecular mechanisms, novel therapies, and biomarker discovery in Neurology and Neuromuscular Diseases. These studies emphasize the translational relevance of our research, bridging basic science and clinical applications.

Our status as a leading international research group in advanced therapy development for rare diseases is underscored by our role as a founding member of the European Rare Diseases Research Alliance (ERDERA). This initiative, led by INSERM (France), is the largest EU project for rare diseases research over the next seven years, with a budget exceeding 300 million euros. It involves over 170 organizations from both public and private sectors, aiming to advance prevention, diagnosis, and treatment research in rare diseases. Our group contributes to the Technology Accelerator Hub, leveraging our expertise in RNA therapies, gene editing, lipid nanoparticles, and the development of personalized therapies with antisense oligonucleotides.

Additionally, we are key participants in other European initiatives, such as the COST on Human Gene Editing (GenHumDi). Our research focuses on both basic and clinical aspects, supported by several national and international grants. Projects include unveiling novel biochemical pathways (Téléthon grant on CMG2 receptor) and identifying disease-relevant biomarkers (ISCIII grant on biomarkers for Congenital Myasthenia).

Our commitment to supporting novel treatments for Duchenne Muscular Dystrophy, Spinal Muscular Atrophy, and other neuromuscular diseases is reflected by the participation of the Neuromuscular Unit in 25 multicenter clinical trials in 2024. These trials aimed to assess the safety and efficacy of advanced gene therapies and others.

Throughout the year, we presented our

research at numerous international conferences, including the World Muscle Society and the CRISPR Medicine News Conference, further establishing our group's prominence in the field.

SELECTED PUBLICATIONS

- Coratti G, Bovis F, Pera MC, Civitello M, Rohwer A, Salmin F et al. Long-term natural history in type II and III spinal muscular atrophy: a 4-year international study on the Hammersmith Functional Motor Scale Expanded. Eur J Neurol. 2024;31(12):IF:4,500. (Q1).
- Cao X, Lake M, Van der Hoeven G, Claes Z, Del Pino J, Lemaire S et al. SDS22 coordinates the assembly of holoenzymes from nascent protein phosphatase-1. Nat. Commun. 2024;15(1):5359-5359. IF:14,700. (Q1).
- Dang UJ, Damsker JM, Guglieri M, Clemens PR, Perlman SJ, Smith EC et al. Efficacy and Safety of Vamorolone Over 48 Weeks in Boys With Duchenne Muscular Dystrophy. Neurology. 2024;102(5):IF:8,400. (Q1).
- Estévez B, Matalonga L, Martorell L, Codina A, Ortez CI, Carrera L et al. Improving Diagnostic Precision: Phenotype-Driven Analysis Uncovers a Maternal Mosaicism in an Individual with RYR1-Congenital Myopathy. J Neuromuscul Dis. 2024;11(3):647-653. IF:3,200. (Q2).

SELECTED PROJECTS

- CMG2 receptor: Deciphering its role in the pathophysiology of COL6-RDs and its potential as a therapeutic target. (28815). Association Francaise Contre les Myopathies; Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 2024-2026. IP:Arístides Lopez Marquez.
- ERDERA EUROPEAN RARE DISEASES RESEARCH ALLIANCE. (101156595). European Commission. 2024-2031. IP:Cecilia Jiménez Mallebrera.
- MyoQ: La plataforma de Nanomedicina para terapias avanzadas contra las Distrofias Musculares Congénitas. (AI-2023-045). Federación Española de Enfermedades Raras. 2024-2025. IP: Cecilia Jiménez Mallebrera.
- Desarrollo de outcome measures clínicos e identificación de

biomarcadores para avanzar hacia el tratamiento personalizado en síndromes miasténicos congénitos (MYASMEASURES). Instituto de Salud Carlos III (ISCIII). 2024-2027. IP: Daniel Natera de Benito.

SELECTED CLINICAL STUDIES

- An Open-Label, Systemic Gene Delivery Study to Evaluate the Safety, Tolerability and Expression of SRP-9001 in Association with Imlifidase in Subjects with Duchenne Muscular Dystrophy with Pre-existing Antibodies to rAAVrh74. (SRP-9001-104). Sarepta Therapeutics, Inc. 2023IP:Andrés Nascimento Osorio.
- Estudio de fase III multinacional, aleatorizado, doble ciego, controlado con placebo, de liberación génica sistémica para evaluar la seguridad y la eficacia de SRP-9001 en sujetos con distrofia muscular de Duchenne. (SRP-9001-301). Sarepta Therapeutics, Inc. 2022 IP: Andrés Nascimento Osorio.
- Estudio de Fase 4 de Nusinersen (BIIB058) en Pacientes con Atrofia Muscular Espinal que Recibieron Onasemnogene Apeparvovec. RESPOND. (232SM404). Biogen IDEC Research LTD. 2021IP:Andrés Nascimento Osorio.
- Estudio de fase 3, multicéntrico, aleatorizado, doble ciego, controlado con placebo para evaluar la seguridad y eficacia de PF-06939926 en el tratamiento de la distrofia muscular de Duchenne. (C3391003). Pfizer Inc. 2020IP:Andrés Nascimento Osorio.

Paediatric Neurometabolic Disorders: Neural Communication Mechanisms and Personalised Therapies

M^a Angels García Cazoral, MD, PhD

	22 PROJECTS 13 competitive projects 9 non competitive projects
	24 CLINICAL TRIALS & OBSERVATIONAL STUDIES
	26 PUBLICATIONS
	119 IMPACT FACTOR 4,6% average impact factor
	69% PUBLICATIONS IN 1ST QUARTILE
	19% PUBLICATIONS IN 1ST DECILE
	15% LEADERSHIP

MEMBERS

ASSISTANT RESEARCHER

Paloma Rami Lopez, Helena Gimeno Agut, Nazareno Juan Lascano , Ana Roche Martínez, Katia Sofía Illescas Brol, Yaiza Díaz Osorio, Júlia Romagosa I Pérez, Leticia Diana Pias Peleteiro, Ariadna Borrás Martínez, Rosanna Marí Vico, Silvia Constanca Liendo Vallejo

RESEARCHER

Alfonso Luis De Oyarzabal Sanz, Roser Colomé Roura, Silvia Maria Meavilla Olivas, Alejandra Darling, Jordi Muchart López, M^adel Mar O'Callaghan Gordo, Federico Ramos

PREDOC ASSOCIATED RESEARCHERS

Juliana Ribeiro Constante, Uliana Musokhranova Matveeva, Natalia Alexandra Julià Palacios

Throughout 2024, numerous projects

have led to new knowledge and treatments for our patients. Key highlights include:

1. Advances in the Characterization of Rare Diseases of Neurotransmission

We have further characterized several rare neurotransmitters disorders through international (I-NTD) and national networks (SENEP). Notably, we expanded clinical and neuropsychological knowledge of SSADH deficiency, identified tryptophan and lipid metabolism alterations in STXBP1 and GRIN disorders, discovered a new EEG biomarker in SYNGAP1 encephalopathy, and volumetric neuroimaging biomarkers for SYNGAP1, GRIN, and STXBP1. We have described new genes and pathophysiological mechanisms responsible for pediatric Parkinsonism, as well as a possible new treatment for tyrosine hydroxylase deficiency (the BH4 chaperone).

2. Development of "Organ-on-a-Chip" Devices

In collaboration with the Institute for Bioengineering of Catalonia (IBEC), we advanced models such as "synapse-on-a-chip" using nanotechnology and neuronal cultures to simulate microcircuits of diseases like Rett syndrome (MECP2 mutations) and Tyrosine Hydroxylase deficiency.

3. Clinical Trials on Treatments Developed by Our Team

Ongoing trials started on 2024 include Leriglitazone for Rett syndrome and experimental use of spermidine in mitochondrial and autophagy disorders. Several "Neuroprotect trials" (Neuroprotect is a metabolic based formula developed by our team) have been developed for a series of neurodevelopmental diseases.

SELECTED PUBLICATIONS

- Amato ME, Darling A, Stovickova L, Attard S, Eggink H, Engelen M et al. Improving paediatric movement disorders care: Insights on rating scales utilization and clinical practice. Eur J Paediatr Neurol. 2024;52:10-19. IF:2,300. (Q2).
- Julià NA, Olivella M, Sigatullina M, Ibáñez S, Muñoz B, Alonso O et al. L-serine treatment in patients with GRIN-related encephalopathy: a phase 2A, non-randomized study. Brain. 2024;147(5):1653-1666. IF:11,900. (Q1).

- Julià NA, Kuseyri O, Olivella M, Pons R, Horvath G, Lücke T et al. The continuously evolving phenotype of succinic semialdehyde dehydrogenase deficiency. *J Inherit Metab Dis.* 2024;47(3):447-462. IF:4,200. (Q1).
- Ribeiro J, Tristan A, Martinez FF, Ibanez S, Peña JL, Ramos JM et al. Developmental outcome of electroencephalographic findings in SYNGAP1 encephalopathy. *Front. Cell. Dev. Biol.* 2024;12:1321282-1321282. IF:4,600. (Q1).
- Illescas S, Díaz Y, Serradell A, Toro L, Musokhranova U, Julià NA et al. Metabolic characterization of neurogenetic disorders involving glutamatergic neurotransmission. *J. Inherit. Metab. Dis.* 2024;47(3):551-569. IF:4,200. (Q1).

SELECTED PROJECTS

- Development of leriglitazone for Rett Syndrome and related disorders. [CPP2021-008554]. Ministerio De Ciencia E Innovacion. 2022-2025. IP:M^aAngels García Cazorla, Alfonso Luis De Oyarzabal Sanz.
- Sinapsis en un chip: medicina personalizada en trastornos genéticos del neurodesarrollo que afectan a la comunicación sináptica. [PI21/00073]. Instituto de Salud Carlos III (ISCIII). 2022-2025. IP:M^aAngels García Cazorla.
- Developing patient-tailored therapeutic candidates for rare genetic forms of pediatric parkinsonism. [202012-30]. Fundació La Marató de TV3. 2021-2024. IP:M^aAngels García Cazorla.
- Enfermedades Neurodegenerativas de inicio en la infancia de origen genético: identificación y caracterización de entidades asociadas a la autofagia. Asociacion Bpan Spain. 2024-2025. IP:Alejandra Darling.

SELECTED CLINICAL STUDIES

- L-serine clinical trial. Tolerability and Efficacy of L-Serine in Patients with GRIN-related encephalopathy. Danone, S.A. 2020-2024. IP:M^aAngels García Cazorla.
- Double-blind, randomized, placebo-controlled study of Leriglitazone in pediatric Rett Syndrome. [MT-2-04]. Minoryx Therapeutics S.L. 2024IP:M^aAngels García Cazorla.

- A Phase 2, Open-Label Extension Study to Assess the Safety and Efficacy of GLM101 Administered Intravenously to Participants with PMM2-CDG. [GLM101-007]. Glycomine, Inc. 2024IP:Mercedes Serrano Gimaré.
- ESTUDIO EN FASE III DE JR-141 EN PACIENTES CON MUCOPOLISACARIDOSIS TIPO II (SÍNDROME DE HUNTER) A Phase III study of JR-141 in Mucopolysaccharidosis type II (Hunter Syndrome) patients. [JR-141-GS31]. JCR Pharmaceuticals Co., Ltd. 2022IP:Leticia Diana Pias Peleteiro.
- AN EXPLORATORY, OPEN-LABEL, MULTICENTER STUDY IN MALE PEDIATRIC PATIENTS WITH CEREBRAL X-LINKED ADRENOLEUKODYSTROPHY (CALD) TO ASSESS THE EFFECTS OF MIN 102 TREATMENT ON THE PROGRESSION OF CEREBRAL LESIONS. [MT-2-02]. Minoryx Therapeutics S.L. 2019IP:M^aAngels García Cazorla.

Neonatal Brain

**Thais Agut Quijano, MD, PhD
& Ana Alarcon Allen, MD, PhD**

7
PROJECTS
5 competitive projects
2 non competitive projects

11
PUBLICATIONS

40
IMPACT FACTOR
3,7 average impact factor

55%
PUBLICATIONS IN 1ST QUARTILE

18%
PUBLICATIONS IN 1ST DECILE

27%
LEADERSHIP

MEMBERS

RESEARCHER

Marta Gómez Chiari, Sílvia Planas Román, Nuria Herranz Rubia, Maria del Mar Velilla Aparicio

POSTDOC ASSOCIATED RESEARCHERS

Nuria Carreras Blesa

The Neonatal Brain Group remains committed to advancing knowledge on foetal and neonatal brain diseases that impact child health and development.

Its main research areas continue to be: extrauterine maturation of the preterm brain; foetal and neonatal infections affecting brain development; and care practices for newborns with neurological risk or pathology and their families.

The group collaborates with national and international specialists in neonatal neurology, including other teams within the Institut de Recerca Sant Joan de Déu. Notably, the group has contributed to review publications from leading European reference

groups, such as the ESPR Special Interest Group on Near-Infrared Spectroscopy (NIRS) and the EurUS. Brain group. Members of the group actively participate in Grupo_Cerebro_Neonatal (GCN), a Spanish network dedicated to neonatal neurological issues, which aims to share clinical experience, advance research, and foster collaboration in neonatal and developmental neurology.

In the field of innovation and knowledge transfer, the group collaborates on the development of a non-invasive ultrasound-based technology for diagnosing neonatal meningitis. It also participates in AI4NICU Action, a pan-European multidisciplinary initiative focused on implementing AI-based neuromonitoring tools in neonatal units to support clinical decision-making.

The group actively supports academic training, with four PhD theses currently in progress.

Finally, the team is being integrated into the newly created Critical Care Centre at Hospital Sant Joan de Déu. This innovative centre, launched in 2024, combines neonatal and paediatric critical care, research, and teaching under a unified model. It aims to become a global reference in improving outcomes for critically ill newborns and children through impactful research, collaborative innovation, and strategic development.

SELECTED PUBLICATIONS

- Leruez M, Chatzakis C, Lillieri D, Blazquez D, Alarcon A, Bourgon N et al. Consensus recommendation for prenatal, neonatal and postnatal management of congenital cytomegalovirus infection from the European congenital infection initiative (ECCI) [vol 40, 100892 , 2024]. Lancet Reg. Health-Eur. 2024;42:100974-100974. IF:13,600. (Q1).
- Alsina M, Lühr M, Aldecoa V, del Río R, Maton P, Sarafidis K et al. Effect of Cerebral Oximetry-Guided Treatment on Brain Injury in Preterm Infants as Assessed by

Magnetic Resonance Imaging at Term Equivalent Age: An Ancillary SafeBoosC-III Study. Neonatology. 2024;:38-45. IF:2,600. (Q1).

- Rodríguez P, Alarcon A, Martínez M, Cabrera M, Aldecoa V, Fernández A et al. Behavioral Problems and Family Impact in Congenital Cytomegalovirus Infection. Pediatr. Infect. Dis. J. 2024;43(6):556-558. IF:2,900. (Q1).
- Alarcon A, de Vries LS, Parodi A, Arnáez J, Cabañas F, Steggerda SJ et al. Neuroimaging in infants with congenital cytomegalovirus infection and its correlation with outcome: emphasis on white matter abnormalities. Arch. Dis. Child.-Fetal Neonatal Ed. 2024;109(2):151-158. IF:3,900. (Q1).

SELECTED PROJECTS

- 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). (PI23/00103). Instituto de Salud Carlos III (ISCIII). 2024-2026. IP:Ana Alarcon Allen.
- SGR 2022-2024_Grup Cervell Neonatal (GCN). (2021 SGR 01505). Agaur - Agència de Gestió d'Ajuts Universitaris i de Recerca. 2022-2025. IP: Thais Agut Quijano.
- Estudio CRIB (Cribado de citomegalovirus congénito en recién nacidos sanos e ingresados - Barcelona). (PI19/00095). Instituto de Salud Carlos III (ISCIII). 2020-2024. IP:Antoni Noguera Julian,Ana Alarcon Allen.
- Evaluation of a new point-of-care risk-stratification tool based on quantification of prognostic biomarkers for the screening of the very sick patient to improve neonatal survival. Sociedad Española de Neonatología. 2023-2025. IP:Ana Alarcon Allen.

Neuropsychology

Roser Pueyo Benito, PhD

 **11**
PUBLICATIONS

 **34**
IMPACT FACTOR
3,1 average impact factor

 **73%**
PUBLICATIONS IN 1ST QUARTILE

 **55%**
LEADERSHIP

MEMBERS

RESEARCHER

Isabel García García, Maria Mataró Serrat, Xavier Caldú Ferrús, Maria Angeles Jurado Luque

POSTDOC ASSOCIATED RESEARCHERS

Júlia Ballester Plané, Olga Laporta Hoyos, Cristina Sánchez Castañeda

PREDOC ASSOCIATED RESEARCHERS

Anna Prunell Castañe, Adrià Bermudo Gallaguet, Montse Blasco Sierra, María García Galant, Sandra Luís Ruiz, Jonatan Ottino González

In 2024, our research group made significant progress in understanding neuropsychological functioning in individuals with risk factors such as obesity, and in exploring the neuropsychological impacts of congenital, perinatal, and acquired injuries, including cerebral palsy and stroke, along with their rehabilitation. Our team is engaged in both ongoing national research projects and new international initiatives.

We have continued to develop guidelines for the neuropsychological assessment of cognition and autism traits in children with cerebral palsy, supported by a national grant and a Marie Skłodowska-Curie Actions Postdoctoral Fellowship. Our notable publications this year include studies on the neuropsychological sequelae of post-COVID conditions, the impact of lifestyle interventions on brain connectivity and cognitive improvements in aging populations,

and the relationship between white matter integrity and motor function in dyskinetic cerebral palsy. We also explored the impact of chronic stress and adverse childhood experiences on executive functions in youth, finding that early adversity was linked to poorer executive performance. Additionally, we investigated resting-state functional connectivity in children with developmental dyscalculia, identifying significant differences that highlight the importance of these networks for arithmetic development.

These achievements underscore our group's expertise in addressing emerging neuropsychological challenges and our commitment to advancing the field through rigorous research and innovative approaches.

SELECTED PUBLICATIONS

- Caldú X, Reid LB, Pannek K, Fripp J, Ballester J, Leiva D et al. Tractography of sensorimotor pathways in dyskinetic cerebral palsy: Association with motor function. *Ann Clin Transl Neurol*. 2024;11(10):2609-2622. IF:4,400. [Q1].
- Dimitriadis SI, Castells A, Roig F, Dacosta R, Lamonja N, Torán P et al. Intrinsic functional brain connectivity changes following aerobic exercise, computerized cognitive training, and their combination in physically inactive healthy late-middle-aged adults: the Projecte Moviment. *GeroScience*. 2024;46(1):573-596. IF:5,300. [Q1].
- Mateu R, Adan A, Grau S, Rifà X, Caldú X, Bargalló N et al. Alterations in functional brain connectivity associated with developmental dyscalculia. *J Neuroimaging*. 2024;34(6):694-703. IF:2,300. [Q2].
- Prunell A, Garolera M, Ottino J, Jurado MA. Allostatic load, adverse childhood experiences, executive functions, and BMI status in adolescents and young adults. *Am. J. Hum. Biol*. 2024;36(9)IF:1,600. [Q1].

SELECTED PROJECTS

- Evaluation of Autism SpEctrum Disorder in children with Cerebral Palsy (EASED-CP). 101066954.

Unió Europea. MSCA Postdoctoral Fellowships 2021 (HORIZON-MSCA-2021-PF-01). 2022-2026. IP: Roser Pueyo Benito

- Guías basadas en la evidencia y consensuadas para la evaluación neuropsicológica de las personas con parálisis cerebral grave y parálisis cerebral discinética. PID2020-117163RB-I00. Ministerio de Ciencia e Innovación (MICINN). Convocatòria d'ajuts del Programa Estatal d'Investigació, Desenvolupament i Innovació Orientada als reptes de la Societat. Modalitat Reptes. 2021-2025. IP: Roser Pueyo Benito

Cognitive Neuroscience

Carles Escerca Micó, PhD

 **11**
PUBLICATIONS

 **31**
IMPACT FACTOR
2,8 average impact factor

 **55%**
PUBLICATIONS IN 1ST QUARTILE

 **82%**
LEADERSHIP

MEMBERS

RESEARCHER

Judith Dominguez Borrás, Jordi Costa Faidella, Imma Clemente Lapena, Maria José Corral López, Maria Isabel Núñez Peña, Iria San Miguel Insúa, Hans Supèr, Marc Via García

PREDOC ASSOCIATED RESEARCHERS

Siham Ijjou Kadiri, Sonia Arenillas Alcón, Marta Puertollano Rodríguez

Capitalizing on the frequency-following response (FFR), a brain potential obtained from the EEG in response to a speech sound, we have continued pushing 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, lead of the Foetal Environment and Obstetric Complications research group). First, we have unveiled a neurodevelopmental milestone emerging in typically developing infants at the age of six months: the ability to encode the temporal fine structure of speech sounds, as revealed with the FFR (Puertollano et al., 2024). Second, we showed that neonates born very late preterm (GA 35 and 36 weeks) present an immature neural phase locking to the low spectral characteristics of speech (voice pitch), compared to neonates born at term two (37-38 GA weeks) or four (39-40 GA weeks) later, these two latter groups do not differing among them, suggesting a critical

period during fetal development for maturation of the pitch neural encoding machinery in the auditory system (i.e., from 37 to 38 GA; Ribas-Prats et al., 2024). These findings together with those of previous years, are supporting the FFR a powerful biomarker for neurocognitive development -early language acquisition-, and as such, we have managed to submit a patent application for a methods and systems to predict neurodevelopmental outcomes at the age of two years based on a neonatal FFR and artificial intelligence algorithm. Currently, we are developing a prototype to record the neonatal FFR and yield a neurodevelopmental prediction for a user-friendly device for bedside use. Seven PhD theses have been defended on these and related topics.

SELECTED PUBLICATIONS

- Puertollano M, Ribas T, Gorina N, Ijjou S, Arenillas S, Mondéjar A et al. Longitudinal trajectories of the neural encoding mechanisms of speech-sound features during the first year of life. *Brain Lang.* 2024;258:105474-105474. IF:2,100. (Q1).
- Nunez MI, Campos C. Response inhibition deficits in math-anxious individuals. *Ann. N.Y. Acad. Sci.* 2024;1540(1):200-210. IF:4,100. (Q1).
- Ribas T, Arenillas S, Martínez S, Gómez MD, Escera C. The frequency-following response in late preterm neonates: a pilot study. *Front. Psychol.* 2024;15:1341171-1341171. IF:2,600. (Q2).
- Romeo A, Leonovych O, Solé M, Super H. Cognitive Vergence Recorded with a Webcam-Based Eye-Tracker during an Oddball Task in an Elderly Population. *Sensors.* 2024;24(3)IF:3,400. (Q2).

Attention, Perception and Language Acquisition (APAL)

Laura Bosch Galceran, PhD

 **2** PUBLICATIONS

 **6** IMPACT FACTOR
2,9 average impact factor

 **50%** PUBLICATIONS IN 1ST QUARTILE

 **100%** LEADERSHIP

MEMBERS

RESEARCHER

Ferran Pons Gimeno, Marta Ramon Casas

POSTDOC ASSOCIATED RESEARCHERS

Beatriz de Diego Lázaro

PREDOC ASSOCIATED RESEARCHERS

Laia Marcet Jiménez

During 2024, we have completed the goals of a competitive project from the Spanish MICINN, addressing a) the development of indexical representation, and b) lexical learning ability at 18-24 months, both in typically developing infants and in clinical populations. Regarding indexical representation, a primary level of an associative face-language connection was found by 4 months of age but retention of the face-language pairings was not present across the first year of life. The identification of socio-linguistic factors that modulate this ability is being addressed. Regarding the research line on lexical learning, a study on minimal-pair word learning (two novel words differing in VOT features) yielded significant differences between late-to-moderate preterm and full-term infants at 18 months, revealing the negative impact of prematurity on basic associative learning mechanisms when fine temporal speech features are involved. Data collection and preliminary

analyses from the multidisciplinary and longitudinal project involving ORL, Neuroradiology and Psychology Units, and collaborative research with the Cognition and Brain Plasticity Group (UB) on congenitally deaf infants with a cochlear implant tested pre- and two years post-implantation, has been completed. Results confirm greater variability within the implanted group in terms of language outcomes and word learning skills (fast mapping/ novel word learning and retention), compared with a control group of hearing participants. Current analyses connecting brain data pre-implantation, socio-educative factors and later language and cognitive outcomes are on their way. The research line within the TEA-CARE project in collaboration with the UnimTEA Unit (Multidisciplinary Unit of Autism Spectrum Disorder), more than 20 children around 30 months of age have been tested using three different experimental paradigms with the eye-tracker. The aim is to assess how a parent-mediated intervention based on the Early Start Denver Model enhances children's social responsiveness, as captured through changes in gaze patterns and attention to social stimuli.

SELECTED PUBLICATIONS

- Birulés J, Bosch L, Lewkowicz DJ, Pons F. Time course of attention to a talker's mouth in monolingual and close-language bilingual children. *Dev Psychol.* 2024;60(1):135-143. IF:3,100. (Q1).
- Marcet L, Birulés J, Bosch L, Pons F. Who spoke that language? Assessing early face-language associations in monolingual and bilingual infants. *Front. Psychol.* 2024;15:1393836-1393836. IF:2,600. (Q2).

Research in Child and Adolescent Mental Health

Montserrat Dolz Abadia, MD, PhD



14

PROJECTS

7 competitive projects

7 non competitive projects



3

CLINICAL TRIALS &
OBSERVATIONAL STUDIES



17

PUBLICATIONS



74

IMPACT FACTOR

4,3 average impact factor



71 %

PUBLICATIONS IN 1ST QUARTILE



18%

PUBLICATIONS IN 1ST DECILE



41%

LEADERSHIP

MEMBERS

ASSISTANT RESEARCHER

Juana Camila Muñoz Restrepo, Laura Maritza Astiasuainzarra Villa, Muriel Ferrer Vergés, Federica Lombardini , Paula Resina Curado, Ingrid Tortadès Arumí, Marina Fabrega Ribera

COLLABORATOR RESEARCHER

Marta Forner Gomez

RESEARCHER

Alazne Gorrotxategi Aizpitarte, Aritz Aranbarri Paredes, Xavier Estrada Prat, Francisco Villar Cabeza, Laia Mollà Cusí, Esther Via Virgili, Neus Elias Carbonell, José Ángel Alda Díez, Mar Alvarez Segura, Ester Camprodon Rosanas, Maria Diez Juan, Fernando Lacasa Saludes, Ma Ángeles Mairena García de la Torre, Josep Lluís Matalí Costa, Daniel Muñoz Samons, Marta Pardo Gallego, Isabel Rueda Barcena, Eduardo Serrano Troncoso, Anna Sintés Estevez

POSTDOC ASSOCIATED RESEARCHERS

Pablo Vidal-Ribas Belil, Inmaculada Insa Pineda, Anna Butjosa Molines, Jordina Tor Fabra

PREDOC ASSOCIATED RESEARCHERS

Helena Vall Roqué, Laia Villalta Maciá

In 2024, our research group focused on advancing recruitment and data collection across several key studies. These included clinical and neuroimaging investigations on precursors of binge eating disorder in adolescents with obesity (PREC-TA and PREC-BED, Dr. Via), on the identification of protective and risk factors in youth at clinical high risk for psychosis (CAPRIS-PROTECT, Dr. Tor, CAPRIS-EI; Dr Dolz), highlighting language delays and higher grandiosity in those transitioning to psychosis, and on early-life determinants of neurobehavioral and emotional problems in the ENGINE cohort (Dr. Gascón, Dr. Camprodon). Additional ongoing projects addressed parenting interventions in children with genetic vulnerabilities (The GAP, Dr. Villalta), post-COVID trauma recovery in children from community settings (RESCCUE; Dr. Álvarez), and biomarker identification in autism (TEA CARE, Dr. Aranbarri).

Last year, we concluded several projects, including the EmCoVID19 longitudinal study (Dr. Via), which reported a spike in emotional and behavioral symptoms during lockdown, with slower recovery in adolescents, and a study on circadian disruption in children with neurodevelopmental disorders (Dr. Alda, Dr. Aranbarri).

Our group was awarded several new competitive grants in 2024. These include a project aimed at creating a predictive model of transition to psychosis in children and adolescents at high-risk of psychosis (PREDICT-CAPRIS, PI24/00302; Dr. Tor) and another one aimed at understanding fluctuations of irritability in real-time in the context of parent and adolescents interactions (PAIRED, PI24/00303; Dr. Vidal-Ribas). In the context of collaborations with other departments at HSJD we have also benefited with grants to examine epigenetic processes in neurodevelopmental disorders (TRI-VIAE, PI24/00482; Dr Serrano, Dr Elias) and to develop AI-based prediction of psychopathology in children with congenital heart disease (Koplowitz; Dr. Cambrubí, Dr. Llorens, Dr. Pérez-Ordoñez).

In clinical innovation, we are piloting resilience training in youth at risk for psychosis (following training of Dr. Tor and Dr. Dolz at Boston Children's Hospital), evaluating tDCS for ADHD in collaboration with the Neurology department (Dr. Climent, Dr. Via), and testing a mixed-reality system to foster interpersonal synchrony in children with ASD (Dr. Parés, Dr. Mairena).

SELECTED PUBLICATIONS

- Dolz M, Tor J, Puig O, de la Serna E, Muñoz D, Pardo M et al. Clinical and neurodevelopmental predictors of psychotic disorders in children and adolescents at clinical high risk for psychosis: the CAPRIS study. Eur. Child Adolesc. Psych. 2024;33(11):3925-3935. IF:6,000. (Q1).
- Estrada X, Estrada E, Tor J, Mezzatesta M, Aranbarri A, Gorrotxategi A et al. Caregiver-reported emotional-behavioral symptoms in Spanish youth during the COVID-19 pandemic: a longitudinal study. Pediatr. Res. 2024;IF:3,100. (Q1).
- Winter I, Slot M, van HH, Bosson MG, Berger G, Aschauer H et al. Effectiveness of Omega-3 Fatty Acids Versus Placebo in Subjects at Ultra-High Risk for Psychosis: The PURPOSE Randomized Clinical Trial. Schizophr. Bull. 2024;IF:5,300. (Q1).

SELECTED PROJECTS

- Estudio multicéntrico longitudinal sobre marcadores de predicción de la transición a psicosis en niños y adolescentes con riesgo de psicosis: el papel del estrés intrauterino. (PI21/00090). Instituto de Salud Carlos III (ISCIII). 2022-2026. IP: Montserrat Dolz Abadia.
- Estudio multicéntrico longitudinal PREDICT-CAPRIS: creación de un modelo de predicción del riesgo de transición a un trastorno psicótico en niños y adolescentes mediante una calculadora de riesgo. Instituto de Salud Carlos III (ISCIII). 2024-2027. IP: Jordina Tor Fabra.
- Interacciones de Padres y Adolescentes en Relación con la Desregulación Emocional (PAIRED study). Instituto de Salud Carlos III (ISCIII). 2024-2027. IP: Pablo Vidal-Ribas Belil.

- Precusores del trastorno por atracón en adolescentes con obesidad: marcadores MRI temprano de disfunción de circuitos cerebrales de refuerzo e inhibición (Estudio PREC-BED). Instituto de Salud Carlos III (ISCIII). 2022-2025. IP: Esther Via Virgili.

SELECTED CLINICAL STUDIES

- Ensayo controlado con placebo en sujetos con alto riesgo para la psicosis comparado con ácidos grasos omega-3 en Europa. University Medical Center Utrecht. 2016-2024. IP: Montserrat Dolz Abadia.
- Estudio exploratorio a corto plazo para evaluar la seguridad, tolerabilidad y farmacocinética de Seltorexant como terapia adyuvante al tratamiento con antidepresivos en adolescentes con trastorno depresivo mayor que muestran una respuesta inadecuada a los inhibidores de recaptación de serotonina más psicoterapia. Janssen - Cilag, S.A. 2021-2024. IP: Montserrat Dolz Abadia.
- An Exploratory, Multicenter, Randomized, double-blind, placebo-controlled study evaluating the effect and safety of pitolisant in children and adolescents with Autism Spectrum Disorders. BIOPROJET PHARMA. 2024. IP: Neus Elias Carbonell.

Epilepsy and Movement Disorders in Pediatrics

Alexandros Arzimanoglou, MD, PhD

	15 PROJECTS 6 competitive projects 9 non competitive projects
	13 CLINICAL TRIALS & OBSERVATIONAL STUDIES
	36 PUBLICATIONS
	187 IMPACT FACTOR 5,2 average impact factor
	58 % PUBLICATIONS IN 1ST QUARTILE
	33% PUBLICATIONS IN 1ST DECILE
	39% LEADERSHIP

MEMBERS

ASSISTANT RESEARCHER

Alexis Arzimanoglou
Ayudante de investigación: Berta Mateu Yus, Anna Aguilar Ros, Itziar Alonso Colmenero, Santiago Antonio Candela Cantó, Veronica Delgadillo Chilavert, Andrea Palacio Navarro, Alia Ramírez Camacho

RESEARCHER

Javier Aparicio Calvo, Maria Alejandra Climent Perin, Maria del Carmen Fons Estupiña, Anna López Sala, Juan Darío Ortigoza Escobar

Throughout 2024, the CEReG – Complex Epilepsies Research Group – has been awarded several competitive and private research grants, which have enabled the continuation of its research lines focused on structural, genetic, and metabolic epilepsies.

In addition, there has been a

significant increase in studies related to epilepsy and movement disorders, a rapidly growing research area. Over the course of 2024, more than 10 research projects have been conducted, primarily focusing on early-onset epilepsies, drug-resistant focal epilepsies associated with mTORopathies, GNAO1-related disorders, and the use of personalized treatments for epileptic and developmental encephalopathies. The group has participated in more than 20 clinical trials, most of which are multicenter studies. These trials aim to evaluate the efficacy and/or safety of new treatments for various epilepsy etiologies, including Tuberous Sclerosis Complex, Dravet Syndrome, Lennox-Gastaut Syndrome, Focal Cortical Dysplasia, Angelman Syndrome, CDKL5 Deficiency Disorder, and Mitochondrial Diseases. Furthermore, the group has contributed to the development of several clinical trials aimed at advancing new diagnostic or monitoring methods, such as transcranial direct current stimulation and the study of cerebral hemodynamics and metabolism. Throughout 2024, the group has produced 50 scientific publications, more than half of which appeared in Q1 journals. CEReG has been involved in a wide variety of studies, all united by a common goal: to advance the understanding of complex epilepsies in order to improve the quality of life of the affected children.

SELECTED PUBLICATIONS

- Ousingsawat J, Talbi K, Gómez H, Koy A, Fernández A, Tekgül H et al. Broadening the clinical spectrum: molecular mechanisms and new phenotypes of ANO3-dystonia. Brain. 2024;147(6):1982-1995. IF:11,900. (Q1).
- Julià NA, Olivella M, Sigatullina M, Ibáñez S, Muñoz B, Alonso O et al. L-serine treatment in patients with GRIN-related encephalopathy: a phase 2A, non-randomized study. Brain. 2024;147(5):1653-1666. IF:11,900. (Q1).
- Kaiyrzhanov R, Ortigoza JD, Stringer BW, Ganieva M, Gowda VK, Srinivasan VM et al. Clinical and Molecular Spectrum of Autosomal Recessive <i>CA8</i>-Related Cerebellar Ataxia. Mov Disord. 2024;39(6):983-995. IF:7,400. (Q1).

- Saez A, Ibarluzea MG, M S, Muguruza A, Nuñez E, Ramis R et al. MLe-KCNQ2: An Artificial Intelligence Model for the Prognosis of Missense <i>KCNQ2</i> Gene Variants. Int J Mol Sci. 2024;25(5) IF:4,900. (Q1).

SELECTED PROJECTS

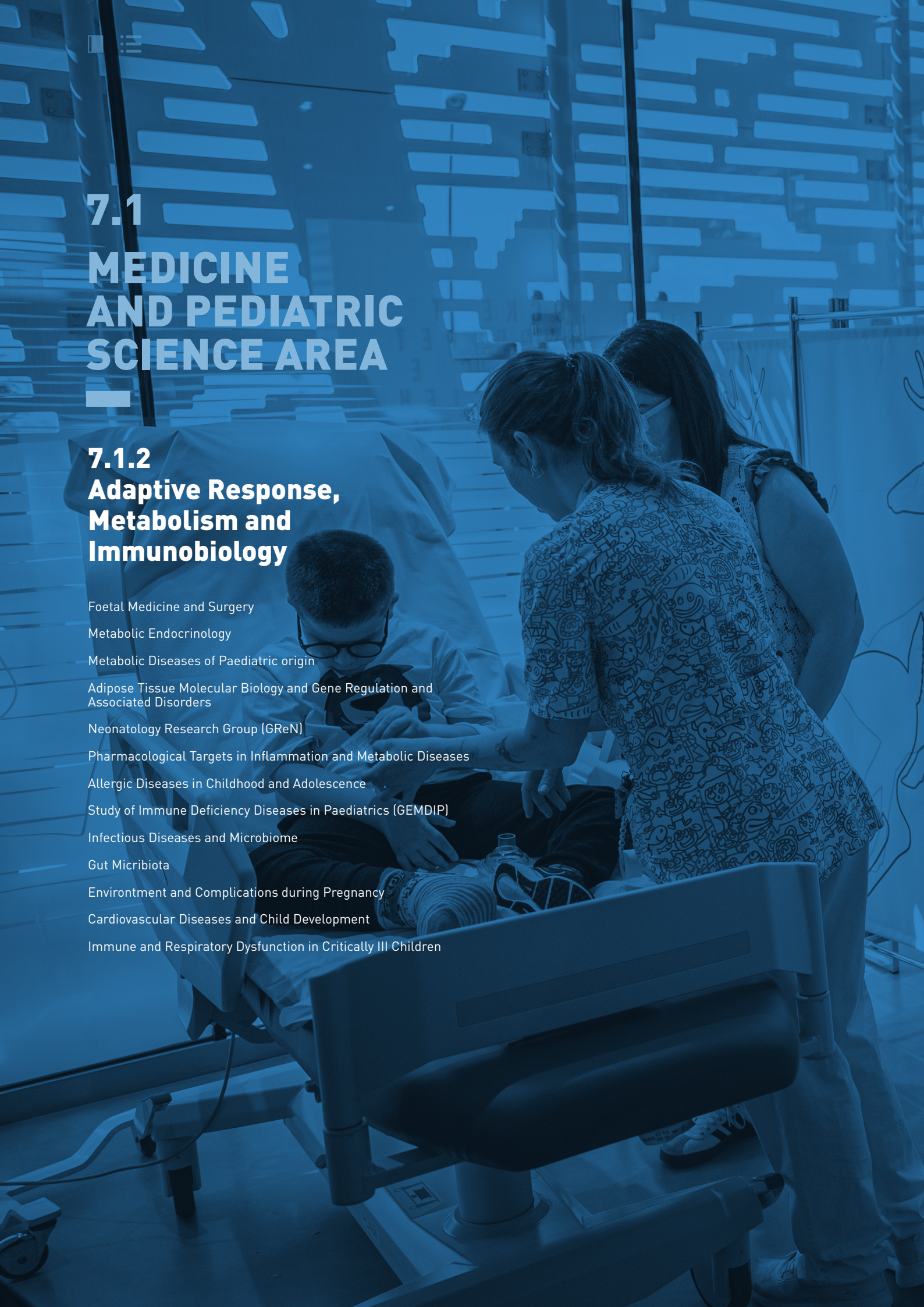
- BR202302 - Mapas de conectividad funcional cerebral y neurodesarrollo en epilepsia pediátricas de debut precoz. EpiNeuroMaps. Hospital Sant Joan de Déu - Esplugues HSJD. 2024-2027. IP: Maria del Carmen Fons Estupiña.
- El análisis de la conectividad cerebral como herramienta para evaluar los trastornos neuroconductuales y de regulación emocional (EpiETRE.net). (PI21/01268). Instituto de Salud Carlos III (ISCIII). 2022-2026. IP: Alexis Arzimanoglou.
- Correlación anatomo-electro-clínica y molecular en pacientes pediátricos con epilepsia focal fármaco-resistente y lesión estructural relacionada con mTORpatías. Torrons Vicens. 2021-2025. IP: Javier Aparicio Calvo
- Canalopatía KCNQ2. Análisis de biomarcadores, efectos biofísicos de la variante genética y evaluación de la eficacia de los tratamientos a través de una red de investigación multi-céntrica Española. Provincia San Juan de Dios de España. 2018-2025. IP: Maria del Carmen Fons Estupiña,

INC. 2021 IP: Javier Aparicio Calvo.

- Real World Evidence Study on the epidemiology and disease management in TSC patients in Spain. Jazz Pharmaceuticals, INC. 2024. IP: Federico Ramos.
- Hemodinamia y metabolismo cerebral en pacientes con convulsiones neonatales y encefalopatía epiléptica de debut precoz con espasmos infantiles (Bmetaluz). Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD FSJD. 2022. IP: Maria del Carmen Fons Estupiña.

SELECTED CLINICAL STUDIES

- Seguridad y eficacia de la estimulación transcraneal directa de corriente continua (tDCS) en pacientes pediátricos con enfermedades neuropsiquiátricas. (FSJD-NeuroHoop-2023). Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 2024 IP: Maria Alejandra Climent Perin.
- ESTUDIO ABIERTO SOBRE LA SEGURIDAD Y LA EFICACIA DEL CENOBAMATO (YKP3089) EN PACIENTES PEDIÁTRICOS CON CRISIS DE INICIO PARCIAL (FOCALES). Open-Label Safety and Efficacy Study of Cenobamate (YKP3089) in Pediatric Subjects with Partial-onset (Focal) Seizures. (YKP3089C040). SK Life Science,



7.1 MEDICINE AND PEDIATRIC SCIENCE AREA

7.1.2 Adaptive Response, Metabolism and Immunobiology

Foetal Medicine and Surgery

Metabolic Endocrinology

Metabolic Diseases of Paediatric origin

Adipose Tissue Molecular Biology and Gene Regulation and
Associated Disorders

Neonatology Research Group (GReN)

Pharmacological Targets in Inflammation and Metabolic Diseases

Allergic Diseases in Childhood and Adolescence

Study of Immune Deficiency Diseases in Paediatrics (GEMDIP)

Infectious Diseases and Microbiome

Gut Microbiota

Environment and Complications during Pregnancy

Cardiovascular Diseases and Child Development

Immune and Respiratory Dysfunction in Critically Ill Children

Foetal Medicine and Surgery

Eduard Gratacós Solsona, MD, PhD



10

PROJECTS

6 competitive projects

4 non competitive projects



1

CLINICAL TRIALS &
OBSERVATIONAL STUDIES



21

PUBLICATIONS



208

IMPACT FACTOR

9,9 average impact factor



86%

PUBLICATIONS IN 1ST QUARTILE



48%

PUBLICATIONS IN 1ST DECILE



33%

LEADERSHIP

MEMBERS

ASSISTANT RESEARCHER

Jennifer Cazorla Champi, Albert Vidal Baca, Núria Casaponsa Sarabia, Clara Cots Pérez, Lavinia Valy Frunza, Alba Galera Mas, Ivan Vallejo Gutierrez, Borja Sese Ballesteros, Emily Marisol Toscano Guerra, Núria Blanco i Quintanilla, Victoria Beatriz Pino Jiménez, Adrià Escolà Cerqueda, Talita Micheletti, Victoria Gomez Asencio, Erika Sanchez Ortiz, Alejandro Trujillano Fernandez, Antonio Javier Gómez Asencio, Anna Gascon González, Carla Nicolau Graupera

MANAGEMENT

Montserrat Arroyes Albuja, Meritxell Casademunt Moya, Angela del Pan Moruno, Ester Cardet Bobet

POSTDOC ASSOCIATED RESEARCHERS

Elisenda Bonet Carné, Francesca Crovetto, Yolanda Jacoba de Roo Puente, Miriam Illa Armengol

PREDOC ASSOCIATED RESEARCHERS

Alejandra Guadalupe Trejo Dominguez, Miguel Angel Moran Galvez

TECHNICIAN

Andrea Sanchez Loeza, Marc Gállego Asín, Marco Humberto Lescano Mesias, Jessica Ortiz Mengual, David Vizcarro Carretero

UNDEFINED

Mariona Generó Hidalgo- Saavedra,
María Moya Guerrero

In 2024, we continued our research aimed at improving diagnosis and therapy in maternal-fetal medicine. We are working on several projects involving image processing, clinical trials and the development of new medical devices in fetal therapy.

As a highlight of 2024, we published in the Lancet our findings of the RATIO37 clinical trial. The study has demonstrated the positive consequences of including an ultrasound scan at the end of pregnancy that allows serious neonatal complications to be avoided in babies at risk.

At this moment, we are fully engaged in the development on the PE37 trial, a multinational clinical trial involving nearly 10,000 participants to prevent late preeclampsia and we have initiated the PE360 study, a 360° approach to unveil the heterogeneity of preeclampsia and transform its understanding, prediction and management. Additionally, we have initiated a collaboration with the Universitätsklinikum of Düsseldorf through a project for the early detection and interception for childhood acute lymphoblastic leukemia.

Furthermore, different members of the group have received research awards related with the CaixaResearch Artificial Placenta project. Eduard Gratacós has received the CSC Impulsa award for innovative projects and Elisenda Bonet has received the Relevant Young Researcher Circulo Ecuestre award.

At the same time, we remain committed to training the next generation of researchers in the field of maternal-fetal medicine through training fellowship programs.

SELECTED PUBLICATIONS

- Sanchez S, Marti PM, Hoodbhoy Z, Bernardino G, Prats J, Aguado AM et al. Prediction of low birth weight from fetal ultrasound and clinical characteristics: a comparative study between a low- and middle-income and a high-income country. *BMJ Glob. Health.* 2024;9(12):IF:7,100. (Q1).
- Castro S, Crovetto F, Estruch R, María Ruiz A, Larroya M, Sacanella E et al. Validation of a pregnancy-adapted Mediterranean Diet Adherence Screener (preg-MEDAS): a validation study nested in the Improving Mothers for a better Prenatal Care Trial BarCeloNa (IMPACT BCN) trial. *Am. J. Clin. Nutr.* 2024;120(2):449-458. IF:6,500. (Q1).
- Basurto D, Watananirun K, Cordier AG, Otaño J, Carriere D, Scuglia M et al. Tracheomalacia and tracheomegaly in infants and children with congenital diaphragmatic hernia managed with and without fetoscopic endoluminal tracheal occlusion (FETO) a multicentre, retrospective cohort study. *Lancet Child. Adolesc. Health.* 2024;8(8):580-588. IF:19,900. (Q1).
- Rial M, Lubusky M, Parra M, Krofta L, Kajdy A, Zohav E et al. Term planned delivery based on fetal growth assessment with or without the cerebroplacental ratio in low-risk pregnancies (RATIO37): an international, multicentre, open-label, randomised controlled trial. *Lancet.* 2024;403(10426):545-553. IF:98,400. (Q1).

SELECTED PROJECTS

- Impacto de una intervención de Dieta Mediterránea durante la gestación sobre la Microbiota Materno-Neonatal y su asociación con el Neurodesarrollo: un Ensayo Clínico Aleatorizado. (PI22/00684). Instituto de Salud Carlos III (ISCIII). 2023-2025. IP: Francesca Crovetto.
- Evaluación de los efectos de un sistema de placenta artificial en el neurodesarrollo en un modelo animal de oveja a nivel multiescala. (PI22/01306). Instituto de Salud Carlos III (ISCIII). 2023-2025. IP: Miriam Illa Armengol.
- A multicenter randomised trial of screening with sFlt-1/PlGF and planned delivery to prevent preeclampsia at term. Roche. 2021. IPs: Elisa Llorba, Francesc Figueras, Eduard Gratacós.

Metabolic Endocrinology

Lourdes Ibáñez Toda, MD, PhD



6

PROJECTS

5 competitive projects
1 non competitive projects



5

CLINICAL TRIALS &
OBSERVATIONAL STUDIES



7

PUBLICATIONS



24

IMPACT FACTOR

3,4 average impact factor



43%

PUBLICATIONS IN 1ST QUARTILE



86%

LEADERSHIP

MEMBERS

COLLABORATOR RESEARCHER

Judith Bassols Casadevall, Abel López Bermejo

RESEARCHER

Silvia Marin Del Barrio, Silvia Xargay Torrent, Paula Casano Sancho, Marta Díaz Silva

PREDOC ASSOCIATED RESEARCHERS

Cristina García Beltran

During 2024, our team has focused on a multicenter, multinational, randomized, double-blind, and placebo-controlled clinical trial funded by the European Commission (H2020 Research and Innovation Programme under Grant Agreement 899671 (www.spiomet4health), exploring a first treatment for polycystic ovary syndrome (PCOS) in adolescents and young women. This approach combines a lifestyle intervention program with a pharmacological therapy consisting of a single pill containing low doses of three medications acting on different pathways with different targets, with potential for reverting the PCOS phenotype. The medication includes two insulin sensitizers and one anti-androgen and anti-mineralcorticoid.

The inclusion period closed on July 15, 2024, and overall, 322 patients have been recruited of which one third have completed the study so far. During 2025, the baseline results will be reported in national and international meetings.

We have submitted an application to Marató TV3 (December 2024) to perform a study entitled: Novel insights into the pathogenesis of Polycystic Ovary Syndrome using a genetic model: identification of potential biomarkers for early diagnosis in humans. The study will start in the second trimester of 2025, as the application has been funded.

We are about to complete the recruitment of another clinical trial comparing the effects of a low-dose combination of two insulin sensitizers and one anti-androgen on the changes in clinical outcome, hepatic fat depots (by MRI), and bone age maturation in girls with advanced puberty (breast development between age 8-9 yr) and with a history of an upward mismatch between weight at birth and body mass index at diagnosis of puberty.

We have also completed and published the results related to the longitudinal characterization of the exosomal proteome in children born appropriate- (AGA) or small-for-gestational-age (SGA). Finally, we have started the analyses of the results of the longitudinal assessment of exosomal microRNAs in the same populations.

SELECTED PUBLICATIONS

- de Zegher F, Ibáñez L. Lower Sex Hormone-Binding Globulin and Faster Maturation Elevate Free Testosterone For Age in Girls With Obesity. *J. Clin. Endocrinol. Metab.* 2024;1F:5,000. (Q1).
- de Zegher F, Díaz M, Ibáñez L. Ethnic variation in the relationship between ectopic fat and insulin resistance: Potential contributions of deep subcutaneous adipose tissue, rs1443512 in HOTAIR, and rs6712203 in COBLL1. *Diabetes Obes. Metab.* 2024;1F:5,400. (Q1).
- García C, Peyrou M, Navarro A,

López A, de Zegher F, Villarroya F et al. Organokines and liver enzymes in adolescent girls with polycystic ovary syndrome during randomized treatments. *Front. Endocrinol.* 2024;15:1325230-1325230. IF:3,900. (Q2).

- de Zegher F, Ibáñez L. Letter to the Editor From de Zegher and Ibanez: "Distinct Reproductive Phenotypes Segregate With Differences in Body Weight in Adolescent Polycystic Ovary Syndrome". *J. Endocr. Soc.* 2024;8(6)IF:3,000. (Q2).

SELECTED PROJECTS

- SPIOMET4HEALTH_PCOS in adolescent girls and young women: Toward a treatment guided by pathophysiology. {899671}. European Commission. 2021-2026. IP:Lourdes Ibáñez 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. (PI22/01424). Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD; Instituto de Salud Carlos III (ISCIII). 2023-2025. IP:Paula Casano Sancho, Marta Díaz Silva.
- 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. (IC121/00005). Institut d'Investigació Biomèdica de Girona Dr. Josep Trueta. 2022-2025. IP:Lourdes Ibáñez Toda.
- Nous coneixements sobre la patogènesi de la síndrome d'ovaripoliquístic mitjançant un model genètic: identificació de biomarcadors potencials per al diagnòstic precoç en humans. Fundació La Marató de TV3. 2024-2028. IP: Lourdes Ibáñez 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. 2022IP:Lourdes Ibañez Toda.

- Ensayo clínico de fase II, aleatorizado, multicéntrico y multinacional para evaluar la eficacia, la tolerabilidad y la seguridad de una combinación de dosis fijas de espironolactona, pioglitazona y metformina (SPIOMET) para adolescentes y mujeres adultas jóvenes (AYA) con síndrome de ovario poliquístico (SOP) 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 adolescent girls and young adult women (AYAs) with polycystic ovary syndrome (PCOS) / Ensayo clínico de fase II, aleatorizado, multicéntrico y multinacional para evaluar la eficacia, la tolerabilidad y la seguridad de una combinación de dosis fijas de espironolactona, pioglitazona y metformina (SPIOMET) para adolescentes y mujeres adultas jóvenes con síndrome de ovario poliquístico (SOP). (SPIOMET4HEALTH). Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 2022 IP:Lourdes Ibañez Toda.
- Ensayo clínico prospectivo, abierto, aleatorizado, con dos grupos de pacientes para evaluar la eficacia y la seguridad de la combinación de Etinil-estradiol y levonorgestrel versus la combinación de pioglitazona, espironolactona y metformina a dosis bajas en adolescentes con hiperandrogenismo ovárico e hiperinsulinismo: efectos sobre la función ovulatoria, parámetros de inflamación crónica, marcadores de evolución y efectividad del tratamiento, y de desarrollo de diabetes tipo 2. (FSJD-PIOSPIMET-2015). Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 2016 IP:Lourdes Ibañez Toda.

Metabolic Diseases of Paediatric origin

Josep Jiménez Chillarón, PhD
& Carles Lerin Martínez, PhD

 **10**
PROJECTS
7 competitive projects
3 non competitive projects

 **8**
CLINICAL TRIALS &
OBSERVATIONAL STUDIES

 **7**
PUBLICATIONS

 **36**
IMPACT FACTOR
5.1 average impact factor

 **86%**
PUBLICATIONS IN 1ST QUARTILE

 **14%**
PUBLICATIONS IN 1ST DECILE

 **29%**
LEADERSHIP

MEMBERS

ASSISTANT RESEARCHER

Ares Sentenach Carbó, Ana Lopez Bataller, Lorena González López

COLLABORATOR RESEARCHER

Ivonne Palacios Marin

RESEARCHER

Montserrat Amat Bou, Serafin Murillo Garcia, Marina Llobet Garces, Ruben Díaz Naderi, Marta Ramon Krauel

POSTDOC ASSOCIATED RESEARCHERS

Marcela Catalina Parra Vargas

PREDOC ASSOCIATED RESEARCHERS

Paula Ximena Molina Giraldo

In 2024, we expanded and consolidated our clinical and research activities, publishing seven peer-reviewed articles (with two more in press) and managing ten ongoing projects, including four clinical studies at phases II or III. A major focus of our work has been advancing the understanding of Prader-Willi syndrome (PWS), where we have thoroughly characterized the gut

microbiome and metabolomic signatures associated with this condition to help explain their unique metabolic features and relative protection from insulin resistance. In our preclinical research, we demonstrated in rodent models that intermittent fasting significantly improves liver metabolism and uncovered a strong link between circadian rhythms and metabolic dysfunction tied to obesity, supporting the potential of dietary timing interventions for metabolic health. Our achievements include securing a EU grant through the Transforming Health Care Systems call, which allows us to coordinate the CONNECT-CARE project, an initiative focused on developing digital and personalized strategies for obesity prevention and management across healthcare systems. We also contributed to an international expert consensus published in a leading journal, which established evidence-based dietary recommendations for the prevention and management of metabolic dysfunction-associated fatty liver disease (MAFLD), emphasizing balanced, personalized nutrition and lifestyle interventions. Additionally, we completed two translational clinical studies: one investigating the impact of maternal betaine supplementation during breastfeeding on infant outcomes and gut microbiota and another evaluating the effects of intermittent fasting in pediatric obesity, both of which advance our understanding of early-life and nutritional interventions in metabolic health.

SELECTED PUBLICATIONS

- Zeng XF, Varady KA, Wang XD, Targher G, Byrne CD, Tayem R et al. The role of dietary modification in the prevention and management of metabolic dysfunction-associated fatty liver disease: An international multidisciplinary expert consensus. Metab.-Clin. Exp. 2024;161:156028-156028. IF:10,900. [Q1].
- Calvo J, Cabrera R, Lerin C, González S, Selma M, Martínez C et al. Comprehensive Targeted and Quantitative Profiling of the Human Milk Metabolome: Impact of Delivery Mode, Breastfeeding Practices, and Maternal Diet. Mol. Nutr. Food Res. 2024;68(24)IF:4,500. [Q1].

- Murillo S, Brugnara L, Ríos S, Ribas V, Servitja JM, Novials A. People with type 1 diabetes exhibit lower exercise capacity compared to a control population with similar physical activity levels. *Diabetes Res. Clin. Pract.* 2024;211:111655-111655. IF:6,100. (Q1).
- Bang P, Polak M, Bossowski A, Maghnie M, Argente J, Ramon M et al. Frequency and Predictive Factors of Hypoglycemia in Patients Treated With rhIGF-1: Data From the Eu-IGFD Registry. *J Clin Endocrinol Metab.* 2024;109(1):46-56. IF:5,000. (Q1).

SELECTED PROJECTS

- El microbioma intestinal como diana terapéutica en el síndrome de Prader-Willi: efectos metabólicos y en el comportamiento de los pacientes. (PI20/00301). Instituto de Salud Carlos III (ISCIII). 2021-2025. IP: Marta Ramon Krauel.
- CONNECT-CARE: Inclusive Healthcare Access and Personalized Health Management for Children and Adolescents. Instituto de Salud Carlos III (ISCIII). 2024-2027. IP: Carles Lerin Martinez.
- Non-genomic Inheritance of environmentally-induced traits: Deciphering epigenetically-driven genetic variation in mammals. John Templeton Foundation. 2021-2024. IP: Marta Ramon Krauel.
- Role of microbial metabolites in regulating hypothalamic pathways involved in feeding behavior. Foundation for Prader-Willi Research. 2023-2025. IP: Carles Lerin Martinez.

SELECTED CLINICAL STUDIES

- 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. 2022IP: Montserrat Amat Bou.
- 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. 2022IP: Marta Ramon Krauel.

- Estudio en fase II, doble ciego y controlado con placebo de setmelanotide en pacientes con defectos genéticos específicos en la vía del receptor de la melanocortina 4, en dos etapas (preinclusión abierta seguida de retirada aleatorizada). A 2-Stage (Open-Label Run-in followed by Randomized Withdrawal), Double-Blind, Placebo-Controlled, Phase 2 Study of Setmelanotide in Patients with Specific Gene Defects in the Melanocortin-4 Receptor Pathway. (RM-493-034). RHYTHM Pharmaceuticals, Inc. 2022IP: Marta Ramon Krauel.
- 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. 2020IP: Marta Ramon Krauel.

Adipose Tissue Molecular Biology and Gene Regulation and Associated Disorders

Francesc Villarroya Gombau, PhD

 **8**
PUBLICATIONS

 **49**
IMPACT FACTOR
6,1 average impact factor

 **100%**
PUBLICATIONS IN 1ST QUARTILE

 **38%**
PUBLICATIONS IN 1ST DECILE

 **50%**
LEADERSHIP

MEMBERS

RESEARCHER

Marta Giralt Oms, Roser Iglesias Coll, Teresa Mampel Astals, Anna Planavila Porta, Aleix Gavalda Navarro, Joan Villarroya Terrade

POSTDOC ASSOCIATED RESEARCHERS

Montserrat Cairó Calzada, Rubén Cereijo Téllez, Marion Peyrou, Tania Paloma Quesada López

INVESTIGADOR PRE-DOC

Laura Campderrós Traver, Gemma Ferrer Curriu, Samantha Morón Ros, Celia Helena Rupérez Gonzalo

TECHNICIAN

Mercedes Morales Rueda, Gemma Moreno Besora, Albert Però Garcia

During 2024, our group generated several research achievements to be specifically highlighted. A) In collaboration with several other laboratories we could enhance the knowledge of the role of brown adipose activity in health and disease conditions specifically in humans, a challenging objective. These findings have been published in top reputed journal (*Cell Reports Medicine, Obesity*). B) Totally novel factors controlling adiposity have been identified: splicing factor SF3B1 and the tight junction protein claudin-1, both published in internationally

reputed journals. C) We characterized the actions of antiretroviral drugs used for HIV infection treatment on adipocytes and metabolism (2 publications), in the important context of the growing awareness of an obesogenic role of these drugs in treated patients. D) In collaboration with other teams at SJD, we identified organokines involved in the responsiveness to treatments of PCOS patients. E) We contributed to Nature Reviews Endocrinology, the worldwide top impact journal in endocrinology; with a report on the importance of EPAC in brown adipose tissue biology, which reinforces the recognition and leadership of our team in the field. Moreover, during 2024, our project "Identification and characterization of the molecular actors responsible for the health effects of brown adipose tissue secretome" was awarded by the Spanish Ministry of Science, securing a relevant funding for pursuing our research on this field. Moreover, we are research team members of the collaborative project "Molecular adaptations of human brown adipose tissue to overnutrition" awarded by CIBER Physiopathology of Obesity and Nutrition after a competitive call.

SELECTED PUBLICATIONS

- Quesada T, Cereijo R, Blasco A, Mestres A, Prieto P, Domingo JC et al. Divergent effects of the antiretroviral drugs, dolutegravir, tenofovir alafenamide, and tenofovir disoproxil fumarate, on human adipocyte function. *Biochem. Pharmacol.* 2024;220:116010-116010. IF:5,300. [Q1].
- Jurado L, Sanchez G, Di X, Yang W, Kohler I, Villarroya F et al. Cold-induced changes in plasma signaling lipids are associated with a healthier cardiometabolic profile independently of brown adipose tissue. *Cell Rep. Med.* 2024;5(2):101387-101387. IF:11,700. [Q1].
- Villarroya F, Giral M. Controlling brown adipose tissue size through EPAC1. *Nat. Rev. Endocrinol.* 2024;20(5):259-260. IF:31,000. [Q1].
- Castellá M, Mestres A, Gavalda A, Blasco A, Quesada T, Romero I et al. The splicing factor SF3B1 is involved in brown adipocyte thermogenic activation. *Biochem. Pharmacol.* 2024;220:116014-116014. IF:5,300. [Q1].

Neonatology Research Group (GReN)

Martin Iriondo Sanz, MD, PhD

	8 PROJECTS 7 competitive projects 1 non competitive projects
	5 CLINICAL TRIALS & OBSERVATIONAL STUDIES
	10 PUBLICATIONS
	32 IMPACT FACTOR 3.2 average impact factor
	60% PUBLICATIONS IN 1ST QUARTILE
	10% PUBLICATIONS IN 1ST DECILE
	50% LEADERSHIP

MEMBERS

COLLABORATOR RESEARCHER

María Dolores Salvia Roiges, Marta Thió Lluch, Cristina Borràs Novell, Ana Herranz Barbero

RESEARCHER

Marta del Olmo Fernández, Cristina Carrasco Carrasco, Isabel Iglesias Platas, Ana Morillo Palomo

POSTDOC ASSOCIATED RESEARCHERS

Marta Camprubi Camprubi, Africa Pertierra Cortada

PREDOC ASSOCIATED RESEARCHERS

Carla Balcells Esponera, Jordi Clotet Caba, Ruth Del Rio Florentino, Beatriz Del Rey Hurtado De Mendoza, Montserrat Izquierdo Renau

Our research group encompasses multiple areas, each of them focusing on understanding how neonatal disease and early exposures can generate both immediate and delayed effects that may manifest during childhood or adulthood, both from a metabolic and neurodevelopmental perspective. Regarding the neonatal nutrition research group, we completed the follow-up of a cohort of very

premature patients between 7 and 9 years of age, and published data related to the macromolecular composition and bioactive factors in breast milk from mothers of very premature newborns. Throughout 2024, new results were presented at international conferences and as a master's thesis in the Master's in Neonatology at the University of Barcelona regarding metabolic health at school age in individuals born very prematurely participating in the competitive project "Consequences in childhood of perinatal growth failure in very premature newborns: clinical and metabolomic study (FIS PI20/00294)". Within the neurodevelopment and critical patient group, work is ongoing on a new continuous neuromonitoring device (TinyBrains-sjd.icfo.eu), carried out in collaboration with the cardiology department and the Institute of Photonic Sciences (ICFO), as part of a European Horizon 2020 grant (<https://tinybrains.eu/>). Additionally, within this line, we continue the investigation into the origins of brain alterations that may affect patients with congenital heart disease, for which we have been awarded two sources of competitive funding. One involves creating a brain damage risk score, including data from fetal life to immediate postoperative care, using artificial intelligence algorithms (PI23/0386). The other project, which has received a research grant from the Koplowitz Foundation, is titled "Psychopathology and Congenital Heart Disease: Development of Prediction Algorithms Using Artificial Intelligence." Furthermore, within the research group on critical neonatal care, we have collaborated in several multicenter projects related to our areas of expertise, such as the BuS study, which evaluates the efficacy and safety of administering Budesonide with Endotracheal Surfactant in preventing bronchopulmonary dysplasia in very premature newborns, and a trial focusing on the short- and long-term impact of inhaled nitric oxide therapy for the treatment of severe hypoxia secondary to persistent pulmonary hypertension in the neonatal period. The Neonatology Nursing Team has collaborated in the project "Mindfulness to Reduce Stress in Mothers and Fathers During Kangaroo Care in a Neonatal Intensive Care Unit" and is starting a project on "Implementation of an Intervention to Increase Milk Production in Mothers of Premature Newborns Admitted

to a NICU." They are also involved in a project on the "Emotional Impact on Parents When Their Newborn is Admitted to the Neonatal Intensive Care Unit," in collaboration with the University of Barcelona. Finally, it is also worth noting the close collaboration of several members of our team with the BCNatal group on the artificial placenta project (<https://bcnatalresearch.org/es/proyectos-id/placenta-artificial/>).

SELECTED PUBLICATIONS

- Balcells C, Borràs C, López M, Cubells I, Basseda A, Izquierdo M et al. Bioactive peptides in preterm human milk: Impact of maternal characteristics and their association to neonatal outcomes. *Biofactors*. 2024;50(1):135-144. IF:5,000. (Q1).
- Roggero P, Ryumina I, Gunier RB, Winsey A, Rauch SA, Zarco I et al. Postnatal growth of etiologically characterized preterm newborns according to gestational age at birth. *Pediatr Res*. 2024;IF:3,100. (Q1).
- Morillo A, Clotet J, Camprubí M, Diez EB, Silla J, Riverola A. Implementing palliative care, based on family-centered care, in a highly complex neonatal unit. *J. Pediatr*. 2024;100(2):143-148. IF:2,800. (Q1).
- Catarina F, Ibáñez R, Fontalvo M, Couce ML, Camprubí M. Pain and heart rate variability in neonates receiving dexmedetomidine. *J. Perinatol*. 2024;44(11):1669-1674. IF:2,400. (Q1).

SELECTED PROJECTS

- Psicopatología y Cardiopatía Congénita: Desarrollo de algoritmos de predicción mediante el uso de Inteligencia artificial. (Koplo_cardip). Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD; Fundación Alicia Koplowitz. 2024-2026. IP: Marta Camprubi Camprubi.
- TinyBrains_Bio-photonic imaging of the infant brain, the missing link between the cellular brain damage and the neurovascular unit during acute illness. (101017113). European Commission; Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 2021-2025. IP: Marta Camprubi Camprubi, Joan Sánchez de Toledo.
- Impacto de la suplementación con probióticos en el desarrollo de la microbiota intestinal, el crecimiento

y la salud del recién nacido prematuro. Obra Social San Juan de Dios de España. IP: Montserrat Izquierdo.

- Score de daño cerebral prequirúrgico para recién nacidos con cardiopatía congénita utilizando herramientas de inteligencia artificial. (PI23/0386). Instituto de Salud Carlos III (ISCIII). 2023-202. IP: Marta Camprubí Camprubí/ Patricia García Canadilla.

SELECTED CLINICAL STUDIES

- EFICACIA Y SEGURIDAD DE LA ADMINISTRACIÓN DE BUDESONIDA CON SURFACTANTE PULMONAR PORCINO 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-Institut d'Investigacions Biomèdiques August Pi i Sunyer. 2023IP:Cristina Carrasco Carrasco.
- Efecto del Alopurinol en pacientes con encefalopatía hipóxico-isquémica tratados con hipotermia. ALBINO ensayo clínico multicéntrico, aleatorizado, ciego, controlado con placebo. (H2020-PHC-18-2015-667224). Instituto de investigación Sanitaria Hospital La Fe. 2017IP:Marta Camprubi Camprubi.
- Impacto a corto y largo plazo de la terapia con óxido nítrico inhalado para el tratamiento de hipoxia severa secundaria a la hipertensión pulmonar persistente en el periodo neonatal. Colaboración con el Hospital la Fe de Valencia. IP: África Pertierra Cortada.
- Estudio piloto de validación de la adquisición de imagen de resonancia magnética pulmonar. Fundació de Recerca Clínic Barcelona-Institut d'Investigacions Biomèdiques August Pi i Sunyer. IP: Cristina Carrasco Carrasco.

Pharmacological Targets in Inflammation and Metabolic Diseases

Manuel Vázquez Carrera, PhD

11
PUBLICATIONS

84
IMPACT FACTOR
7,6 average impact factor

91%
PUBLICATIONS IN 1ST QUARTILE

46%
PUBLICATIONS IN 1ST DECILE

82%
LEADERSHIP

MEMBERS

RESEARCHER

F. Xavier Palomer Tarridas

POSTDOC ASSOCIATED RESEARCHERS

Emma Barroso Fernández, Marta Montori Grau

During 2024, our research group has made significant contributions to the field of metabolic and fibrotic diseases, particularly focusing on liver and cardiovascular health. Our work has furthered the understanding of key molecular pathways involved in these conditions and has opened new avenues for potential therapeutic strategies. One of our major achievements has been elucidating the role of Growth Differentiation Factor 15 (GDF15) in hepatic metabolism. Our study demonstrated that GDF15 activates AMP-activated protein kinase (AMPK) and inhibits gluconeogenesis and fibrosis in the liver by attenuating the transforming growth factor-β1 (TGF-β1)/mothers against decapentaplegic homolog 3 (SMAD3) pathway, highlighting its potential as a therapeutic target for metabolic and fibrotic liver diseases. Additionally, we have explored the regulation of very-low-density lipoprotein receptor (VLDLR) levels by SIRT1 in the liver, providing new

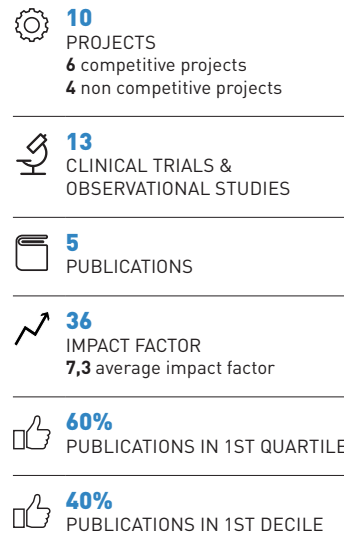
insights into lipid metabolism and its implications in metabolic disorders. Our research has also emphasized the protective role of peroxisome proliferator-activated receptor beta/delta (PPAR β/δ) in hepatic fibrosis, demonstrating its ability to reduce SMAD3 phosphorylation and p300 levels via AMPK activation in hepatic stellate cells. Beyond liver-related conditions, our group has investigated the role of PPAR β/δ in diabetic cardiomyopathy, showing its potential to prevent inflammation and fibrosis in this context. Furthermore, we have identified a novel mechanism by which PPAR β/δ upregulates the insulin receptor β subunit in skeletal muscle by reducing lysosomal activity and EphB4 levels, providing valuable insights into insulin signaling and metabolic homeostasis. Overall, our work in 2024 has significantly advanced the understanding of key metabolic pathways and their implications in liver and cardiovascular diseases. These findings contribute to the development of novel therapeutic strategies aimed at combating metabolic disorders, fibrosis, and related complications.

SELECTED PUBLICATIONS

- Barroso E, Jurado J, Wahli W, Palomer FX, Vazquez M. Increased hepatic gluconeogenesis and type 2 diabetes mellitus. Trends Endocrinol. Metab. 2024;35(12):1062-1077. IF:11,400. (Q1).
- Rostami A, Palomer FX, Pizarro J, Barroso E, Valenzuela BI, Crispi F et al. PPAR β/δ prevents inflammation and fibrosis during diabetic cardiomyopathy. Pharmacol. Res. 2024;210:107515-107515. IF:9,100. (Q1).
- Jurado J, Barroso E, Bernard M, Zhang M, Peyman M, Rada P et al. GDF15 activates AMPK and inhibits gluconeogenesis and fibrosis in the liver by attenuating the TGF- β 1/SMAD3 pathway. Metab.-Clin. Exp. 2024;152:155772-155772. IF:10,900. (Q1).
- Zhang M, Barroso E, Peña L, Rada P, Valverde ÁM, Wahli W et al. PPAR β/δ attenuates hepatic fibrosis by reducing SMAD3 phosphorylation and p300 levels via AMPK in hepatic stellate cells. Biomed. Pharmacother. 2024;179:117303-117303. IF:6,900. (Q1).

Allergic Diseases in Childhood and Adolescence

Montserrat Alvaro Lozano, MD, PhD



MEMBERS

MANAGEMENT

Silvia del Valle Fernandez

RESEARCHER

Rosa Jiménez Feijoo, Jaime Lozano Blasco, Adrianna Machinena Spera, Maria del Mar Folqué Giménez, Mónica Piquer Gibert
PREDOC ASSOCIATED RESEARCHERS
Olga Dominguez Sánchez

During 2024 our team has participated in many clinical trials in the area of food allergy, respiratory allergy and chronic urticaria. Most of them are international trials with the participation of infants, children and adolescents. Other studies have been developed by us in the same fields and also in relation with drug allergy and atopic dermatitis. Our group has also published some works in well known and indexed scientific magazines.

We have been accredited as a "Complexity Asthma Unit with excellence" by the Spanish Pediatric Society of Allergology, Asthma and Clinical Immunology (SEICAP).

We are also conducting some studies for which we have been awarded with national and international prizes and grants. Also we have been involved in the evaluation and accreditation of "Asthma Centres" all through Spain. One of our components is part of the European Academy of Allergology and Clinical Immunology (EAACI) "Quality Committee" being involved in the research and support of centres from an international perspective.

Within our teaching activities, we are conducting a Barcelona University Master in Pediatric Allergology and Clinical Immunology and we are an accredited Centre for the development of the training in "Europeana Pediatric Allergist" by EAACI. These activities rise our research area activities.

Another of our main areas of interest is food allergy and the development of new treatments which are important so our children are protected from anaphylaxis and death. Immunotherapy for food allergy and the use of biologics either in the field of food allergy, asthma and chronic urticaria are also in our research interest. In fact one of our members is an author for the most important international guidelines in the diagnosis and treatment of food allergies. Also one of our department member has collaborated as co-Chair for the international "Food allergy and Anaphylaxis meeting" in 2024.

SELECTED PUBLICATIONS

- Muraro A, de Silva D, Podesta M, Anagnostou A, Cardona V, Halken S et al. 10 practical priorities to prevent and manage serious allergic reactions: GA2LEN ANACare and EFA Anaphylaxis Manifesto. Clin. Transl. Allergy. 2024;14(12):IF:4,600. (Q2).
- Camino A, Pardo J, Bello X, Argiz L, Boyle RJ, Custovic A et al. Whole Exome Sequencing Identifies Epithelial and Immune Dysfunction-Related Biomarkers in Food Protein-Induced Enterocolitis Syndrome. Clin. Exp. Allergy. 2024;54(11):919-929. IF:6,300. (Q1).
- Argiz L, Valsami M, Arasi S, Barni S, Boscia S, Bracaglia G et al.

Clinical-Hematological Changes and Predictors of Severity in Acute Food Protein-Induced Enterocolitis Syndrome Reactions at Oral Food Challenge: A Multicenter Observational Study. J. Allergy Clin. Immunol.-Pract. 2024;12(9)IF:8,200. (Q1).

- Rodríguez Del Río P, Alvaro M, Arasi S, Bazire R, Escudero C, Patel N et al. Evaluation of clinical outcomes of efficacy in food allergen immunotherapy trials, COFAITH EAACI task force. Allergy. 2024;79(4):793-822. IF:12,600. (Q1).

SELECTED PROJECTS

- 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. Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD; Sociedad Española de Inmunología Clínica, Alergia y Asma Pediátrica. 2023-2025. IP: Olga Domínguez Sánchez.
- Tolerancia a huevo en lactantes con APLV y/o dermatitis atópica tras introducción precoz de huevo horneado. Sociedad Española de Inmunología Clínica, Alergia y Asma Pediátrica. 2019-2024. IP: Montserrat Alvaro Lozano.
- Tolerancia a alimentos horneados en niños menores de 5 años alérgicos a proteínas de leche de vaca y huevo. Sociedad Española de Inmunología Clínica, Alergia y Asma Pediátrica. . 2017-2024. IP: Montserrat Alvaro Lozano.
- Genetics of Food Allergy Barcelona Montserrat Alvaro. Max Delbrück Centrum für Molekulare medizin Berlin-Buch. 2021-2025. IP: Montserrat Alvaro Lozano.

SELECTED CLINICAL STUDIES

- Ensayo Clínico de Fase II, doble ciego, aleatorizado, de múltiples dosis, cruzado, de tres tratamientos, tres períodos y seis secuencias, controlado con placebo, para evaluar la eficacia, farmacocinética, farmacodinámica, la seguridad y la tolerabilidad de bromuro de glicopirronio en niños con asma de 6 a menos de 12 años de edad. A Phase II, randomized, double-blind, 3-way cross over,

placebo controlled, multiple dose (2-week treatment in each of the 3 periods), dose range finding study to ev. [CQVM149C2201]. Novartis Farmacéutica, S.A. 2022 IP: Jaime Lozano Blasco.

- Protocolo maestro de tres estudios aleatorizados, controlados con placebo, doble ciegos, multicéntricos, de grupos paralelos de dupilumab en pacientes con urticaria crónica espontánea (UCE) que siguen siendo sintomáticos a pesar del uso de tratamiento antihistamínico H1 en pacientes sin tratamiento previo con omalizumab y en pacientes intolerantes o con respuesta incompleta a omalizumab. (EFC16461-CUPID). Sanofi-Aventis S.A. 2022IP: Montserrat Alvaro Lozano.
- Estudio multicéntrico, aleatorizado, doble ciego, controlado con placebo de 52 semanas de duración para evaluar la eficacia clínica y la seguridad de ligelizumab (QGE031) en la disminución de la sensibilidad a los cacahuets en pacientes con alergia al cacahuete. (CQGE031G12301). Novartis Farmacéutica, S.A. 2022 IP: Montserrat Alvaro Lozano.
- Estudio de 52 semanas de duración, aleatorizado, doble ciego, con doble simulación, de grupos paralelos, multicéntrico, de no inferioridad, para evaluar la tasa de exacerbación, las mediciones adicionales de control del asma y la seguridad en participantes adultos y adolescentes con asma grave con fenotipo eosinofílico tratados con GSK3511294 en comparación con mepolizumab o benralizumab. (206785). Glaxosmithkline, S.A. 2021IP: Jaime Lozano Blasco.

Study of Immune Deficiency Diseases in Paediatrics (GEMDIP)

Laia Alsina Manrique de Lara, MD, PhD & Jordi Antón López, MD, PhD

 **19**
PROJECTS
15 competitive projects
4 non competitive projects

 **30**
CLINICAL TRIALS &
OBSERVATIONAL STUDIES

 **26**
PUBLICATIONS

 **195**
IMPACT FACTOR
7,5 average impact factor

 **81%**
PUBLICATIONS IN 1ST QUARTILE

 **27%**
PUBLICATIONS IN 1ST DECILE

 **19%**
LEADERSHIP

MEMBERS

STAFF RESEARCHER

Gerard Andreu Morera, Manel Carreras Martínez, Montserrat Escuté Amat, Erika Esteve Palau, M^a Araceli Gonzalez Cuevas, Pablo Javier Marchena Yglesias, Ramón Mir Abellán

UNDEFINED

Maria del Carmen Alvarez Moya, Pilar Aparicio García, Antonio Cárdenas Cárdenas, Gemma Donaire Sansó, Gloria Marsal Terés, Encarnación Moreno Castañeda, Elena Reus Calvo, Beatriz Sahún Mairal, Montserrat Sanmartí Villamala, Pilar Torré González

During 2024, the GEMDIP group has consolidated its research activity, making significant advances both in the field of pediatric rheumatology and clinical immunology.

On the rheumatology side, under the leadership of Dr. Jordi Antón, the group has maintained a strong presence in clinical research, with active participation in numerous international multicenter clinical trials evaluating new therapeutic options for pediatric autoimmune diseases. Highlights include phase II and III clinical trials in systemic juvenile idiopathic arthritis, chronic childhood vasculitis, and localized scleroderma. In addition, GEMDIP has led national initiatives focused on developing predictive models of treatment response and has participated actively in the international validation of new classification criteria for juvenile idiopathic arthritis, consolidating collaborations with the Pediatric Rheumatology European Society (PReS).

In parallel, the clinical immunology line, led by Dr. Laia Alsina, has advanced in characterizing immune dysregulation in pediatric patients with secondary immunodeficiencies, particularly focusing on plasma cell biomarkers such as sBCMA and APRIL. Ongoing projects include the development of predictive models of immune recovery after B-cell depleting therapies, with funding from competitive private calls (e.g., Grifols). The team has also contributed to multicenter studies on the impact of immunomodulators on immune ontogeny and has reinforced its position in personalized therapy approaches for pediatric immune disorders.

Jointly, the two teams have strengthened translational research efforts by integrating clinical data, advanced biomarker studies, and functional immune assays. This synergy has led to high-impact scientific production, with publications in leading journals such as *Blood*, *Annals of the Rheumatic Diseases*, and *Science Immunology*. Collaborative work has particularly focused on the characterization of monogenic and secondary immune dysregulation phenotypes in pediatric patients, linking immune dysfunction to clinical outcomes and therapeutic responses.

Overall, GEMDIP's efforts during 2024 have enhanced the group's visibility and leadership in pediatric immune-mediated diseases, fostering innovative diagnostic and therapeutic strategies with direct clinical applicability.

SELECTED PUBLICATIONS

- Sebastián D, Beltrà M, Irazoki A, Sala D, Aparicio P, Aris C et al. TP53INP2-dependent activation of muscle autophagy ameliorates sarcopenia and promotes healthy aging. *Autophagy*. 2024;20(8):1815-1824. IF:14,600. (Q1).
- Marin S, Ballaz A, Gomez C, Marchena P, Lopez P, Francisco I et al. Symptom-related screening programme for early detection of chronic thromboembolic pulmonary hypertension after acute pulmonary embolism: the SYSPE study. *Thorax*. 2024;79(2):144-152. IF:10,800. (Q1).
- 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.* 2024;IF:8,700. (Q1).
- Giménez M, Hernández S, Padullés A, Boix L, Grau S, Badia JM et al. Impact of an antimicrobial stewardship program indicator on the appropriateness of the empiric antibiotic treatment of urinary source *Escherichia coli* bacteraemia. *Int J Antimicrob Agents*. 2024;64(2):107202-107202. IF:4,900. (Q1).

SELECTED PROJECTS

- A CLINICAL INVESTIGATION STUDY TO EVALUATE THE EFFICACY AND SAFETY OF AIRVAULT DURING GRAVITY DELIVERED INTRAVASCULAR INFUSIONS IN A CLINICAL SETTING (SAFE-INFUSION STUDY: AirVault). (CLIN-CIP-001 (AirVault)). Tessen Solutions Limited. 2024. IP: Ramón Mir Abellán.
- Evaluación funcional en pacientes sometidos a artroplastia total de rodilla mediante equilibrio ligamentario convencional comparado con equilibrio guiado con sensor: ensayo clínico

aleatorizado. Parc Sanitari de Sant Joan de Déu -Serveis de Salut Mental. 2021-2024. IP: Juan Castellanos Robles.

- AppATB: an automated, multiplatform, bacteraemia database and antimicrobial stewardship app to improve antibiotics prescription support by adapting it to the local microbial ecosystem. Agaur - Agència de Gestió d'Ajuts Universitaris i de Recerca. 2024-2026. 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. Instituto de Salud Carlos III (ISCIII). 2020-2025. IP: Vicens Diaz de Brito Fernandez.

SELECTED CLINICAL STUDIES

- 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 (estudio SAFE-Infusion). A NON-INFERIORITY RANDOMIZED CLINICAL TRIAL INVESTIGATING EFFICACY AND SAFETY OF AN INNOVATIVE MEDICAL DEVICE IN THE REDUCTION OF MECHANICAL COMPLICATIONS OF PERIPHERAL INTRAVENOUS CATHETERS (SAFE-INFUSION STUDY). (Tada 05-01-11 (ReLink)). TADA Group AB. 2023IP: Ramón Mir Abellán.
- Cirugía guiada personalizada de rodilla GPS® de Exactech®. Exactech® Knee Guided Personalized Surgery (eGPS®): Clinical Study. Exactech, Inc. 2021. IP: Juan Castellanos Robles.
- Long-term treatment of cancer associated VTE: Optimal dose of apixaban: API-CAT STUDY for APIxaban Cancer Associated Thrombosis - API-CAT. APHP Clinical Research and Development Department (DRCD). 2020-2025. IP: Pablo Javier Marchena Yglesias.
- 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. 2021IP: Vicens Diaz de Brito Fernandez.

Infectious Diseases and Microbiome

Carmen Muñoz Almagro, MD, PhD



16

PROJECTS

11 competitive projects
5 non competitive projects



16

CLINICAL TRIALS &
OBSERVATIONAL STUDIES



35

PUBLICATIONS



203

IMPACT FACTOR

5.8 average impact factor



71%

PUBLICATIONS IN 1ST QUARTILE



29%

PUBLICATIONS IN 1ST DECILE



31%

LEADERSHIP

MEMBERS

ASSISTANT RESEARCHER

Miguel Blanco Fuentes, Maria
Cisneros Pérez, Alba Redin Alonso

RESEARCHER

Clàudia Fortuny Guasch, Maria Goretti
López Ramos, Antoni Noguera Julian,
Pedro Brotons de los Reyes, Victoria
Fumadó, Juan José García García,
Cristian Launes Montaña, Silvia Simó
Nebot

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INVESTIGADOR PRE-DOC

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Bonilla, Eneritz Velasco, Joan Vinent
Genestar

TECHNICIAN

Amaresh Pérez Argüello

During 2024, the Pediatric Infectious
Diseases and Microbiome Research
Group participated in 16 national and
international projects, 15 of which
were competitive. These projects
generated 45 publications throughout
the year. Additionally, they facilitated

the hiring of 4 senior postdoctoral
researchers, one predoctoral
researcher, and 2 research assistants
who carried out their work in the
R&D&I Microbiology Laboratory at our
Hospital.

A significant milestone was our
participation in the European VEBIS
project, driven by the European
Centre for Disease Prevention and
Control (ECDC), which investigates
the effectiveness of vaccines against
SARS-CoV-2 and influenza in a
cohort of healthcare workers. In this
study, our group was responsible
for validating the use of saliva as
a sample for detecting the target
viruses, thus improving the comfort of
participating workers. In 2024, three
articles were published presenting the
results of this project.

It is also important to highlight our
involvement in two international
projects on the molecular
epidemiology of invasive
pneumococcal disease: the IRIS
Project, coordinated by the University
of Oxford, and PSerenade, led by the
Johns Hopkins Bloomberg School of
Public Health in the United States.
These studies generated three
publications in 2024.

Regarding the studies led by our
group, we highlight the publication
of an innovative study on the use of
shotgun metagenomics to improve
the microbiological diagnosis of
encephalitis. Several other studies
were also published, including those
on the impact of introducing the
monoclonal antibody nirsevimab for
the prevention of RSV bronchiolitis,
a study on the dynamics of
pneumococcal colonization during the
COVID-19 pandemic lockdown, three
studies on the burden of tuberculosis
disease in pediatrics, and one on the
impact of international travel on gut
microbiota, among others.

SELECTED PUBLICATIONS

- Henares D, Monsalvez V, Brotons
P, Machado ML, Capilla S, Gomila
A et al. Human gut microbiota
composition associated with
international travels. Travel Med.

Infect. Dis. 2024;61:102747-102747.
IF:6,300. [Q1].

- Belman S, Lefrancq N, Nzenze
S, Downs S, du M, SW et al.
Geographical migration and
fitness dynamics of Streptococcus
pneumoniae. Nature.
2024;631(8020):386-392. IF:50,500.
[Q1].
- Agüera M, Soler A, Alejandro C,
Moussalam S, Sala P, Pons G et al.
Nirsevimab immunization's real-
world effectiveness in preventing
severe bronchiolitis: A test-negative
case-control study. Pediatr. Allergy
Immunol. 2024;35(6)IF:4,300. [Q1].
- Noguera A, Latre C, Flores Á.
Availability of paediatric dispersible
fixed-dose combinations of
tuberculosis drugs in Spain. Eur
Respir J. 2024;63(4)IF:17,000. [Q1].

SELECTED PROJECTS

- 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.
(PI23/00049). Fundació Privada
per a la Recerca i la Docència Sant
Joan de Déu - FSJD; Instituto de
Salud Carlos III (ISCIII). 2024-2026.
IP:Carmen Muñoz Almagro.
- Tendencia actual de la enfermedad
neumocócica invasiva pediátrica
(ENI) y su impacto previsible en la
introducción de nuevas vacunas
conjugadas. (PI23/00051). Instituto
de Salud Carlos III (ISCIII). 2024-
2026. IP:Maria Fernández de Sevilla
Estrach.
- Laboratorio de soporte para la
vigilancia epidemiológica molecular
de Streptococcus pneumoniae,
Bordetella pertussis y Neisseria
meningitidis. Agència de Salut
Pública de Catalunya. 2011-3000.
IP:Carmen Muñoz Almagro.
- Vaccine Effectiveness, Burden and
Impact Studies (VEBIS) of COVID-19
and Influenza. European Centre
for Disease Prevention and Control
(ECDC). 2021-2024. IP:Carmen
Muñoz Almagro.
- Estudio multicéntrico retrospectivo-
prospectivo nacional del valor de los
ítems en el diagnóstico de la adenitis
por micobacterias no tuberculosas
y de sus distintas aproximaciones
terapéuticas. (FSJ-ADE-2015-01).
Fundació Privada per a la Recerca
i la Docència Sant Joan de Déu

- FSJD. 2015IP:Antoni Noguera Julian.

SELECTED CLINICAL STUDIES

- Estudio de fase III, abierto, de un solo grupo y con dosis repetidas, para evaluar la seguridad y tolerabilidad, la farmacocinética y la actividad antiviral de maribavir para el tratamiento de la infección por el citomegalovirus (CMV) en niños y adolescentes que han recibido un trasplante de células madre hematopoyéticas (HSCT) o un trasplante de órgano sólido (TOS). 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. 2022IP:Clàudia Fortuny Guasch.
- ESTUDIO DE FASE IB, ABIERTO Y ÚNICO BRAZO PARA EVALUAR LA FARMACOCINÉTICA, LA FARMACODINAMIA Y LA SEGURIDAD DE TOCILIZUMAB EN PACIENTES PEDIÁTRICOS HOSPITALIZADOS CON COVID-19. A PHASE Ib, SINGLE ARM, OPEN-LABEL STUDY EVALUATING THE PHARMACOKINETICS, PHARMACODYNAMICS, AND SAFETY OF TOCILIZUMAB IN PEDIATRIC PATIENTS HOSPITALIZED WITH COVID-19. (WA43811). Roche Diagnostics International Ltd. 2022IP:Clàudia Fortuny Guasch.
- Phase 3, Multicenter, Randomized, Partially Blinded, Palivizumab-Controlled Study to Evaluate the Safety, Efficacy, and Pharmacokinetics of MK-1654 in Infants and Children at Increased Risk for Severe RSV Disease. (MK-1654-007). Merck, Sharp & Dohme de España. S.A. 2021IP:Clàudia Fortuny Guasch.
- "Clinical outcomes of children and adolescents living with HIV and taking DTG-based ART in Europe and Thailand: a European Pregnancy and Paediatric Infections Cohort Collaboration (EPPICC) study". (GSK1349572). Fondazione Penta ETS. 2024IP:Antoni Noguera Julian.

Gut Microbiota

Laura Baldomà Llavínés, PhD

 **11**
PUBLICATIONS

 **56**
IMPACT FACTOR
5.1 average impact factor

 **91%**
PUBLICATIONS IN 1ST QUARTILE

 **36%**
PUBLICATIONS IN 1ST DECILE

 **27%**
LEADERSHIP

MEMBERS

RESEARCHER

Josefa Badia Palacin

POSTDOC ASSOCIATED RESEARCHERS

Sergio Martínez Ruiz, Luzmira Cecilia Cordero Alday, Yenifer Olivo Martínez

Given the key role of intestinal dysbiosis in the development of diseases affecting multiple organs, new therapeutic strategies are increasingly focusing on the gut microbiome. Among these, extracellular vesicles (EVs) produced by beneficial gut bacteria are emerging as promising tools for postbiotic-based therapies.

In 2024, our research group achieved two major breakthroughs in this area. First, we showed that EVs derived from the probiotic *Escherichia coli* Nissle 1917 (EcN) can regulate intestinal serotonin metabolism under inflammatory conditions using an IL-1β-induced inflammation model in Caco-2 cells. Serotonin plays a crucial role in maintaining intestinal homeostasis, and its dysregulation is associated with increased severity of inflammatory bowel disease (IBD). EcN EVs reduced free serotonin levels by upregulating the serotonin transporter SERT through the downregulation of miR-24, miR-200a, TLR4, and NOD1. They also mitigated alterations in tight junction proteins and oxidative stress markers. These findings highlight the therapeutic potential of postbiotic

interventions in IBD, with EcN EVs showing promise in modulating serotonin metabolism and preserving intestinal barrier integrity. This was the first report of the regulation of miR-24 and miR-200a by microbiota/probiotic-derived EVs.

The second major finding was the demonstration of the effectiveness and safety of interventions involving EVs from probiotic and commensal *E. coli* strains in mitigating diarrhea and enhancing immune responses in a preclinical model of rotavirus infection in suckling rats. This study, conducted in collaboration with the Autoimmunity & Immunonutrition group at the University of Barcelona, showed that EVs enhanced both humoral and cellular immune responses against viral infection, improved intestinal maturation and absorptive capacity, and strengthened barrier integrity in a strain-specific manner. These results support the potential of microbiota-derived EVs as a novel, safe strategy to boost neonatal immunity and alleviate symptoms of viral infections, offering an alternative to the use of live probiotic bacteria in early-life therapies.

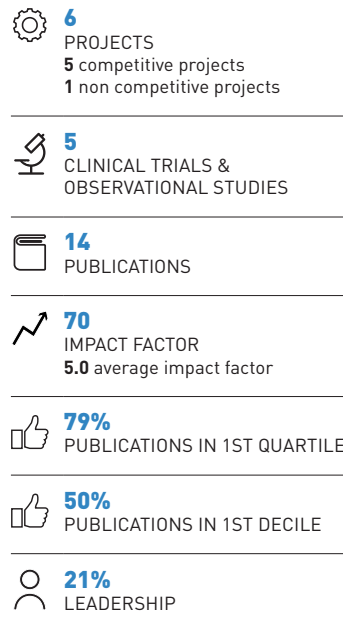
SELECTED PUBLICATIONS

- Cimino C, Sánchez E, Bonaccorso A, Bonilla L, Musumeci T, Badia J et al. In vitro and in vivo studies of ocular topically administered NLC for the treatment of uveal melanoma. *Int. J. Pharm.* 2024;660:124300-124300. IF:5,300. (Q1).
- Olivo Y, Martínez S, Cordero C, Bosch M, Badia J, Baldoma L. Modulation of Serotonin-Related Genes by Extracellular Vesicles of the Probiotic *Escherichia coli* Nissle 1917 in the Interleukin-1β-Induced Inflammation Model of Intestinal Epithelial Cells. *Int. J. Mol. Sci.* 2024;25(10)IF:4,900. (Q1).
- Martínez S, Olivo Y, Cordero C, Rodríguez MJ, Pérez FJ, Badia J et al. Microbiota-Derived Extracellular Vesicles as a Postbiotic Strategy to Alleviate Diarrhea and Enhance Immunity in Rotavirus-Infected Neonatal Rats. *Int. J. Mol. Sci.* 2024;25(2)IF:4,900. (Q1).
- Folle C, Marqués AM, Díaz N, Carvajal P, Sánchez E, Suñer J et al. Gel-Dispersed Nanostructured Lipid Carriers Loading Thymol

Designed for Dermal Pathologies.
Int. J. Nanomed. 2024;19:1225-1248.
IF:6,700. [Q1].

Environment and Complications during Pregnancy

Maria Dolores Gómez Roig, MD, PhD



MEMBERS

ASSISTANT RESEARCHER

Ainhoa Perez Gesali, Concepción Muñoz Lozano, Natàlia Gorina Careta, Patricia Ferrer Aguilar, Laura Mallén Perez, Marc Josep Cahuana Bartra, Laura Almeida Toledano

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INVESTIGADOR PRE-DOC

Diana Lucia Lip Sosa

During 2024, our 'Environment and complications in pregnancy' team will continue to investigate prenatal exposure to substances of abuse (tobacco, alcohol and drugs) and the influence of the environment on maternal and child health by studying exposed cohorts to understand prenatal and postnatal consequences on neurodevelopment and overall health.

Follow-up of the projects "Emotive plus". Impact of a structured prenatal intervention programme to reduce alcohol intake on perinatal and neurodevelopmental outcomes, with the aim of evaluating the impact of a structured prenatal intervention programme to reduce alcohol intake during pregnancy on foetal growth restriction and other perinatal outcomes, as well as on foetal and infant neurodevelopment, currently under analysis. And the project 'Influence of alcohol consumption during pregnancy on placental and foetal genomics, and its impact on placental function and postnatal neurodevelopment' whose objective is to determine whether prenatal alcohol consumption produces molecular changes in the placenta and/or umbilical cord blood, thus establishing a possible aetiopathogenesis or correlation with foetal growth restriction and foetal alcohol spectrum disorders.

We also highlight the study of prenatal neurodevelopment through innovative techniques in which we use frequency following response (FFR) as a biomarker of neurocognitive development in newborns with alcohol exposure.

In addition, we have obtained funding for several competitive and private projects of which the following stand out: Spanish Research Network on Maternal, Newborn, Child and Developmental Health (RICORS-SAMID), RICORS Code: RD24/0013/0004, where we communicate the importance of preconceptional and prenatal exposure to environmental pollutants and their influence on future health.

Impact of the environment (exposome) on sexual and reproductive health in a national multicentre birth cohort. La Marató 2024. Sexual and reproductive health. Our aim is to investigate the relationship between the exposome (alcohol and tobacco consumption, diet, endocrine disruptors, air pollution) during conception, childhood and early adulthood, with sexual and reproductive health: gynaecological pathologies, pubertal

development, ovarian function and seminal quality.

SELECTED PUBLICATIONS

- Almeida L, Navarro E, Sebastiani G, Ferrero SI, Ferrer P, Garcia O et al. Effect of prenatal phthalate exposure on fetal development and maternal/neonatal health consequences: A systematic review. Sci. Total Environ. 2024;950:175080-175080. IF:8,200. (Q1).
- 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. 2024;IF:8,700. (Q1).
- Knox B, Güil N, Basagaña X, Cserbik D, Dadvand P, Foraster M et al. Prenatal exposure to per- and polyfluoroalkyl substances, fetoplacental hemodynamics, and fetal growth. Environ. Int. 2024;193:109090-109090. IF:10,300. (Q1).
- Murillo C, Rueda C, Larroya M, Boada D, Grau L, Ponce J et al. Intra-amniotic infection and/or inflammation is associated with fetal cardiac concentric hypertrophy and diastolic dysfunction in preterm labor and preterm prelabor rupture of membranes. Am. J. Obstet. Gynecol. 2024;230(6)IF:8,700. (Q1).

SELECTED PROJECTS

- Consumo de alcohol prenatal, marcadores moleculares, y su repercusión en la función placentaria y el neurodesarrollo. (PI23/00053). Instituto de Salud Carlos III (ISCIII). 2024-2026. IP: Maria Dolores Gómez Roig.
- Impacto de un programa de intervención prenatal estructurado, de disminución de consumo de alcohol, en los resultados perinatales y de neurodesarrollo. (PI20/00490). Instituto de Salud Carlos III (ISCIII). 2021-2025. IP: Maria Dolores Gómez Roig.
- Spanish network in maternal, neonatal, child and developmental health research (RICORS- SAMID). Instituto de Salud Carlos III (ISCIII). 2024-2027. IP: Maria Dolores Gómez Roig.
- Impact of the environment

(exposome) on sexual and reproductive health in a national multicenter birth cohort. Fundació La Marató de TV3. 2024 -2027. IP: Maria Dolores Gómez Roig.

SELECTED CLINICAL STUDIES

- Balón de Cook versus dinoprostona vaginal para la inducción del parto a término en la restricción del crecimiento intrauterino (estudio COLIGROW). (COLIGROW). Herraiz. 2023IP:Edurne Mazarico Gallego.
- Efficacy of low dose acetylsalicylic acid in preventing adverse maternal and perinatal outcomes in SARS-CoV-2 infected pregnant women. (SARA). Fundació Privada ISGLOBAL. 2022IP:Edurne Mazarico Gallego.
- Optimización del manejo antenatal de mujeres con amenaza de parto pretérmino mediante modelos de predicción: estudio clínico randomizado multicéntrico abierto (OPTIM-PTL). (OPTIM-PTL). Fundació de Recerca Clínic Barcelona-Institut d'Investigacions Biomèdiques August Pi i Sunyer. 2022IP:Silvia - Irena Ferrero Martínez.
- Tratamiento del crecimiento intrauterino restringido precoz con heparina de bajo peso molecular: Ensayo Clínico Randomizado (TRACIP). (FSJD-TRACIP-2017). Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 2017IP:Edurne Mazarico Gallego.

Cardiovascular Diseases and Child Development

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

 **16**
PROJECTS
10 competitive projects
6 non competitive projects

 **8**
CLINICAL TRIALS &
OBSERVATIONAL STUDIES

 **22**
PUBLICATIONS

 **149**
IMPACT FACTOR
6,8 average impact factor

 **77%**
PUBLICATIONS IN 1ST QUARTILE

 **23%**
PUBLICATIONS IN 1ST DECILE

 **27%**
LEADERSHIP

MEMBERS

STAFF RESEARCHER

Maria Pia Cassanello Peñarroya, Sonia Carriqui Arenas, Esther Aurenanz Clemente, Jose Carlos Cruzalegui Gómez, Laia Brunet García, Maria Clara Escobar Díaz, Bosco Alejandro Moscoso Garrido, Carin Cristina Walter, Sergio César Diaz, Isaac Moll Adrian, Ana Pilar García García

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Patricia Garcia Cañadilla

INVESTIGADOR PRE-DOC

Adriana Modrego Muñoz

TECHNICIAN

Cristina Ruiz Herguido

UNDEFINED

Marta Pérez Ordóñez

In 2024, our group continued to

expand the research on cardiovascular diseases in pediatric populations continued to focus on improving the prevention, diagnosis, and treatment of cardiovascular conditions in children and adolescents.

We are leading several initiatives that integrate clinical trials, genetic research, and advanced diagnostic tools to develop predictive models based on large volumes of clinical and imaging data analysis. Through newly secured national and European funding, we are advancing these efforts to identify at-risk pediatric patients at an early stage, thereby facilitating more targeted and personalized interventions.

As a highlight, our group contributed to high-impact publications, including the PANORAMA-HF trial, a randomized, multicenter study that demonstrated the potential of Sacubitril/Valsartan in improving outcomes for pediatric heart failure patients. Additionally, our study on Continuous Rhythm Monitoring With Implanted Loop Recorders in Children and Adolescents With Brugada Syndrome provided valuable insights into using implanted devices for real-time arrhythmia monitoring, advancing personalized care for young patients with this condition. In addition to our clinical work, we remain dedicated to training the next generation of cardiovascular researchers and collaborating with leading academic institutions. Through our ongoing projects and collaborations, we are committed to improving the lives of young patients affected by cardiovascular diseases.

SELECTED PUBLICATIONS

- Shaddy R, Burch M, Kantor PF, Solar S, Garito T, Zhang S et al. Sacubitril/Valsartan in Pediatric Heart Failure (PANORAMA-HF): A Randomized, Multicenter, Double-Blind Trial. *Circulation*. 2024;150(22):1756-1766. IF:35,600. (Q1).
- Bergonti M, Ciconte G, Cruzalegui JC, Crotti L, Arbelo E, Casella M et al. Continuous Rhythm Monitoring With Implanted Loop Recorders in Children and Adolescents With Brugada Syndrome. *J. Am. Coll. Cardiol*. 2024;84(10):921-933. IF:21,700. (Q1).
- Bertrandt RA, Gist K, Hasson D,

Zang H, Reichle G, Krawczeski C et al. Cardiac Surgery-Associated Acute Kidney Injury in Neonates Undergoing the Norwood Operation: Retrospective Analysis of the Multicenter Neonatal and Pediatric Heart and Renal Outcomes Network Dataset, 2015-2018. *Pediatr. Crit. Care Med*. 2024;25(5):246-257. IF:4,100. (Q1).

- Cutler MJ, Eckhardt LL, Kaufman ES, Arbelo E, Behr ER, Brugada P et al. Clinical Management of Brugada Syndrome: Commentary From the Experts. *Circ.-Arrhythmia Electrophysiol*. 2024;17(1)IF:9,100. (Q1).

SELECTED PROJECTS

- Artificial intelligence based monitoring system for the personalized care of children with congenital heart disease (AI-COR). (202315-10). Fundació La Marató de TV3; Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 2024-2027. IP:Patricia Garcia Cañadilla.
- Identificación de predictores de arritmias cardíacas y muerte súbita en pacientes pediátricos afectados de enfermedades neuromusculares. (PI21/00094). Instituto de Salud Carlos III (ISCIII). 2022-2026. IP:Georgia Sarquella Brugada.
- Evaluation of Electrocardiographic Data from High-risk Cardiac Patients Using WILLEM cardiologist-level Artificial Intelligence software. (PIC024-21_HGV). Idoven 1903 S.L. 2024 IP: Georgia Sarquella Brugada.
- Explorando los límites del daño cerebral irreversible en un modelo experimental pediátrico de parada circulatoria: utilidad de la autoregulación cerebral. Instituto de Salud Carlos III (ISCIII). 2024-2027. IP: Joan Sánchez de Toledo.

SELECTED CLINICAL STUDIES

- 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. 2024IP:Georgia Sarquella Brugada.
- Multi-Center, Multi-National, Open-Label, Efficacy and Safety

Study of Etripamil Nasal Spray in Pediatric Patients with Paroxysmal Supraventricular Tachycardia. (MSP-2017-1265(NODE-202)).

Milestone Pharmaceuticals inc. 2023IP:Georgia Sarquella Brugada.

- 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). Estudio clínico de fase 2/3, aleatorizado, doble ciego y controlado con plac. (MK-1242-036). Merck, Sharp & Dohme de España. S.A. 2023IP: Sergio César Diaz.
- Evaluation of Electrocardiographic Data from High-risk Cardiac Patients Using WILLEM cardiologist-level Artificial Intelligence software. Idoven 1903 S.L. 2024. IP: Georgia Sarquella.

Immune and Respiratory Dysfunction in Critically Ill Children

Francisco José Cambra Lasaosa



6

PROJECTS

6 competitive projects

0 non competitive projects



4

CLINICAL TRIALS &
OBSERVATIONAL STUDIES



21

PUBLICATIONS



72

IMPACT FACTOR

3,4 average impact factor



62%

PUBLICATIONS IN 1ST QUARTILE



14%

PUBLICATIONS IN 1ST DECILE



57%

LEADERSHIP

MEMBERS

STAFF RESEARCHER

Anna Solé Ribalta, Carmina Guitart Pardellans, Mónica Balaguer Gargallo, Elisabeth Esteban Torne, Iolanda Jordán García, Martí Pons Òdena

ASSISTANT RESEARCHER

Vanessa Andrino Estrecha, Nuria Millán García del Real, Elena Fresán Ruiz, Sergio Benito Fernández, Lluïsa Hernandez Platero, Carme Alejandre Galobardes, Patricia Corniero Alonso, Aida Felipe Villalobos, Susana Segura Matute, David Vila Pérez

COLLABORATOR RESEARCHER

Montserrat Esquerda Areste

RESEARCHER

Maria Ciudad Celdrán, Sara Bobillo Perez, Roi Campos Rodriguez, Aitor López González, Anna Solé Ribalta, Monica Girona Alarcon, Carmina Guitart Pardellans, Mónica Balaguer Gargallo, Elisabeth Esteban Torne, Iolanda Jordán García, Martí Pons Òdena

PROFESIONAL

Enrique Del Campo Garcia-Ramos, Ignacio Del Castillo Velilla, Mireia Soler Lecha, Javier Trastoy Quintela

UNDEFINED:

Sergi Huerta Calpe, Ricardo Suárez Ramírez

During the year 2024, 40 communications have been presented at national and international conferences and 29 articles have been published in high impact factor journals, four of which are highlighted in the corresponding section.

In scientific production in 2024, we highlight the publication of 29 articles related to the Group's lines of research in high impact journals. Four of them are highlighted in the corresponding section.

We have participated in four clinical trials, mentioned in the corresponding section.

We have participated in the supervision of 6 doctoral theses. Three in the area of PICU and another three in collaboration with other specialities.

In the field of Artificial Intelligence research, we continue with the development of the international project led by our unit with the participation of several European paediatric hospitals entitled Development, validation and pilot testing of models based on machine learning for the prediction and early detection of sepsis in paediatric intensive care and emergency units. PESERS 2.0 project.

A grant has been obtained from the Ministry of Science and Innovation. State research agency for the work Development of new intelligent tools for education and training in neonatal and paediatric mechanical ventilation - SMARTLUNG

In which we participate in collaboration with Inbentus and Universitat Politècnica de Catalunya.

Continuation of the projects ARDS in CHILDREN and ECMO initiation strategies impact on NEURO-DEVELOPMENT - ASCEND.

Use of electrical impedance tomography in the ventilation of patients with severe acute bronchiolitis

We have collaborated with various scientific societies and institutions such as the Borja Institute of Bioethics and the Spanish Society of Paediatric Intensive Care and the Latin American Society of Paediatric Intensive Care.

Awards received for the work Codesign of improvements in the experience of families of infants with bronchiolitis in the PICU. Chiesi Farmaceutici.

SELECTED PUBLICATIONS

- González C, Girona M, Casaldàliga A, Bobillo S, Fresán E, Solé A et al. Risk factors for multidrug-resistant bacteria in critically ill children and MDR score development. Eur. J. Pediatr. 2024;183(12):5255-5265. IF:3,000. (Q1).
- García R, Fresán E, Guitart C, Bobillo S, Jordán I. The Use of Ceftazidime-Avibactam in a Pediatric Intensive Care Unit-An Observational Prospective Study. Antibiotics-Basel. 2024;13(11)IF:4,300. (Q1).
- Bermúdez L, Mayordomo J, Miñambres M, Reyes S, Valencia J, Lopez YM et al. Implications of sedation during the use of noninvasive ventilation in children with acute respiratory failure (SEDANIV Study). Crit. Care. 2024;28(1):235-235. IF:8,800. (Q1).
- Mortamet G, Milesi C, Baudin F, Yalindag N, Kneyber M, Pons M. Weaning from noninvasive respiratory support in children in acute settings: Expert consensus statement using modified Delphi methodology. Pediatr. Pulmonol. 2024;59(2):348-354. IF:2,700. (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. (PI23/00055). Instituto de Salud Carlos III (ISCIII). 2024-2026. IP: Iolanda Jordán García.
- Desarrollo de un modelo predictivo con inteligencia artificial para la detección temprana de insuficiencia respiratoria en pacientes pediátricos. Instituto de Salud Carlos III (ISCIII). 2024-2027. Mónica Balaguer Gargallo.
- PCIH2402 - Ajuts "Post-FSE HSJD" (Starting) - Finançament d'ajuts "Post-FSE HSJD" (Starting) per tal que els i les residents que hagin demostrat el seu interès en la recerca puguin finalitzar els projectes iniciats al llarg de la seva residència. Iolanda Jordan Garcia i Ana Alarcón Allen - Centre de Crítics (Unitat de cures intensives pediàtriques i neonatals). Hospital Sant Joan de Déu - Esplugues HSJD. 2024-2025. IP: Iolanda Jordán García, Ana Alarcon Allen.

de LJPC-501 en pacientes pediátricos de > 2 a 17 años de edad con hipotensión resistente a la catecolamina asociada a choque distributivo. La Jolla Pharmaceutical Company. 2018-2024. IP: Iolanda Jordán García.

SELECTED CLINICAL STUDIES

- 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. 2021 IP: Iolanda Jordán García.
- Estudio abierto, de un solo brazo para evaluar la farmacocinética, seguridad y tolerabilidad, y para explorar los resultados clínicos del tratamiento con dosis única o múltiple de zanamivir IV en neonatos e infantes menores de 6 meses con infección por gripe confirmada complicada. 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. 2020 IP: Mónica Balaguer Gargallo.
- Estudio aleatorizado, controlado con placebo, doble ciego y multicéntrico de la eficacia y la seguridad



7.1 MEDICINE AND PEDIATRIC SCIENCE AREA

7.1.3 Paediatric Cancer

Paediatric Cancer Epigenetics

Translational Genomics

Sarcomas and Histiocytosis

Paediatric Cancer Treatment

Leukaemia and Paediatric Haematology Disorders

Molecular Pharmacology and Experimental Therapeutics (MPET)

Paediatric Cancer Epigenetics

Alexandra Avgustinova, PhD



5
PROJECTS
4 competitive projects
1 non competitive projects



2
PUBLICATIONS



40
IMPACT FACTOR
19,8 average impact factor



100%
PUBLICATIONS IN 1ST QUARTILE



100%
PUBLICATIONS IN 1ST DECILE

MEMBERS

POSTDOC ASSOCIATED RESEARCHERS

Paula Bujosa Rodríguez, Carlos Javier Rodríguez Hernandez

During 2024, our group has made significant progress in understanding the biology of aggressive paediatric cancers, with a focus on malignant rhabdoid tumours (MRT). Leveraging state-of-the-art technologies, including single-cell multiome and spatial transcriptomics, we have generated and analysed an expanding collection of patient-derived samples. These efforts are yielding novel insights into inter-patient heterogeneity and revealing distinct intratumoural niches that may inform future targeted therapies. In parallel, we have initiated a new research line aimed at uncovering the determinants of immune checkpoint inhibitor response in childhood cancers. Through longitudinal liquid biopsy sampling and integrative analysis, we have demonstrated proof-of-concept for tracking anti-tumour T cell responses over time. Importantly, we successfully identified tumour-reactive TCRs from both the tumour microenvironment and peripheral blood, laying the groundwork for future immune monitoring and therapeutic strategies. We have also advanced the

development of genomically engineered pluripotent stem cell models of paediatric cancers. These models are beginning to offer new platforms for mechanistic studies and therapeutic testing in a controlled and scalable system.

Our research efforts have been supported by several competitive grants awarded in 2024, including the 70% Survival Challenge (Fundación AECC), Consolidación Investigadora (AEI), and Plan Nacional (AEI). These recognitions reflect the growing impact and translational potential of our work.

SELECTED PUBLICATIONS

- Lorito N, Subbiani A, Smiriglia A, Bacci M, Bonechi F, Tronci L et al. FADS1/2 control lipid metabolism and ferroptosis susceptibility in triple-negative breast cancer. *EMBO Mol. Med.* 2024;16(7):1533-1559. IF:9,000. (Q1).
- Sanchez E, Muiños F, Pinheiro M, González V, Rodríguez CJ, Avgustinova A et al. Origins of Second Malignancies in Children and Mutational Footprint of Chemotherapy in Normal Tissues. *Cancer Discov.* 2024;14(6):953-964. IF:30,600. (Q1).

SELECTED PROJECTS

- ONCO-COMP_Oncogenic competence during development – When, Where and Why?. (101076506). European Commission; Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 2023-2028. IP:Alexandra Avgustinova.
- Ayudas para contratos predoctorales para la formación de doctores 2021. (PRE2021-098532). Ministerio de Economía Y Competitividad (MINECO). 2022-2024. IP:Alexandra Avgustinova.
- GLEBioassay_Nano-Monitoring of Cancer Immunotherapy Efficiency: The Lateral Electrophoretic Bioassay platform. (AC21_2/00045). Instituto de Salud Carlos III (ISCIII). 2022-2025. IP:Carlos Javier Rodríguez Hernandez.
- Ayudas para contratos Ramón y Cajal (RYC) 2019. Beneficiario: Alexandra Avgustinova. (RYC2019-027738-I). Ministerio de Economía Y Competitividad (MINECO). 2020-2025. IP:Alexandra Avgustinova.

Translational Genomics

Cinzia Emilia Lavarino, PhD



9
PROJECTS
4 competitive projects
5 non competitive projects



5
CLINICAL TRIALS &
OBSERVATIONAL STUDIES



11
PUBLICATIONS



57
IMPACT FACTOR
5,2 average impact factor



46%
PUBLICATIONS IN 1ST QUARTILE



18%
PUBLICATIONS IN 1ST DECILE



0%
LEADERSHIP

MEMBERS

ASSISTANT RESEARCHER

Alba Parra Checa

RESEARCHER

Héctor Salvador Hernández

POSTDOC ASSOCIATED RESEARCHERS:

Marta García López

TECHNICIAN

Júlia Gallego Santos, Sonia Paco Mercader

UNDEFINED

Sara Garcia Palomino

During 2024, our research group was awarded two competitive national projects from the Instituto de Salud Carlos III (ISCIII) and the Sociedad Española de Hematología y Oncología Pediátricas (SEHOP). These grants have significantly enhanced our research focus on understanding the molecular mechanisms underlying high-risk neuroblastoma. One of the projects enables us to implement a multi-omic approach combined with high-throughput drug screening to investigate therapy resistance in patients who do not respond to treatment. Simultaneously, we are conducting a dedicated study on the

mechanisms of resistance to anti-GD2 immunotherapy in aggressive neuroblastoma cases. These projects build upon previous private funding, which allowed us to generate enough preliminary data to secure competitive funding. Additionally, we are continuing several projects that started before 2024, focusing on the development of epigenetic classifiers for pediatric cancers. We are also actively participating in the multi-center SEHOP-PENCIL study (Personalized Medicine for Cancer in Children in Spain) and other related initiatives. In parallel with our research activities, our group published 14 scientific articles. We made notable contributions to the fields of pediatric oncology, neurogenetic disorders, and vascular anomalies. Some highlights of our work include studies on the origins of secondary malignancies in children and the mutational changes caused by chemotherapy in normal tissues. We also advanced the management of high-risk neuroblastoma through novel immunotherapy approaches and optimized DNA methylation-based tumor classification methods across international centers. Additionally, we investigated the genetic predisposition to cancer through the study of TP53 haplotypes, and identified risk factors for radiation recall reactions in pediatric patients.

SELECTED CLINICAL STUDIES

- Ensayo de Fase I/II, Abierto y de un solo brazo para Evaluar la Farmacocinética, Seguridad/ Tolerabilidad y Eficacia de la Formulaci3n Granulada de Selumetinib en ni1os de ≥ 1 a < 7 A1os con Neurofibromas Plexiformes (NP) Sintomáticos e Inoperables relacionados con Neurofibromatosis Tipo 1 (NF1) (SPRINKLE). (D1346C00004). Astrazeneca Farmaceutica Spain, S.A. 2021IP:H3ctor Salvador Hern3ndez.
- Ensayo fase I, de un solo brazo, secuencial, para evaluar el efecto de los alimentos sobre la seguridad y farmacocin3tica de selumetinib despu3s de dosis m3ltiples en ni1os adolescentes con neurofibromas plexiformes (NP) asociados a neurofibromatosis tipo 1 (NF1). A Phase I, Single-Arm, Sequential

Study to Evaluate the Effect of Food on the Gastrointestinal Toxicity and Pharmacokinetics of Selumetinib after Multiple Doses in Adolescent Children with Neurofibromatosis Type 1 (NF1) Related Plexiform Neurofibromas (PN). (D1346C00015). Astrazeneca Farmaceutica Spain, S.A. 2021IP:H3ctor Salvador Hern3ndez.

Sarcomas and Histiocytosis

Jaume Mora Graupera, MD, PhD

 **23**
PROJECTS
13 competitive projects
10 non competitive projects

 **16**
CLINICAL TRIALS &
OBSERVATIONAL STUDIES

 **22**
PUBLICATIONS

 **99**
IMPACT FACTOR
4,5 average impact factor

 **73%**
PUBLICATIONS IN 1ST QUARTILE

 **5%**
PUBLICATIONS IN 1ST DECILE

 **46%**
LEADERSHIP

MEMBERS

ASSISTANT RESEARCHER

Giancarlo Castellano , Anna Felip i Badia, Xenia Fiego Masriera, Carla Rios Astorch, Jara Martin Serrano, Irene Cuervas Oliveras, Sara P3rez Jaume

MANAGEMENT

Gonçalo Martins da Costa Pereira Rodrigues

COLLABORATOR RESEARCHER

Maria Inmaculada Hernandez Mu1oz

RESEARCHER

Sandra Castillo Diez, Silvia Mateo Lozano, Sara S3nchez Molina, Maite Gorostegui Obanos, Alicia Casta1eda Heredia, Lucas Krauel Gim3nez-Salinas, Moira Garraus Oneca

POSTDOC ASSOCIATED RESEARCHERS

Estela Prada Varela, Diego Vel3zquez S3nchez, Elisabet Figuerola Bou

INVESTIGADOR PRE-DOC

Pablo T3boas Out3n, Mar3a S3nchez Jim3nez

2024 highlight has been the publication in Cancer Discovery, a major impact journal, of the

investigation initiated 9 years earlier and performed in collaboration with the IRB group led by Nuria Lopez-Bigas of the cell of origin. The death of Marta in 2012 of a second malignant tumor, sparked the interest and with the undeclined support of her family, we led the investigation of why some children develop multiple malignancies during development. This study features the most important characteristics of PCCB research: driven by the interest to understand children's cancer, fostered by families and donors and in close collaboration with our joint venture centers like IRB.

Another highlight of the year has been the finalization of the institutional agreement between the Institute Josep Carreras (IJC) and the PCCB with the nomination of Pablo Menendez as the coordinator of the IJC/PCCB Leukemia laboratory. The formal agreement between IJC and PCCB with a planned investment of 10 M€ in the next 4 years will culminate with the 2025 opening of the new Laboratory and initial recruitment of the new Pls.

SELECTED PUBLICATIONS

- Mahnoor S, Molnar C, Velázquez D, Reina J, Llamazares S, Heinen JP et al. Human EWS-FLI protein levels and neomorphic functions show a complex, function-specific dose-response relationship in Drosophila. Open Biol. 2024;14(7):240043-240043. IF: 4,500. (Q1).
- Sanchez E, Muiños F, Pinheiro M, González V, Rodriguez CJ, Avgustinova A et al. Origins of Second Malignancies in Children and Mutational Footprint of Chemotherapy in Normal Tissues. Cancer Discov. 2024;14(6):953-964. IF:30,600. (Q1).
- Gorostegui M, Muñoz JP, Pérez S, Simao M, Cristina E, Garraus M et al. Management of High-Risk Neuroblastoma with Soft-Tissue-Only Disease in the Era of Anti-GD2 Immunotherapy. Cancers. 2024;16(9)IF:4,500. (Q1).
- Aschero MR, Ganievich D, Lamas G, Restrepo CA, Ottaviani D, Zugbi S et al. Immunohistochemical expression of TFF1 is a marker of poor prognosis in retinoblastoma. Pediatr Blood Cancer. 2024;71(1) IF:2,400. (Q1).

SELECTED PROJECTS

- Ayuda Ramon y Cajal. Beneficiari: Sandra Castillo. (RYC2022-035574-I). Ministerio De Ciencia E Innovacion. 2024-2029. IP:Sandra Castillo Diez.
- Investigo 2022_Dr. Jaume Mora. (100031TC3). Agaur - Agència de Gestió d'Ajuts Universitaris i de Recerca. 2022-2024. IP: Jaume Mora Graupera.
- Drosophila models for the study of pediatric cancer. Clients diversos. 2021-3000. IP: Jaume Mora Graupera.
- Disrupción de enhancers: la nueva generación de terapia epigenética en el sarcoma de Ewing. Instituto de Salud Carlos III (ISCIII). 2024-2027. IP: Jaume Mora Graupera.

SELECTED CLINICAL STUDIES

- A phase II trial of Lutetium-DOTATATE in children with primary refractory or relapsed high-risk neuroblastoma. (Lu-DO-N). Karolinska Institutet. 2024IP:Maite Gorostegui Obanos.

Paediatric Cancer Treatment

Angel Montero Carcaboso, PhD

 **19**
PROJECTS
11 competitive projects
8 non competitive projects

 **2**
CLINICAL TRIALS &
OBSERVATIONAL STUDIES

 **23**
PUBLICATIONS

 **160**
IMPACT FACTOR
7,0 average impact factor

 **74%**
PUBLICATIONS IN 1ST QUARTILE

 **35%**
PUBLICATIONS IN 1ST DECILE

 **26%**
LEADERSHIP

MEMBERS

POSTDOC ASSOCIATED RESEARCHERS

Maria del Rosario Aschero

PREDOC ASSOCIATED RESEARCHER

Federica Marino , Raúl Mañogil Millán,
Leire Balaguer Lluna, Nuria Martinez
Velasco, Clàudia Resa Parés

ASSISTANT RESEARCHER

Chao Liang , Víctor Burgueño
Sandoval, Mercè Baulenas Farrés

TECHNICIAN

Ainhoa Cantón Pérez

COLLABORATOR RESEARCHERS

Guillermo Chantada , Ofelia Cruz
Martínez, Andrés Morales La Madrid

The mission of the group is to develop novel therapies for pediatric patients with solid cancers, with focus on pharmaceutical innovation and drug delivery. In this field, the main 2024 impact was achieving clinical translation (regulatory approval for a Phase 1 trial) of a local SN-38 delivery system invented by us in collaboration with Jose Tornero at the Universitat Politècnica de Catalunya. The clinical trial is designated "First-in-paediatrics, open label,

exploratory, externally controlled clinical trial to evaluate safety, efficacy and pharmacokinetics of 7-ethyl-10-hydroxy-camptothecin -SN-38- formulated as a biocompatible polymeric nanofiber membrane -CEB-01- for treatment, in addition to standard of care, of paediatric patients from birth to less than 18 years of age with a locally resectable tumours in comparison to standard of care" (Eudra CT: 2024-520054-38-00). Another of our inventions, "G2B-002 for the treatment of gliomas", achieved the status of orphan drug designation of the European Medicines Agency in 2024, which is an important milestone for facilitating clinical translation.

We participated in more than 20 publications in the field of pediatric cancer and pharmaceutical sciences in 2024. For instance, we collaborated with Mariella Filbin (Dana-Farber/ Boston Children's Hospital) to discover new vulnerabilities of the G34R-mutant diffuse hemispheric gliomas (Liu et al, Cancer Cell, 2024), or with Paula Schaiquevich (Hospital Garrahan) to study the mechanisms of acquired pharmacological resistance of retinoblastoma (Cancela et al, IOVS, 2024).

Three of our students obtained the PhD degree during 2024: Mercè Baulenas, Leire Balaguer and Víctor Burgueño.

SELECTED PUBLICATIONS

- Cancela MB, Winter U, Zugbi S, Dinardi M, Alves da Quinta D, Aschero MR et al. Mimicking Retinoblastoma Treatment With Repeated Topotecan or Melphalan Develops Cross-Resistance to Classic Agents But Not to Repurposed Drugs. Invest. Ophthalmol. Vis. Sci. 2024;65(14):14-14. IF:5,000. (Q1).
- Liu I, Alencastro Veiga Cruzeiro G, Bjerke L, Rogers RF, Grabovska Y, Beck A et al. Article GABAergic neuronal lineage development determines clinically actionable targets in diffuse hemispheric glioma, H3G34-mutant. Cancer Cell. 2024;42(9)IF:48,800. (Q1).
- Pascual G, McIntyre B, Giudice AM, Alikarami F, Morrissey A, Matlaga S et al. Targeting GPC2 on Intraocular and CNS Metastatic Retinoblastomas with Local and

Systemic Delivery of CAR T Cells. Clin. Cancer Res. 2024;30(16):3578-3591. IF:10,400. (Q1).

Panisello,C,Aschero,MR,Martínez,A,Roca,H,Carabelli,J,Pradenas,E et al. NSGS MICE HUMANIZED WITH CORD BLOOD CD34NEG MONONUCLEAR CELLS SHOW SUSTAINED AND FUNCTIONAL MYELOID -LYMPHOID REPRESENTATION WITH LIMITED GRAFT -VERSUS -HOST-DISEASE. 53rd Annual Scientific Meeting of the International-Society-for-Experimental-Hematology (ISEH). 2024. Chicago. Netherlands:Elsevier BV. 2024 p.104466.

SELECTED PROJECTS

- GLIOMATCH_The malignant Glioma immuno-oncology matchmaker: towards data-driven precision medicine using spatially resolved radio-multiomics. (101136670). European Commission; Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 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 alogénicas, asociadas con CART anti-IL13Ra2 en pacientes con tumor difuso intrínseco de tronco (DIPG) (fase Ib). (ICI23/00063). Instituto de Salud Carlos III (ISCIII). 2024-2027. IP:Andrés Morales La Madrid.
- Desarrollo de una inmunoterapia innovadora adoptiva de células CAR-T para sarcoma de Ewing - CARITES. (PLEC2022-009416). Ministerio De Ciencia E Innovacion. 2022-2025. IP:Angel Montero Carcaboso.
- Potenciació de la infecció i oncolisi de l'adenovirus VCN-01 amb topotecan. (SLT033/23/000112). Generalitat de Catalunya. 2023-2024. IP:Angel Montero Carcaboso.

SELECTED CLINICAL STUDIES

- A Phase 3, Randomized, International Multicenter Trial of DAY101 Monotherapy Versus Standard of Care Chemotherapy in Patients with Pediatric Low-Grade Glioma Harboring an Activating RAF Alteration Requiring First-Line

Systemic Therapy. (DAY101-002). Day One Biopharmaceuticals. 2023IP:Ofelia Cruz Martínez.

- SIOP Ependimoma II - Programa clínico internacional para el diagnóstico y tratamiento de niños, adolescentes y adultos jóvenes con ependimoma. (ET-13-002). Sociedad Española de Hematología y Oncología Pediátricas. 2017IP:Ofelia Cruz Martínez.
- Phase Ib Clinical Trial on the Safety of Immunotherapy With Autologous Dendritic Cells Primed With Lysate Allogeneic Tumor Lines in Patients With Diffuse Intrinsic Pontine Glioma (DIPG). (FSJD-DIPG-DC). Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 2016IP:Andrés Morales La Madrid.
- Estudio prospectivo internacional en niños mayores de 3 a 5 años con meduloblastoma de riesgo estándar clínico de perfil biológico de bajo riesgo. (SIOP - PNET 5 MB - LR). Sociedad Española de Hematología y Oncología Pediátricas. 2016IP:Ofelia Cruz Martínez,Vicente Santa-María López.

Leukaemia and Paediatric Haematology Disorders

Nerea Vega García



12

PROJECTS

7 competitive projects

5 non competitive projects



53

CLINICAL TRIALS &

OBSERVATIONAL STUDIES



27

PUBLICATIONS



167

IMPACT FACTOR

6,2 average impact factor



78%

PUBLICATIONS IN 1ST QUARTILE



26%

PUBLICATIONS IN 1ST DECILE



15%

LEADERSHIP

MEMBERS

RESEARCHER

Mireia Camós Guijosa, Nuria Conde Cuevas, José Luis Dapena Díaz, Anna Faura Morros, Elisa González Forster, Ignacio Mario Isola, Anna Monter Rovira, Sara Montesdeoca Romero, Edurne Sarrate Garcia, Maria Solsona Gadea, Julia Marsal Ricoma, Ruben Berrueco Moreno, Albert Català Temprano, Veronica Celis Passini, Susana Rives Solà, Anna Ruiz Llobet, Montserrat Torredadell Burriel

POSTDOC ASSOCIATED RESEARCHERS

Elena Esperanza Cebollada

INVESTIGADOR PRE-DOC

Joan Pera Garcia, Clara Vicente Garces, Susanna Gassiot Riu, Maria Trabazo del Castillo, Anna Alonso Saladrígues, Montserrat Meseguer Meda

TECHNICIAN

María Elizabeth García Pérez, Mercè Richarte Franqués, Alba Crespo Carrasco

In 2024, our research group achieved several significant milestones in pediatric hematology-oncology. One of the most notable was our integration into the ALLTogether consortium, a leading European cooperative group for pediatric acute lymphoblastic leukemia (ALL). We successfully initiated the ALLTogether PILOT clinical trial in Spain, with Dr. Susana Rives serving as the National Chair and Principal Investigator (PI), and Dr. José Luis Dapena as PI at Hospital Sant Joan de Déu (HSJD). Dr. Mireia Camós leads one of the two Spanish central laboratories in the trial, accredited under ISO15189 for IG/TR-based measurable residual disease (MRD) monitoring and is a member of the EuroMRD group.

We secured competitive funding for multiple research initiatives. These include the integration of FSJD as an independent group in the Spanish Advanced Therapy Network RICOR-TERAV Plus, coordinated by Dr. Rives, with contributions from Dr. Català in gene therapy, among other investigators from other FSJD research groups. Additionally, Dr. Elena Esperanza led a transcriptomic project on B-/T-cell ALL and AML (PFNR0203), resulting in international presentations, a submitted manuscript, and a published article based on RNA sequencing of B-other ALL patients.

We concluded the CLOSER project, an EU-funded international initiative aimed at bridging pediatric leukemia care between South America and Europe, led by Dr. Mireia Camós. Ongoing research continued in coagulation disorders, lymphoma, CAR-T therapy, bone marrow failure, immune cytopenias, myelodysplastic syndromes, and high-risk leukemia.

Throughout 2024, our team was involved in numerous clinical trials and published over 35 scientific articles in high-impact journals such as Journal of Clinical Oncology, Science Immunology, Cell Reports Medicine, and Blood. These publications covered key topics including CAR-T therapy, ALL, AML, bone marrow failure,

hemoglobinopathies, and hemophilia.

SELECTED PUBLICATIONS

- Theron A, Alonso A, Dapena JL, López M, Díaz de Heredia C, Verdú J et al. Secondary haematological dysplasia after CAR-T-cell therapy for acute lymphoblastic leukaemia in children. Br J Haematol. 2024;:186-194. IF:5,100. (Q1).
- Molinos A, Alonso A, Herrero B, Caballero T, Galan V, Panesso M et al. Impact of disease burden and late loss of B cell aplasia on the risk of relapse after CD19 chimeric antigen receptor T Cell (Tisagenlecleucel) infusion in pediatric and young adult patients with relapse/refractory acute lymphoblastic leukemia: role of B-cell monitoring (vol 14, 1280580, 2024). Front. Immunol. 2024;15IF:5,700. (Q1).
- Velasco T, Trincado JL, Vinyoles M, Closa A, Martínez A, Gutiérrez F et al. Integrative single-cell expression and functional studies unravels a sensitization to cytarabine-based chemotherapy through HIF pathway inhibition in AML leukemia stem cells. Hemasphere. 2024;8(2) IF:11,900. (Q1).
- Staniek J, Kalina T, Andrieux G, Boerries M, Janowska I, Fuentes M et al. Non-apoptotic FAS signaling controls mTOR activation and extrafollicular maturation in human B cells. Sci. Immunol. 2024;9(91) IF:17,800. (Q1).

SELECTED PROJECTS

- Estudio multicéntrico fase 2 en pacientes pediátricos (0-18 años) con leucemia linfoblástica aguda B CD19+ en recaída o refractaria. (IC121/00033). Instituto de Salud Carlos III (ISCIII). 2022-2025. IP:Susana Rives Solà.
- CLOSER: Childhood Leukemia: Overcoming distance between South America and Europe Regions. (825749). European Commission. 2019-2024. IP:Mireia Camós Guijosa.
- ADVANCED THERAPIES (RICORS-TERAV). Instituto de Salud Carlos III (ISCIII). 2024-2027. 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. (PI21/00218). Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD; Instituto de Salud Carlos III (ISCIII). 2022-2026. IP: Susana Rives Solà, Montserrat Torredell Burriel.

adolescentes (de 0 a 18 años) con leucemia linfoblástica aguda CD19+ resistente o refractaria al tratamiento. Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD FSJD. 2022-2023. IP: Susana Rives Solà.

SELECTED CLINICAL STUDIES

- A randomized phase 3 trial of fludarabine/cytarabine/ gemtuzumab ozogamicin with or without venetoclax in children with relapsed AML. (ITCC-101/ APAL2020D). Princess Máxima Center for Pediatric Oncology B.V. 2023IP: Albert Català Temprano.
- A PROSPECTIVE, RANDOMIZED, OPEN-LABEL PHASE 2 STUDY TO EVALUATE THE SUPERIORITY OF INOTUZUMAB OZOGAMICIN MONOTHERAPY VERSUS ALLR3 FOR INDUCTION TREATMENT OF CHILDHOOD HIGH RISK FIRST RELAPSE B-CELL PRECURSOR ACUTE LYMPHOBLASTIC LEUKAEMIA "ESTUDIO PROSPECTIVO, ALEATORIZADO, ABIERTO, EN FASE II PARA EVALUAR LA SUPERIORIDAD DE INOTUZUMAB OZOGAMICINA EN MONOTERAPIA FRENTE A ALLR3 PARA EL TRATAMIENTO DE INDUCCIÓN DE LA LEUCEMIA LINFOBLÁ. (B1931036). Pfizer, S.L.U. 2023IP: José Luis Dapena Díaz.
- A Phase Ib study of Vyxeos® (liposomal daunorubicin and cytarabine) in combination with Clofarabine in children with relapsed/refractory AML. (ITCC-092). Princess Máxima Center for Pediatric Oncology B.V. 2022IP: Albert Català Temprano.
- A Phase Ib study of Vyxeos® (liposomal daunorubicin and cytarabine) in combination with Clofarabine in children with relapsed/refractory AML. (ITCC-092). Princess Máxima Center for Pediatric Oncology B.V. 2022IP: Albert Català Temprano.
- Estudio de fase 2 de la infusión de células T autólogas, diferenciadas y de sangre periférica expandidas y transducidas con un lentivirus para expresar un receptor de antígeno quimérico con especificidad anti-CD19 (A3B1) junto con regiones coestimuladoras 4-1BB y CD3z (ARI- 0001 células) en niños y

Molecular Pharmacology and Experimental Therapeutics (MPET)

Marçal Pastor-Anglada, PhD

 **2**
PUBLICATIONS

 **9**
IMPACT FACTOR
4,7 average impact factor

 **100%**
PUBLICATIONS IN 1ST QUARTILE

 **50%**
LEADERSHIP

MEMBERS

RESEARCHER

Sandra Perez-Torras

POSTDOC ASSOCIATED RESEARCHERS

Liska Caviedes Cárdenas, Jose Antonio Agüero Fernández, Aida Mata Ventosa, Nerea Urtasun Plans

PREDOC ASSOCIATED RESEARCHERS

Marta Mata Jurado, Andrea Valentina Prieto Carruyo

During 2024 two major contributions to the pharmacology of new drugs have been provided by our team. Within the framework of a comprehensive collaboration with researchers at the IS Global and IBEC, along with medicinal chemists at the IBUB we have identified the mechanisms implicated in the absorption and tissue delivery of a first-in-class antiplasmodial compound (YAT2150) recently proposed as a new interesting drug for malaria therapy (Camarero-Hoyos et al., 2024). We have also designed, generated and biologically tested a new class of RNase H-sensitive construct (3ASO) that can be disassembled intracellularly upon cell entry leading to the simultaneous release of three different therapeutic oligonucleotides (ONs), tackling each of them the mRNA of a different protein. As proof of concept of the efficacy of this new tool we have assessed the

therapeutic efficacy of this RNase H-sensitive construct by targeting three well known targets in breast cancer therapy, HER2, Akt and Hsp27 in HER2+ cells (Mata-Ventosa et al., 2024).

In a public-private collaboration, we have identified a novel, specific inhibitor of the adenosine transporter human Equilibrative Nucleoside Transporter 1 (hENT1) (PBF4883) which is likely to be further developed in the context of cancer therapy and has been recently included in the pipeline of the biotech company Palobiofarma.

Research at our laboratory has been funded during 2024 by Agencia Estatal de Investigación (Generation of Knowledge and Strategic Lines programs) and Marató de TV3 Foundation. In August 2024 we have been awarded a project funded by the National Institutes of Health (NIH) (USA) which will allow the development of new therapeutic tools targeting human Concentrative Nucleoside Transporters (hCNTs) in a subtype specific manner.

SELECTED CLINICAL STUDIES

- Camarero C, Bouzón I, Avalos Y, Fallica AN, Román L, Ramírez M et al. Leveraging the Aggregated Protein Dye YAT2150 for Malaria Chemotherapy. *Pharmaceutics*. 2024;16(10)IF:4,900. (Q1).
- Mata A, Vila A, Solsona A, Dueña J, Torrents M, Izquierdo E et al. RNase H-sensitive multifunctional ASO-based constructs as promising tools for the treatment of multifactorial complex pathologies. *Bioorganic Chem*. 2024;150:107595-107595. IF:4,500. (Q1).



7.1

MEDICINE AND PEDIATRIC SCIENCE AREA

7.1.4

Precision Medicine in Rare Diseases

Metabolomics and Biochemical Genetics

Neurogenetics and Molecular Medicine

Genomics for the Diagnosis of Rare Diseases

Human Molecular Genetics I

Human Molecular Genetics II

Diagnostic and Therapeutic Imaging



Metabolomics and Biochemical Genetics

Rafael Artuch Iriberrí, MD, PhD



16

PROJECTS

9 competitive projects

7 non competitive projects



10

CLINICAL TRIALS &
OBSERVATIONAL STUDIES



31

PUBLICATIONS



255

IMPACT FACTOR

8,2 average impact factor



68%

PUBLICATIONS IN 1ST QUARTILE



23%

PUBLICATIONS IN 1ST DECILE



32%

LEADERSHIP

MEMBERS

ASSISTANT RESEARCHER

Elena Morella Fernandez, Helena Rodriguez González, Gregorio Alexander Nolasco Tovar

MANAGEMENT

Cristina Carulla Martí, Cristina Sierra March

RESEARCHER

Paula Esteller Cucala, Roser Urreizti Frexedas, Jaume Campistol Plana, Mercedes Serrano Gimaré, Camila García Volpe, Rosa Gassió Subirachs, Aida Ormazabal Herrero

POSTDOC ASSOCIATED RESEARCHERS

Antonio Calvo López, Mercedes Casado Rio, Raquel Montero Sánchez

INVESTIGADOR PRE-DOC

María Virginia Montiel, Florencia Epifani, Mónica Centeno Pla

TECHNICIAN

Lidia Celina Sánchez Silvestre, Adriana Balen Valerio, Yahel Calzadilla Borrás, Aroa Fernández de Miguel, Juan Moreno García, Tania Pardo Chofle

UNDEFINED

Gerard Gutiérrez Arbonés

Our group has consolidated its scientific activity in the last years, as its principal investigators continue with active projects financed by public funds (19 active projects in 2024, with 32 publications in scientific journals and 8 ongoing clinical trials). Of note is the development of the IMPACT Únicas project, led by the group's PI, which aims to access the data of 5 pediatric hospitals nationwide that are experts in rare diseases, in a federated manner, in collaboration with the Barcelona supercomputing center.

The level of publication in this period is stable compared to previous years, with a strong translational component and collaboration with national and international groups.

At this moment, we have established the scientific committee of GenRare, a CIBERER platform that brings together different registries of rare diseases (Dr. Artuch is the president of this committee). Our hospital has been designated with several CSURs, and as a result, we are participating in MetabERN, the European reference network for metabolic diseases.

Regarding metabolomic studies, we continue to collaborate with different CIBERER and non-CIBERER groups in the phenotyping of cellular and animal models. This has generated growing scientific activity, and the idea we have for the future is to consolidate our metabolomics platform to provide biochemical phenotyping services to CIBER and external research groups, according to the scientific interest of the proposal.

Our most relevant contribution to the future is to remain a reference group for the study of rare diseases in the pediatric field. The axes of our future activity are aligned with the lines of research that we currently have, since our intention is to improve our research capabilities in these lines rather than addressing new groups of diseases.

SELECTED PUBLICATIONS

- Muntau AC, Longo N, Ezgu F, Schwartz I, Lah M, Bratkovic D et al. Effects of oral sepiapterin on blood Phe concentration in a broad range of patients with phenylketonuria (APHENITY): results of an international, phase 3, randomised, double-blind, placebo-controlled trial. *Lancet*. 2024;404(10460):1333-1345. IF:98,400. (Q1).
- Cao X, Lake M, Van der Hoeven G, Claes Z, Del Pino J, Lemaire S et al. SDS22 coordinates the assembly of holoenzymes from nascent protein phosphatase-1. *Nat. Commun*. 2024;15(1):5359-5359. IF:14,700. (Q1).
- Rullo J, Martinez M, Bartoccioni P, Puch I, Arias AY, Saen S et al. Structure and mechanisms of transport of human Asc1/CD98hc amino acid transporter. *Nat. Commun*. 2024;15(1):2986-2986. IF:14,700. (Q1).
- Lenz D, Schlieben LD, Shimura M, Bianzano A, Smirnov D, Kopajtich R et al. Genetic landscape of pediatric acute liver failure of indeterminate origin. *Hepatology*. 2024;79(5):1075-1087. IF: 13,000. (Q1).

SELECTED PROJECTS

- Innovative Medicines Initiative 2 Joint EU: Autism Innovative Medicine Studies – 2 – Trials' – 'AIMS-2-TRIALS'. [777394]. European Commission; King's College London. 2023-2026. IP:Mercedes Serrano Gimaré.
- PHENYLKETONURIA: from Childhood to Adults through Brain Functional Connectomics, Cardiovascular Changes, Metabolomic and Microbiota Characteristics. [18/C/2020]. Fundació La Marató de TV3. 2021-2024. IP:Aida Ormazabal Herrero.
- PCIH2412 - Inhibición de la expresión de MAGEL2 como posible terapia para el síndrome de Schaaf-Yang - Roser Urreizti. Clientes Diversos. 2024-2025. IP:Roser Urreizti Frexedas.
- Prat,A,Centeno,M,Castilla,L,Canals,I,Grinberg,DR,Rabionet,R et al. Advancing towards a human brain organoid model of Schaaf-Yang syndrome. 56th Annual Conference of the European-Society-of-Human-Genetics (ESHG). 2023. Glasgow. MACMILLAN BUILDING, 4 CRINAN ST, LONDON N1 9XW,

ENGLAND:NATURE PUBLISHING
GROUP. 2024 p.p. 229-229.

SELECTED CLINICAL STUDIES

- A Phase 1/2 Open-label, Multiple-dose, Dose-escalating Clinical Trial of the Safety and Tolerability of GTX-102 in Pediatric Patients With Angelman Syndrome (AS). (GTX-102-001). Ultragenyx Pharmaceutical, Inc. 2023IP:Mercedes Serrano Gimaré.
- A Phase 2, Randomized, Open-Label, 24-Week Study to Assess the Pharmacodynamics, Safety, Tolerability, and Pharmacokinetics of Multiple Doses of GLM101 Administered Intravenously to Adult, Adolescent, and Pediatric Participants with PMM2-CDG. (GLM101-002). Glycomine, Inc. 2022IP:Mercedes Serrano Gimaré.
- A PHASE II, RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED, PARALLEL GROUP STUDY TO EVALUATE THE SAFETY, EFFICACY, AND PHARMACODYNAMICS OF 52 WEEKS OF TREATMENT WITH BASMISANIL IN PARTICIPANTS AGED 2 TO 14 YEARS OLD WITH DUP15Q SYNDROME FOLLOWED BY A 2-YEAR OPTIONAL OPEN-LABEL EXTENSION. (BP42992). Roche Farma, S.A. 2022 IP: Mercedes Serrano Gimaré. A Phase IIA Multicenter, Open-Label, 12-Week Study to investigate the pharmacokinetics and safety and to provide proof of mechanism of alogabat in children and adolescents aged 5–17 years with Angelman Syndrome (AS) with deletion genotype. (BP41315). F. Hoffmann-La Roche Ltd.; Farmacia; Laboratori HSJD; Moyano; Servicio de Cardiología; Servicio Neurofisiología; Servicio Neuropsicología; Unitat de Recerca (URC) FSJD. 2023. IP:Mercedes Serrano Gimaré.
- An open-label, multicenter study to investigate the safety, tolerability, pharmacokinetics and pharmacodynamics of R07248824 in participants with angelman syndrome. (BP41674). Roche Farma, S.A. 2020IP:Mercedes Serrano Gimaré.

Neurogenetics and Molecular Medicine

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

 **20**
PROJECTS
14 competitive projects
6 non competitive projects

 **19**
PUBLICATIONS

 **111**
IMPACT FACTOR
5,9 average impact factor

 **63%**
PUBLICATIONS IN 1ST QUARTILE

 **11%**
PUBLICATIONS IN 1ST DECILE

 **21%**
LEADERSHIP

MEMBERS

ASSISTANT RESEARCHER

Pau De Graaf Sousa, Nidia Barco Armengol, Ioannis Georvasilis , Maria Rodriguez Sanz, Roberta Repossi , Marcos Frías Nestares, Natalia Caelles Gramunt, Gemma Tort Vázquez, Adrián Alcalá San Martín, Mercè Bolasell Girgas, Antonio F Martinez Monseny

RESEARCHER

Mónica Roldan Molina, Guerau Fernandez Isern

POSTDOC ASSOCIATED RESEARCHERS

Mar Borregán Prats, Esther Cuatrecasas Capdevila, Cristina Hernando Davalillo, Laura Martí Sanchez, Jordi Pijuan Marquilles, Lara Cantarero Abad

PREDOC ASSOCIATED RESEARCHERS

Berta Estévez Arias

TECHNICIAN

Maria Porras Lancho, Irene Suarez Rojas, Sandra Cabanillas Ruiz, Daniel Castillo Mestres, Jordi Genovès Escarré

UNDEFINED

Jonathan Francisco Olival Tremaria

Our group focused on the pathophysiology and functional genomics of neurogenetic disorders, aiming to translate our research into accurate diagnoses and therapies for rare and undiagnosed diseases.

Scientific Milestones: (1)

Pathophysiology: We investigated the neurogenic pathways and molecular mechanisms related to the addiction-associated protein ANKK1. Our research demonstrated that ANKK1 acts as a scaffolding protein in the Wnt/PCP pathway, facilitating neuronal F-ACTIN assembly (Domínguez-Berzosa et al., Int J Mol Sci, 2024). (2) Gene Discovery: We identified novel gene-phenotype relationships, including MAP3K20 (Brooks et al., Hum Genet, 2024) and GEMIN5 (Cascajo-Almenara et al., Eur J Hum Genet, 2024) genes. (3) Functional Genomics: Through the Translational Diagnostics and Therapy Program (TDTP), we studied 73 undiagnosed patients using both in silico and experimental biology approaches. Notable findings included the AIFM1 gene (Pijuan et al., Mov Disord, 2024) and the GNB5 gene (Pijuan et al., Clin Genet, 2024). We also successfully administered an exceptional treatment with elesclamol-copper, a repurposed drug, to children with Menkes disease, yielding positive results (manuscript submitted). (4) Early-Onset Parkinson's Disease: We actively participated in multi-ancestral genetic studies on Parkinson's disease as part of the Global Parkinson Genetics Program (GP2) (Kim et al., Nat Genet, 2024).

Funding and grants. Public agencies financed the group: EU Horizon; the Spanish Research Agency (AEI); the Instituto de Salud Carlos III; the Generalitat de Catalunya (SGR Precision Medicine in Genetic and Rare Diseases); and private foundations: Fundación Ramón Areces (GenNatal project); Menkes International Association and Fundación Amigos de Nono (Menkes disease); Asociación Española Síndrome Coffin-Siris.

International actions. We have established formal academic collaborations with the Latin American Academy of Sciences (ACAL) and the Wisconsin Medical College (MCW). These partnerships involve the preparation of two significant publications, "Human Genetics in Latin America" and the "Nelson Pediatric Textbook of Rare Diseases," in association with the Department of Pediatrics at MCW. Additionally, we are collaborating on the "Global Health" program through the Mellowes Center for Genomic Sciences and Precision Medicine.

SELECTED PUBLICATIONS

- Estévez B, Matalonga L, Yubero D, Polavarapu K, Codina A, Ortez CI et al. Phenotype-driven genomics enhance diagnosis in children with unresolved neuromuscular diseases [27 Sept, 10.1038/s41431-024-01699-4, 2024]. Eur. J. Hum. Genet. 2024;IF:3,700. [Q2].
- Domínguez L, Cantarero L, Rodríguez M, Tort G, Garrido E, Johanna B et al. ANKK1 Is a Wnt/PCP Scaffold Protein for Neural F-ACTIN Assembly. Int. J. Mol. Sci. 2024;25(19):10705 IF:4,900. [Q1].
- Pijuan J, Sevrioukova IF, García Ó, Hernaez M, Gort L, Gómez M et al. A Novel AIFM1-Related Disorder Phenotype Treated with Deep Brain Stimulation. Mov Disord. 2024;39(1):215-217. IF:7,400. [Q1].
- Pijuan J, Vilanova A, Casas D, Campistol J, Hoenicka J, Palau F. Inheritance of c.628-6G>A <i>GNB5</i> hypomorphic allele uncovers another challenge in the pathogenic prediction of genomic variants. Clin Genet. 2024;105(3):340-342. IF:2,900. [Q2].

SELECTED PROJECTS

- BETTER_Better rEal-world healTh-daTa distributEd analytics Research platform. (101136262). European Commission; Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 2023-2027. IP:Francesc Palau Martínez.
- Dinámica de la membrana mitocondrial y sus sitios de contacto entre orgánulos en la fisiopatología celular y del nervio de la enfermedad neurogenética. (PID2020-114655RB-100). Ministerio de Economía Y Competitividad (MINECO). 2021-2025. IP:Francesc

- Palau Martínez, Janet Hoenicka.
- Genes y Fenotipos de Síndromes Parkinsonianos: validación funcional de hallazgos genéticos - ParkGenPhen. (PI22/00680). Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD; Instituto de Salud Carlos III (ISCIII). 2023-2025. IP:Janet Hoenicka.
- Proyecto piloto sobre la implementación de un cribado neonatal genético en España. Fundació Ramón Areces. 2019-2025. IP:Francesc Palau Martínez.

Genomics for the Diagnosis of Rare Diseases

Judith Armstrong Morón, PhD

 **8**
PROJECTS
5 competitive projects
3 non competitive projects

 **9**
PUBLICATIONS

 **32**
IMPACT FACTOR
3,6 average impact factor

 **33%**
PUBLICATIONS IN 1ST QUARTILE

 **11%**
LEADERSHIP

MEMBERS

ASSISTANT RESEARCHER

Roger Prats Oliva

RESEARCHER

Núria Brandi Tarrrau, Délia Yubero Siles

PREDOC ASSOCIATED RESEARCHERS

Aínoha Pascual Alonso, Clara Xiol Viñas

TECHNICIAN

Carlota Ros Bonaventura, Paola Pacheco Fernández

Rett syndrome (RTT) is a neurodevelopmental disorder caused by mutations in the MECP2 gene, which is involved in numerous cellular processes. Additionally, there are patients with neurodevelopmental disorders and mutations in genes other than MECP2, which we believe may be involved in similar cellular functions. By integrating multi-omic data (genomic, transcriptomic, and proteomic) from fibroblasts of RTT patients with known MECP2 mutations, we have gained insights into the molecular consequences of MECP2 dysfunction.

To confirm that we have identified a biomarker for neurodevelopmental

disorders, it is essential to extend our findings to other tissues: the brain, to validate the biomarker, and peripheral blood, as a more accessible tissue for clinical practice.

Our research line on Rett syndrome has been consolidated and supported by competitive public and private funding (ISCIII-FIS PI23/00108 and the ADEY Foundation), enabling us to continue exploring MECP2 expression biomarkers in fibroblasts and extend the study to brain and blood samples.

SELECTED PUBLICATIONS

- Beatriz R, de los Santos MM, García C, Molera C, Paredes AJ, Oliva C et al. Exploring Plasma Coenzyme Q10 Status in Paediatric Dyslipidaemia. Antioxidants. 2024;13(8):IF:6,000. [Q1].
- Illescas S, Díaz Y, Serradell A, Toro L, Musokhranova U, Julià NA et al. Metabolic characterization of neurogenetic disorders involving glutamatergic neurotransmission. J. Inherit. Metab. Dis. 2024;47(3):551-569. IF:4,200. [Q1].
- Brooks D, Burke E, Lee S, Eble TN, O'Leary M, Osei I et al. Heterozygous MAP3K20 variants cause ectodermal dysplasia, craniosynostosis, sensorineural hearing loss, and limb anomalies. Hum. Genet. 2024;143(3):279-291. IF:3,800. [Q2].

Pascual,A,Xiol,C,Smirnov,D,Ko-
pajtich,R,Prokisch,H,Armstron-
g,J. Molecular profiles of MECP2
duplication syndrome and Rett
syndrome patients. 56th Annual
Conference of the European-Soc-
iety-of-Human-Genetics (ESHG).
2023. Glasgow. MACMILLAN
BUILDING, 4 CRINAN ST, LON-
DON N1 9XW, ENGLAND:NATURE
PUBLISHING GROUP. 2024 p.p.
464-464.

SELECTED PROJECTS

- 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. (PI23/00108). Fundació Privada per a la Recerca

i la Docència Sant Joan de Déu -
FSJD; Instituto de Salud Carlos III
(ISCIII). 2024-2026. IP:Judith Silvia
Armstrong Morón.

- Catalan Interhospital Network of Genetic Variants to Improve Genetic Diagnosis in Rare Diseases. (590/C/2020). Fundació La Marató de TV3. 2021-2024. IP: Dèlia Yubero Siles.
- Estudio de pacientes dentro del Espectro Rett mediante un enfoque multiómico integrativo: delucidar la huella molecular de la vía funcional. (PI20/00389). Instituto de Salud Carlos III (ISCIII). 2021-2024. IP:Judith Silvia Armstrong Morón.
- Estudio de validación de dianas terapéuticas en muestra cerebral y sangre periférica de pacientes con síndrome de Rett. FUNDACIÓN ADEY; Fundación Noelia. Niños Contra la Distrofia Muscular Congénita por Déficit de Colágeno VI. 2023-2027. IP:Judith Silvia Armstrong Morón.

Human Molecular Genetics I

Susana Balcells Comas, PhD

 **11**
PUBLICATIONS

 **69**
IMPACT FACTOR
6,3 average impact factor

 **73%**
PUBLICATIONS IN 1ST QUARTILE

 **36%**
PUBLICATIONS IN 1ST DECILE

 **46%**
LEADERSHIP

MEMBERS

STAFF RESEARCHER

Noelia Fernández Castillo, Daniel Raúl
Grinberg Vaisman, Raquel Rabionet
Janssen, Bru Cormand Rifà

TECHNICIAN

Mónica Cozar Morillo

2024 has brought important big data sets of Schaaf-Yang syndrome (SYS), which we are currently analyzing: transcriptomics of iNeurons (iNs), iAstrocytes (iAs), and brain ventral and dorsal organoids; and proteomics of iNs and iAs. At another scale, we are dissecting the precise nuclear localization signal (NLS) and nuclear export signal (NES) of MAGEL2, to better understand the molecular pathology of SYS.

Likewise, 2024 has brought transcriptomic, proteomic and phosphoproteomic data of TRAF7 syndrome fibroblasts under treatment with nutraceutical compounds. We are analyzing these and getting closer to an answer regarding these potential therapeutic approaches.

In the bone side, we have interrogated rare variants in bone-relevant genes for enrichment in postmenopausal osteoporosis and have worked out

protocols to differentiate osteoblasts and osteoclasts from iPS cells, to model the bone phenotype of TRAF7 syndrome. In our research on genetics of stroke recovery, we have generated iPSC lines knock-out for VNN2, which we will differentiate into neutrophils to model its effect in neutrophil function.

In psychiatric disorders, a cross-disorder gene, RBFox1, involved in several mental conditions, has been modeled in zebrafish, where we have observed behavioural alterations that resemble patients' symptoms. We have also explored the genetic landscape of attention-deficit/hyperactivity disorder at genome-wide scale and identified shared genetic risk factors with substance use disorders. Finally, we have studied gut microbiota signatures of vulnerability to food addiction in mice and humans, and partially reversed the phenotype after administering Blautia bacteria (or promoted its growth) in diseased animals.

SELECTED PUBLICATIONS

- Samulenaite S, García A, Mayneris J, Domingo L, Cabana J, Fernandez N et al. Gut microbiota signatures of vulnerability to food addiction in mice and humans. Gut. 2024;73(11):1799-1815. IF:23,100. (Q1).
- Centeno M, Alcaide E, Gibson S, Prat A, Gutiérrez JD, Grinberg DR et al. Subcellular localisation of truncated MAGEL2 proteins: insight into the molecular pathology of Schaaf-Yang syndrome. J. Med. Genet. 2024;61(8):780-782. IF:3,600. (Q2).
- Palma C, Prat A, Soengas E, Centeno M, Sánchez J, Lazaro I et al. Expanding the Phenotypic Spectrum of TRAF7-Related Cardiac, Facial, and Digital Anomalies With Developmental Delay: Report of 11 New Cases and Literature Review. Pediatr. Neurol. 2024;155:8-17. IF:3,200. (Q1).
- Antón E, Adel MR, García J, Leggieri A, López L, Irimia M et al. Pleiotropic contribution of *rbbfox1* to psychiatric and neurodevelopmental phenotypes in two zebrafish models. Transl Psychiatry. 2024;14(1):99-99. IF:5,800. (Q1).

Human Molecular Genetics II

Gemma Marfany Nadal, PhD

 4 PUBLICATIONS

 22 IMPACT FACTOR
5,5 average impact factor

 75% PUBLICATIONS IN 1ST QUARTILE

 75% LEADERSHIP

MEMBERS

POSTDOC ASSOCIATED RESEARCHERS
Serena Mirra

Our research focuses on the generation and characterization of animal and 2D/3D human organoid models to study inherited retinal dystrophy genes with the aim of designing an effective precision therapy.

To study the molecular bases of hereditary blindness, we generated mouse models by gene-editing techniques (CRISPR-Cas9) on two genes that cause retinitis pigmentosa and S-cone syndrome: CERKL and NR2E3, respectively. Lately, we performed more in-depth molecular studies to elucidate why mutations in these genes cause hereditary blindness. For NR2E3, we performed single cell transcriptomics to characterize the photoreceptor populations of the mutant strains compared to wild-type (collaboration with Dr. Vaquerizas at Imperial College London), which generated an article published in Neurobiology of Disease. Regarding CERKL, we collaborated with other IBUB and IRSJD groups (Dr. Villaroya and Dr. Artuch) to show that CERKL depletion causes alterations in mitochondrial morphology and dynamics. We performed transcriptomic and metabolomic analyses in retinal cells, opening new perspectives for a potential treatment by regulation

of mitochondrial metabolism. We are now exploring potential gene therapy treatments by subretinal injection of adeno-associated viruses (AAVs). We have collaborated as well with other CIBERER groups (Dr. Antonio Moreno) and CIBERNED (Dr. Eduardo Soriano) groups in order to deepen our knowledge in rare diseases, and we investigated genes that may contribute to the formation and stability of the sensory and motile cilium, being excellent candidates for causing ciliopathies with retinal neurodegeneration or neurodevelopmental defects, specifically RPGR and USP48.

Our new avenues of research are focusing on the generation of human retinal organoids from hiPSCs as alternative research models to gene-edited mice. During 2024 we have published the work resulting from many years of national collaborations with other CIBERER and CIBERNED groups, centered in the functional characterisation of genes causing rare diseases, such as ciliopathies, retinal dystrophies and neurodevelopmental disorders.

SELECTED PUBLICATIONS

- Aísa I, Rovira Q, Díaz N, Calvo L, Vaquerizas JM, Marfany G. Specific photoreceptor cell fate pathways are differentially altered in NR2E3-associated diseases. Neurobiol. Dis. 2024;194:106463-106463. IF:5,100. (Q1).
- Mirra S, Marfany G. From Beach to the Bedside: Harnessing Mitochondrial Function in Human Diseases Using New Marine-Derived Strategies. Int. J. Mol. Sci. 2024;25(2) IF:4,900. (Q1).
- Izquierdo I, Mirra S, Manso Y, Parcerisas A, Rubio J, Del Valle J et al. A mammalian-specific Alex3/Ga_q protein complex regulates mitochondrial trafficking, dendritic complexity, and neuronal survival. Sci. Signal. 2024;17(822):1007-1007. IF:6,800. (Q1).
- Baz N, Sánchez L, Fernández M, Rovira S, Burgoyne T, Ranjit R et al. Primary Ciliary Dyskinesia and Retinitis Pigmentosa: Novel *RPGR* Variant and Possible Modifier Gene. Cells. 2024;13(6) IF:5,100. (Q2).

Diagnostic and Therapeutic Imaging

Emilio Hinarejos, MD, PhD



2

PROJECTS

1 competitive projects

1 non competitive projects



3

PUBLICATIONS



9

IMPACT FACTOR

3,1 average impact factor



33%

PUBLICATIONS IN 1ST QUARTILE

MEMBERS

ASSISTANT RESEARCHER

Macarena Barrera Gallardo, Gerard Marturià Navarro, Sandra Bernaus Tomé, Martí Engli Rueda

RESEARCHER

Ignasi Barber Martínez de la Torre

In 2024, the Diagnostic Imaging Department continued to serve as the central hub for image-based clinical research within our hospital, supporting various pioneering projects aimed at advancing diagnostic and therapeutic approaches. The department contributed to several studies, for example CBYL719F12201 EPIK-P2: A Phase II double-blind, randomized, placebo-controlled trial assessing the efficacy, safety, and pharmacokinetics of alpelisib (BYL719) in pediatric and adult patients with PIK3CA-related overgrowth spectrum (PROS). BETTER Project: A 3.5-year initiative (Dec 2023 – May 2027) funded by Fundació Privada per a la Recerca i la Docència Sant Joan de Déu, focusing on real-world health data analytics to improve patient outcomes through data-driven healthcare insights. These projects exemplify the department's broad engagement in cutting-edge clinical research.

In 2024, our Radiology Department demonstrated significant contributions to clinical research, interdisciplinary collaboration, and innovation

in imaging-led diagnostics and therapies. Among our scientific output, four key publications stand out for their clinical relevance and academic impact: Standardization in Pediatric Rheumatology Imaging: We contributed to the validation of the OMERACT whole-body MRI scoring system for juvenile idiopathic arthritis, promoting consistency in disease assessment and advancing MRI as a global standard for pediatric musculoskeletal evaluation. In collaboration with genetics teams, we co-authored a study identifying GEMIN5 mutations as a cause of CoQ10 deficiency, with clinical benefits demonstrated through long-term metabolic therapy. This work bridges diagnostic imaging with precision medicine. We also contributed to a multicenter study revealing chronic thromboembolic pulmonary hypertension as a delayed complication of SARS-CoV-2 infection, underscoring the importance of radiologic follow-up in post-COVID care. These studies reflect our department's strategic focus on pediatric imaging, image-guided therapy, genetic-imaging integration, and emerging public health challenges. Our 2024 research output reinforces the central role of radiology in driving diagnostic excellence, therapeutic innovation, and multidisciplinary clinical care.

SELECTED PUBLICATIONS

- Restrepo R, Park HJ, Karakas SP, Cervantes LF, Rodriguez FG, Zahrah AM et al. Bacterial osteomyelitis in pediatric patients: a comprehensive review. Skeletal Radiol. 2024;53(10):2195-2210. IF:1,900. (Q2).
- Panwar J, Tolend M, Kirkhus E, Meyers AB, Redd B, Sudol I et al. Reliability assessment of the OMERACT whole-body magnetic resonance imaging scoring system for juvenile idiopathic arthritis. Semin. Arthritis Rheum. 2024;66:152437-152437. IF:4,600. (Q1).
- Navallas M, Tolend M, Otobo TM, Panwar J, Inarejos E, Hemke R et al. Developing standards for MRI evaluation of joints in children with juvenile idiopathic arthritis utilizing the temporomandibular joint as a model. Jpn. J. Radiol. 2024;42(1):56-68. IF:2,900. (Q2).

- Peters T, Engelke U, de Boer S, Reintjes JTG, Roulet JB, Broekman S et al. Succinic semialdehyde dehydrogenase deficiency in mice and in humans: An untargeted metabolomics perspective. J. Inherit. Metab. Dis. 2024;47(3):417-430. IF: 4,200. (Q1).

SELECTED PROJECTS

- Investigo 2022_Josep Munuera. (100031TG8). Agaur - Agència de Gestió d'Ajuts Universitaris i de Recerca. 2022-2024. IP:Jose Luis Munuera del Cerro.
- A Phase II, Open-label, Single-arm Study of Osimertinib as Induction Therapy Prior to CRT and Maintenance Osimertinib in Patients with Epidermal Growth Factor Receptor (EGFR) Mutation-positive, Stage III, Unresectable Non-small Cell Lung. AstraZeneca. 2024-2028. IP: Emilio Inarejos Clemente.

7.1

MEDICINE AND PEDIATRIC SCIENCE AREA

7.1.5 Associated Clinical Research Groups

Paediatric Chronicity and Palliative Care
Orthopaedic Surgery and Traumatology
Environment Effects on Child/Adolescent Well-being
Hospital Dentistry and Periodontal Medicine
Paediatric Ophtalmology
Nursing Research



Paediatric Chronicity and Palliative Care

Sergi Navarro Vilarrubí, MD, PhD



3

PROJECTS

3 competitive projects

0 non competitive projects



4

PUBLICATIONS



10

IMPACT FACTOR

2.5 average impact factor



25%

PUBLICATIONS IN 1ST QUARTILE



75%

LEADERSHIP

MEMBERS

ASSISTANT RESEARCHER

Mario Gabriel Ciccorossi, Pau Miquel Diego, Carlos Ruiz García

RESEARCHER

Teresa Gili Bigatà, Nyirahabimana Anna Habimana Jordana, Balma Soraya Hernández Moscoso, Tamara López Cobacho, Laura Monfort Carretero, Georgina Morón Cazalilla, Sofía Munguía Navarro, Lucía Navarro Marchena, Eduard Pellicer Arasa, Jose Antonio Porras Cantarero, Sílvia Ricart Campos, Mar Sánchez Ruiz, Isabel Torrús López

PREDOC ASSOCIATED RESEARCHERS

Verónica Gimeno Alcalá, Lucía Peñarrubia San Florencio, Laura Ponce Corredor, Daniel Toro Pérez

UNDEFINED

Inés Marta Villasuso Megino

During 2024, the C2P2 service consolidated a strategic plan for research, education, and innovation through several key initiatives.

Firstly, the European project PALLIAKID, led by the service and funded by Horizon Europe (2023–2028), aims to achieve early identification of patients with palliative

care needs, active family involvement in the care process, and the development of advance care planning through an interactive digital platform.

The service also secured funding from THCS (Transforming Health and Care Systems), which will support new lines of work focused on integrated and personalized care. In addition, participation in a European Joint Action is planned, which will strengthen international collaboration in the field of pediatric palliative care.

In parallel, the service has launched several digital transformation projects, such as Teladoc, mWear, and Tytocare, aimed at improving teleassistance and remote monitoring of chronic and palliative patients. This process is accompanied by qualitative and quantitative studies to assess its clinical and emotional impact.

In terms of research, numerous articles have been published on quality of life, pediatric and adolescent suffering, and spirituality in pediatric patients. The team has also actively participated in national and international conferences through oral communications and posters.

Finally, the “Chronic Conditions and Pediatric Palliative Care” Clinical Research Group has been established within the Sant Joan de Déu Research Institute, reinforcing a commitment to evidence-based care and continuous innovation.

SELECTED PUBLICATIONS

- Toro D, Limonero JT, Bolancé C, Guillen M, Navarro S, Camprodon E. Suffering in children and adolescents in paediatric palliative care in Spain: psychometric properties of the qESNA scale. An Pediatr (Engl Ed). 2024;101(4):238-248.
- de Luis D, Martín A, Riverola A, Habimana NA, Morillo A. Structured programs in perinatal palliative care improve medical assistance. An Pediatr (Engl Ed). 2024;100(5):376-377.

- Rosell DD, Martín A, Riverola A, Habimana NA, Morillo A. Structured programs in perinatal palliative care improve medical assistance. An. Pediatr. 2024;100(5)IF:1,500. [Q2].
- Pons G, Painamil RM, Ricart S, Pellicer E, Sanflorencio LP, Ponce L et al. Characteristics of tracheostomized patients followed up by a Palliative Care and Complex Chronic Patient Service. An Pediatr (Engl Ed). 2024;100(4):251-258.

SELECTED PROJECTS

- PALLIAKID_COMPREHANSIVE PAEDIATRIC PALLIATIVE CARE APPROACH. [101137169]. European Commission. 2023-2028. IP:Sílvia Ricart Campos,Sergi Navarro Vilarrubi.
- Les narratives clíniques de la mort: una oportunitat per al desenvolupament ètic dels professionals?. [NARRA23]. Fundació Víctor Grifols i Lucas. 2021-2025. IP:Pau Miquel Diego.
- Subvencions per a la intensificació de professionals d'infermeria, llevadora, fisioteràpia, dietètica i nutrició, òptica i optometria, podologia i protètica dental en l'àmbit de la recerca i la innovació en salut. Generalitat de Catalunya. 2024-2026 IP: Lucía Peñarrubia San Florencio.
- HOME-C2P2: Supporting children's with complex chronic conditions or palliative needs at home: Clinical Command Center to coordinate efforts with primary healthcare. Instituto de Salud Carlos III (ISCIII). 2024-2027. IP: Sílvia Ricart Campos.

Orthopaedic Surgery and Traumatology

César García Fontecha, MD, PhD



7

PROJECTS

7 competitive projects

0 non competitive projects



1

CLINICAL TRIALS &
OBSERVATIONAL STUDIES



7

PUBLICATIONS



15

IMPACT FACTOR

2,1 average impact factor



29%

PUBLICATIONS IN 1ST QUARTILE



0%

PUBLICATIONS IN 1ST DECILE



43%

LEADERSHIP

MEMBERS

RESEARCHER

Antoni Compte Verdaguer, Laura Corominas Francés, Lydia De Sena De Cabo, Dimosthenis Kiimetoglou, David Moreno Romo, Laura Montserrat Pérez López, Melisa Stitzman Wengrowicz, Ferran Torner Rubies, Alejandro Peiró García, Maria Pilar Rovira Martí

PREDOC ASSOCIATED RESEARCHERS

Rocio Garcia Garcia

In 2024, our research group completed two major projects funded by the Spanish Health Research Fund (FIS). The first focused on Personalized treatment for the correction of skeletal deformities, advancing individualized therapeutic approaches. The second, Effectiveness of non-surgical orthopedic treatments for adolescent idiopathic scoliosis, provided valuable clinical evidence comparing full-time and nighttime bracing. This latter study earned the Best Poster Award at the Scoliosis Research Society (SRS) Annual Meeting and was published in Spine

(Phila Pa 1976): "Impact on Quality of Life of Full-time and Night-time Braces in Adolescent Idiopathic Scoliosis: A Randomized Clinical Trial."

Additionally, our group secured European funding through the Transforming HealthCare System program for the SPINE-SYNC project, focused on integrating clinical data to enhance personalized spinal care among different care levels. We also received the 2024 Research Grant from the Spanish Society of Pediatric Orthopaedics (SEOP). Led by Dr. Pilar Rovira, the project titled "Tibial lengthening with monolateral external fixator: analysis of fibular involvement in complication development".

Other key publications this year include Rovira Martí et al.'s study on Prophylactic intramedullary rodding after femoral lengthening in patients with achondroplasia and hypochondroplasia, and Brunet et al.'s review of Chondroblastomas in children and young adults, both published in the Journal of Pediatric Orthopaedics. Overall, 2024 has been a year of strong scientific output, competitive funding success, and international recognition, solidifying our group's leadership in pediatric orthopedic research and innovation.

SELECTED PUBLICATIONS

- Pérez G, Torra JE, Peiró A, Inmaculada V, Urrea M, Bosch A et al. Incisional negative pressure wound therapy for the prevention of surgical site complications in Paediatric patients with non-idiopathic scoliosis: A randomized clinical trial. INT WOUND J. 2024;21(9). IF:2,600. [Q1].
- Martin P, Pérez LM, Gutierrez D, Miron B, Domínguez E, Perez M. Trapeziometacarpal Dislocations in Pediatric Age, Is There a Better Treatment? Series of Cases and a Systematic Review. J Clin Med. 2024;13(8) IF:3,000. [Q1].
- Benito N, Martinez JC, Lora J, Ariza J, Baeza J, Belzunegui J et al. Executive summary: Guidelines for the diagnosis and treatment of septic arthritis in adults and children, developed by the GEIO (SEIMC), SEIP and SECOT. Enferm. Infect. Microbiol. Clin. 2024;42(4):208-214. IF:2,600. [Q3].

- Carvalho M, Pérez LM, Farr S, Catena N. Trigger thumb treatment approach: Results of a survey of EPOS members. J. Child. Orthop. 2024;18(1):64-71. IF: 1,300. [Q3].

SELECTED PROJECTS

- Alargamiento de tibia con fijador externo monolateral, análisis de la implicación del peroné en el desarrollo de complicaciones. Sociedad Española de Ortopedia Pediátrica. 2024-2027. IP: Maria Pilar Rovira Martí.
- Ensayo clínico aleatorizado comparativo del corsé diurno y nocturno. Sociedad para el estudio de las enfermedades del raquis (GEER). 2023-2027. IP: Alejandro Peiró García.
- Comparison of the anatomical-functional state of the cerebral cortex before and after treatment of congenital pathology of the pediatric upper extremity. Federation of European Societies for Surgery of the Hand (FESSH). 2023-2025. IP: Laura Montserrat Pérez López.
- Estudio longitudinal para evaluar las mediciones de crecimiento y los biomarcadores digitales en participantes pediátricos con acondroplasia. A longitudinal study to evaluate growth measurements and digital biomarkers in pediatric participants with achondroplasia. [OBS16647]. Sanofi-Aventis S.A. 2022IP: César Galo García Fontecha.
- Comparación del estado anatómico-funcional de la corteza cerebral antes y después del tratamiento de patología congénita de extremidad superior pediátrica. Sociedad Española de Ortopedia Pediátrica. 2023-2028. IP: Laura Montserrat Pérez López.
- Registre multicentric internacional observacional prospectiu de fractures. AO Foundation. 2023. IP: Melisa Stitzman Wengrowicz

SELECTED CLINICAL STUDIES

- A Phase 2, open-label, multicenter, 2-stage sequential cohort, dose escalation study to assess the safety, tolerability, pharmacokinetics, pharmacodynamics, and efficacy of subcutaneous SAR442501 in pediatric participants with Achondroplasia. [DRI16646]. Sanofi-Aventis S.A. 2023IP: César Galo García Fontecha.

Environment Effects on Child/Adolescent Well-being

Carles Luaces Cubells, MD, PhD



1

PROJECTS

0 competitive projects

1 non competitive projects



2

CLINICAL TRIALS &

OBSERVATIONAL STUDIES



2

PUBLICATIONS



23

IMPACT FACTOR

2,9 average impact factor



50%

PUBLICATIONS IN 1ST QUARTILE



25%

PUBLICATIONS IN 1ST DECILE



75%

LEADERSHIP

MEMBERS

RESEARCHER

Yolanda Fernández Santervas,
Susanna Hernández Bou, Gemma
Claret Teruel, Ana Isabel Curcoy
Barcenilla, Lidia Martínez Sánchez,
Victoria Trenchs Sainz de la Maza

POSTDOC ASSOCIATED RESEARCHERS

Andrea Aldemira Liz, Vanessa Arias
Constantí, Eva Gargallo Burriel,
Cristina Parra Cotanda

PREDOC ASSOCIATED RESEARCHERS

Guillem Brullas Badell, Marta Díaz
Miguel, David Muñoz Santanach,
Marta Simó Nebot

In 2024, the main innovation in our Group is the incorporation of artificial intelligence as a tool for carrying out one of our key projects. Specifically, we are working on the development and validation of an early hospitalization prediction model based on machine learning, with the aim of improving patient flow and reducing their stay in the Emergency Department. Additionally,

we have continued to work on patient safety and experience, involving them or their families in the design and implementation of various improvement measures. Along these lines, we were selected and are participating in an international multicentre clinical trial for the optimization of analgesia in patients with fractures. Finally, we continue to collaborate with other hospitals (ReSync Study 3, RHEDI, and NIRSEVIMABV2 studies) to assess the impact of the introduction of immunization against Respiratory Syncytial Virus (Nirsevimab) on the healthcare pressure of respiratory pathology in emergencies, as well as the type and severity of the same.

SELECTED PUBLICATIONS

- Algarrada L, Martínez L, Baena I, Benito C, Rodríguez A, López V et al. Multicenter study of adolescent suicide attempts by poisoning: social, epidemiological, and clinical characteristics. *Emergencias*. 2024;36(6):438-446. IF:5,400. (Q1).
- Andina D, Claret G, Gijon M, Camara A, Banos L, de Miguel B et al. Nirsevimab and Acute Bronchiolitis Episodes in Pediatric Emergency Departments. *Pediatrics*. 2024;154(4)IF:6,200. (Q1).
- Garrido M, Alonso JA, Gómez B, Gangoiti I, Hernández S, de la Torre M et al. Salmonella Bacteremia in Spanish Pediatric Emergency Departments: Uncommon But Not Mild. *Pediatr. Infect. Dis. J.* 2024;43(9):825-830. IF:2,900. (Q1).
- Hernández S, Trenchs V, Diego P, Seguí A, Luaces C. Bacterial coinfection in young febrile infants with SARS-CoV-2 infection. *Eur J Pediatr*. 2024;183(1):281-288. IF:3,000. (Q1).

SELECTED PROJECTS

- RSV in Hospital Emergency Departments in Iberia (RHEDI) Study. (RHEDI). 2022-2025 IP:Carles Luaces Cubells.
- ReSync Study 3:Time series analysis of the impact of public health measures on respiratory tracts infections in pediatric emergency departments. 2018 -. 2022 – 2025 IP: Claret, G, Trenchs, V
- Desenvolupament i validació d'un model de predicció precoç d'hospitalització en el servei

d'urgències pediàtriques. 2024-2025 IP: Brullas, G.

- Reentrenamiento de un Modelo de Lenguaje para optimizar la gestión de la demanda urgente pediátrica en el Hospital Sant Joan de Déu y la Atención Primaria. 2024-2025. IP: Carles Luaces i Francesc Ros.

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. 2024IP:Yolanda Fernández Santervas.

Hospital Dentistry and Periodontal Medicine

Alejandro Rivera Baró, MD, PhD



1

PROJECTS

1 competitive projects

0 non competitive projects



3

PUBLICATIONS



6

IMPACT FACTOR

2,1 average impact factor



33%

PUBLICATIONS IN 1ST QUARTILE



100%

LEADERSHIP

MEMBERS

STAFF RESEARCHER

Mireia Aznar Gómez, Lluís Brunet Llobet, Jaume Miranda Rius, Jordi Moncunill Mira, Maria Lluïsa Tobella Camps

During 2024, 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'. The correlation of periodontal inflammatory biomarkers with amniotic fluid biomarkers in pregnant women at high risk of preterm birth (APP and RPM) has not been sufficiently investigated.

During 2024 we completed another study relating bone disease to oromaxillofacial disorders in two different populations. This study with CEIm authorization: PIC 175-19,

"Dentomaxillofacial abnormalities associated with bone diseases in two pediatric populations: Southern Europe and Eastern Africa" has allowed to write a first article for the Orphanet Journal and Rare Diseases and to finalise a Doctoral Thesis that will qualify for an international mention.

There are two further projects that correspond to two doctoral theses that have previously been registered and approved by the UB Doctoral Medicine Committee:

i) CEIm / PIC-01-23. Prognostic factors of traumatized and transplanted teeth.

ii) CEIm / PIC-187-21. Gingival Enlargement induced by orthodontics.

SELECTED PUBLICATIONS

- Bunte K, Brunet LL, María Dolores Rocha E, Ramírez A, Mahmoud MA, Mashala El et al. Patient-related factors that link chronic kidney disease and periodontitis: a scoping review. *Odontology*. 2024. IF:1,900. [Q2].
- Bunte K, Brunet LL, María Dolores Rocha E, Ramírez A, Mahmoud MA, Mashala El et al. Patient-related factors that link chronic kidney disease and periodontitis: a scoping review. *Odontology*. 2024. IF:1,900. [Q2].

SELECTED PROJECTS

- SGR 2022-2024_Hospital Dentistry & Periodontal Medicine Research Group. (2021 SGR 00663). Agaur - Agència de Gestió d'Ajuts Universitaris i de Recerca. 2022-2025. IP: Lluís Brunet Llobet.

Paediatric Ophthalmology

Joan Prat Bartomeu, MD, PhD



2

PROJECTS

0 competitive projects

2 non competitive projects



4

CLINICAL TRIALS & OBSERVATIONAL STUDIES



5

PUBLICATIONS



20

IMPACT FACTOR

4.0 average impact factor



40%

PUBLICATIONS IN 1ST QUARTILE



20%

PUBLICATIONS IN 1ST DECILE



40%

LEADERSHIP

MEMBERS

STAFF RESEARCHER

Elisa Carreras Bertran, Ester Casas Gimeno, Jaume Català Mora, Jesús Díaz Cascajosa, Ana Isabel Díaz Cortés, Carlos Fresno Cañada, Carmen García de Vicuña Muñoz, Enrique Jiménez Gañan, Ana Llorca Cardeñosa, Marta Morales Ballús, Núria Planas Domènech, M^a Josep Planas Tapias, Enric Puigventós Rosanas, Gemma Romeu Cerrillo, Alicia Serra Castanera, Dowon, Simone Suh, Begonya Yeste Mayoral

During 2024, our research group has had a certain continuity in relation to previous years, of special relevance are:

1) Visual changes with intraocular gene therapy in patients with retinal dystrophies,

2) Efficacy and complications of retinoblastoma management using

improved oncolytic viruses,

3) Genetic studies of different rare ophthalmological diseases,

4) Utility of hyaluronate as a palpebral and orbital tissue expander in children with developmental eyelid anomalies.

Regarding innovation, the developments are varied:

1) Development of a virtual reality team for the evaluation and monitoring of functional vision in patients with hereditary retinal dystrophies before and after treatment with advanced intraocular therapies (AGAUR financed)

2) Retinopathy of prematurity classification through AI of photographs (retinography)

3) Development of a visual acuity test in different colors for diagnosis of visual defects in patients with optic pathways lesions

SELECTED PUBLICATIONS

- Mesa P, Yago I, Bolarín JM, Martínez D, López B, Barranco H et al. Childhood-Onset Non-Infectious Uveitis in the "Biologic Era". Results From Spanish Multicenter Multidisciplinary Real-World Clinical Settings. Ocul Immunol Inflamm. 2024;32(9):2159-2169. IF:2,600. [Q2].
- Fonseca E, Olivé G, Martínez E, Guasp M, Naranjo L, Ruiz R et al. Investigating the 2023 MOGAD Criteria in Children and Adults With MOG-Antibody Positivity Within and Outside Attacks. Neurology. 2024;103(6). IF:8,400. [Q1].
- Del Prado C, Llorca A, Yeste B, Grixolli S, Barros MF, Días J et al. chamber inflammation in paediatric patients diagnosed with juvenile idiopathic arthritis. Clin. Exp. Rheumatol. 2024;42(7):1507-1512. IF: 3,400. [Q2]. Optical coherence

tomography for the screening of anterior

- Fresno C, Gispets J, Del Prado C, Puigventós E, Pérez S, Salvador H et al. DRI Triton SS-OCT applied to detect choroidal nodules in paediatric patients affected by NF1. Heliyon. 2024;10(8) IF:3,400. [Q1].

SELECTED PROJECTS

- Equip Realitat Virtual per l'avaluació de la visió funcional en pacients amb DHR pre i post-tractament amb teràpies intraoculars avançades. 2025 – 2026. IP: Jaume Català Mora.
- Global Patient Registry of Inherited Retinal Diseases: IRD Registry. 2024. IP: Jaume Català Mora.
- Estudio retrospectivo de revisión de historias clínicas combinado con encuestas transversales para pacientes y cuidadores para documentar y describir las características clínicas, individuales y sociodemográficas relacionadas con la enfermedad de pacientes con retinosis pigmentaria ligada al cromosoma X (XLRP) y el impacto de la XLRP en los pacientes y sus cuidadores. 2023 – 2024. 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]. [CLOBOF3-17IA03]. Laboratorios Salvat, S.A. 2022. IP: Marta Morales Ballús.
- MyopiaX Treatment for the Reduction of Myopia Progression in Children and Adolescents: Safety and Efficacy Investigation. [CIV-IE-21-06-037026 (MyopiaX-1). Dopavision GmbH. 2023 – 2025. IP: Marta Morales Ballús.
- Ensayo clínico fase I, unicéntrico, abierto y de escalado de dosis, para evaluar la seguridad y la actividad del adenovirus oncolítico VCN-01 en pacientes con retinoblastoma refractario. [FSJD-RTB-2015]. 2017. Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD FSJD. .

Nursing Research

Montserrat Gutierrez

 **1**
PROJECTS
1 competitive projects
0 non competitive projects

 **3**
PUBLICATIONS

 **9**
IMPACT FACTOR
3.0 average impact factor

 **67%**
PUBLICATIONS IN 1ST QUARTILE

 **67%**
LEADERSHIP

MEMBERS

STAFF RESEARCHER

Rosa Maria Carmona Jiménez, María Pilar Hornillos Sánchez, Ana Negre Loscertales, Mirian Pintor Castillo, Alba Ropero Palacios, Eva Maria Luján Luján, Maribel Ferrer Orona, Concepción Agustín Mata, Silvia Ciprés Roig, Jordi Mitjà Costa, Gemma Pérez Acevedo

POSTDOC ASSOCIATED RESEARCHERS

Carmen Yoldi-Vergara , M^a Dolors Navarro Rubio

During 2024, Phases I and II of the Contingency Plan initiated the previous year will be implemented, with the aim of promoting professional development in research through the involvement of nursing management and the staff of heads and coordinators. After analyzing the data collected, it was concluded that nursing managers demonstrate interest and commitment to fostering a culture of active and collaborative research, highlighting the need to acquire knowledge and skills through increased resources and institutional support.

At the end of the year, Carmen Yoldi Vergara's doctoral thesis was presented, joining the professionals

who have earned their doctorates at the institution. In the coming years, we will have, in stages, the theses of thirteen nurses, four of whom belong to the Associated Clinical Group: Nursing Research.

Regarding the group, the work of PhD Eva M. Luján in recent years is noteworthy. She has compiled the experience of implementing the Positive Therapy Model (Nelsen, 2011) in the Acompanya'm Unit. This model is based on the principles of respect, discipline, and affection. This implementation has demonstrated that Positive Discipline reduces immobilization, promotes social and emotional skills, improves well-being, and strengthens relationships in children with mental disorders.

On the other hand, the publication of PhD Carmen Yoldi's study evaluating the association of socioeconomic factors with adherence to self-management (DMQ-Sp) and QoL (PedsQL) demonstrates how factors such as family structure, parental responsibility, educational level, and family income are associated with better health outcomes. This leads to the conclusion that personalized and holistic care strategies are needed in nursing care to identify vulnerable families and prevent complications in children with chronic conditions.

SELECTED PUBLICATIONS

- Pérez G, Torra JE, Peiró A, Inmaculada V, Urrea M, Bosch A et al. Incisional negative pressure wound therapy for the prevention of surgical site complications in Paediatric patients with non-idiopathic scoliosis: A randomized clinical trial. INT WOUND J. 2024;21(9). IF:2,600. (Q1).
- Yoldi C, Conget I, Cardona R, Ramon M. Influence of socioeconomic factors on glycemic control, therapeutic adherence and quality of life in children and adolescents with type 1 diabetes. Endocrinol. Diabetes Nutr. 2024;71(6):253-262. IF:1,800. (Q3).
- Caballero R, Pasten A, Giménez C, Raquel B, Carmona RM, Mora J et al. Beyond Needles: Pioneering Pediatric Care with Virtual Reality

(VR) for TIVAD Access in Oncology. Cancers. 2024;16 (12). IF:4,500. (Q1).

- Beato PI, Chico A, Moreno J, Bellido V, Nattero L, Picón MJ et al. A Multicenter Prospective Evaluation of the Benefits of Two Advanced Hybrid Closed-Loop Systems in Glucose Control and Patient-Reported Outcomes in a Real-world Setting Response. Diabetes Care. 2024;47(5):46-47. IF: 14,800. (Q1).

SELECTED PROJECTS

- Post- acompanya'm: comunitats de suport per a una transició sostenible dels/les joves amb problemes de Salut Mental cap a la vida adulta. (DDS008/22/000240). Generalitat de Catalunya. 2023-2025. IP: Eva Maria Luján Luján.
- Análisis de lesiones cutáneas relacionadas con la dependencia (LCRD) en una unidad de cuidados paliativos pediátricos. IP: Eva Maria Luján Luján.
- Enfermedades minoritarias infantiles y necesidades paliativas al final de la vida. Experiencia de los profesionales sanitarios. IP: Mirian Pintor Castillo
- Influencia de las intervenciones enfermeras en la adherencia terapéutica del paciente con artritis idiopática juvenil durante el programa de transición a adultos. IP: Patricia Ramirez Rodríguez.

Innovation in Medical Assistance Devices

Vicens Diaz de Brito Fernandez

 **7** PROJECTS
6 competitive projects
1 non competitive projects

 **7** CLINICAL TRIALS & OBSERVATIONAL STUDIES

 **10** PUBLICATIONS

 **58** IMPACT FACTOR
5,8 average impact factor

 **60%** PUBLICATIONS IN 1ST QUARTILE

 **30%** PUBLICATIONS IN 1ST DECILE

 **30%** LEADERSHIP

MEMBERS

RESEARCHER

Gerard Andreu Morera, Manel Carreras Martínez, Montserrat Escuté Amat, Erika Esteve Palau, M^a Araceli Gonzalez Cuevas, Pablo Javier Marchena Yglesias, Ramón Mir Abellán, Maria del Carmen Alvarez Moya, Pilar Aparicio García, Antonio Cárdenas Cárdenas, Gemma Donaire Sansó, Gloria Marsal Terés, Encarnación Moreno Castañeda, Elena Reus Calvo, Beatriz Sahún Mairal, Montserrat Sanmartí Villamala, Pilar Torré González

During 2024, our team has actively participated in various clinical research initiatives, consolidating our focus on innovation in medical assistance devices and technologies. Our involvement in several multicenter clinical trials has enhanced our contribution to the development and evaluation of healthcare devices and therapeutic strategies. We have collaborated in national and international studies, including randomized controlled trials and

investigations involving medical devices, focused on improving patient outcomes in several areas such as internal medicine, infectious diseases, patient safety, orthopedics, endocrine disorders in pregnancy, and sexual and reproductive health. Notably, our group has contributed to studies on the efficacy of personalized knee surgery systems and the evaluation of innovative digital health solutions. This activity reflects our commitment to translational research and the application of cutting-edge technology to clinical practice. Moreover, we have expanded our collaborations with pharmaceutical industry sponsors and independent academic promoters alike, supporting both investigator-driven and industry-funded projects. These efforts underscore our ongoing commitment to advancing patient care through device-based innovation.

SELECTED PUBLICATIONS

- Sebastián D, Beltrà M, Irazoki A, Sala D, Aparicio P, Aris C et al. TP53INP2-dependent activation of muscle autophagy ameliorates sarcopenia and promotes healthy aging. *Autophagy*. 2024;20(8):1815-1824. IF:14,600. [Q1].
- Marin S, Ballaz A, Gomez C, Marchena P, Lopez P, Francisco I et al. Symptom-related screening programme for early detection of chronic thromboembolic pulmonary hypertension after acute pulmonary embolism: the SYSPPE study. *Thorax*. 2024;79(2):144-152. IF:10,800. [Q1].
- 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.* 2024;IF:8,700. [Q1].
- Giménez M, Hernández S, Padullés A, Boix L, Grau S, Badia JM et al. Impact of an antimicrobial stewardship program indicator on the appropriateness of the empiric antibiotic treatment of urinary source *Escherichia coli* bacteraemia. *Int J Antimicrob Agents*. 2024;64(2):107202-107202. IF:4,900. [Q1].

SELECTED PROJECTS

- A CLINICAL INVESTIGATION STUDY TO EVALUATE THE EFFICACY AND SAFETY OF AIRVAULT DURING GRAVITY DELIVERED INTRAVASCULAR INFUSIONS IN A CLINICAL SETTING (SAFE-INFUSION STUDY: AirVault). (CLIN-CIP-001 (AirVault)). Tessen Solutions Limited. 2024. IP: Ramón Mir Abellán.
- AppATB: an automated, multiplatform, bacteraemia database and antimicrobial stewardship app to improve antibiotics prescription support by adapting it to the local microbial ecosystem. Agaur - Agència de Gestió d'Ajuts Universitaris i de Recerca. 2024-2026. 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. Instituto de Salud Carlos III (ISCIII). 2020-2025. IP: Vicens Diaz de Brito Fernandez.
- Evaluación funcional en pacientes sometidos a artroplastia total de rodilla mediante equilibrado ligamentario convencional comparado con equilibrado guiado con sensor: ensayo clínico aleatorizado. Parc Sanitari de Sant Joan de Déu -Serveis de Salut Mental. 2021-2024. IP: Juan Castellanos Robles.

SELECTED CLINICAL STUDIES

- 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 (estudio SAFE-Infusion). A NON-INFERIORITY RANDOMIZED CLINICAL TRIAL INVESTIGATING EFFICACY AND SAFETY OF AN INNOVATIVE MEDICAL DEVICE IN THE REDUCTION OF MECHANICAL COMPLICATIONS OF PERIPHERAL INTRAVENOUS CATHETERS (SAFE-INFUSION STUDY). (Tada 05-01-11 (ReLink)). TADA Group AB. 2023IP:Ramón Mir Abellán. Cirugía guiada personalizada de rodilla GPS® de Exactech®. Exactech® Knee Guided Personalized Surgery (eGPS®): Clinical Study. Exactech,

Inc. 2021. IP: Juan Castellanos Robles.

- Long-term treatment of cancer associated VTE: Optimal dose of apixaban: API-CAT STUDY for APIxaban Cancer Associated Thrombosis - API-CAT. APHP Clinical Research and Development Department (DRCD). 2020-2025. IP: Pablo Javier Marchena Yglesias.
- 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. 2021IP:Vicens Diaz de Brito Fernandez.

Clinical groups and innovation

Rosana Hernando Salvador



7

PROJECTS

7 competitive projects

0 non competitive projects



4

CLINICAL TRIALS &

OBSERVATIONAL STUDIES



8

PUBLICATIONS



35

IMPACT FACTOR

4,4 average impact factor



63%

PUBLICATIONS IN 1ST QUARTILE



25%

PUBLICATIONS IN 1ST DECILE



13%

LEADERSHIP

MEMBERS

RESEARCHER

Nuria Berrocal Izquierdo, Pere Coca Alves, Jordi Comajuncosas Camp, Raffaele Fiorillo, Luis Lores Obradors, Bernabé Robles Del Olmo, Sandra Torra Alsina, Miriam Aguado García, Mònica Blanch Anglada, Antonio Callen Soto, Cristina Caupena Auledas, Carolina Elduque Mora, Karolina Esponda Juárez, Patricia Miró Botella, Enric Sebastian Valverde, Anibal Ricardo Silva Rodriguez

"Clinical groups and innovation" is a heterogeneous group of different medical specialties and nursing that aims to contribute through clinical research and applied innovation in the healthcare sector to the study of the epidemiology of prevalent diseases, their pathophysiology, optimization of treatment for these conditions, as well as the creation and/or utilization of new devices and platforms developed through artificial intelligence (IA) that enhance clinical practice and medical treatment.

In 2024, we continue on our path of progressive growth in each of the areas we focus on: research

in the field of neurology, ethics, rehabilitation, pulmonology, aging, general and digestive surgery, digestive diseases, chronic diseases of the musculoskeletal system, allergic diseases, and nursing research in chronic wound care. The field of innovation remains an important pillar for us, merging with each of our areas. Notable projects include the use of AI like the development of technology for cognitive training and physical stimulation for individuals at risk of developing neurodegenerative diseases in their own homes (COGNIVITRA study), the use of AI in motor and cognitive rehabilitation at the home of patients who have recently suffered a stroke (PHRASE), in the aphasia rehabilitation (ORACIA) and the use of AI in real-time monitoring of asthmatic patients and their exposure to air pollution through a clinical digital platform, among other initiatives.

Part of this scientific production has been reflected in publications in indexed journals, including those with a high impact factor. Notably: Sebastián D, Beltrà M, Irazoki A, Sala D, Aparicio P, Aris C, Alibakhshi E, Rubio-Valera M, Palacín M, Castellanos J, Lores L, Zorzano A. TP53INP2-dependent activation of muscle autophagy ameliorates sarcopenia and promotes healthy aging. *Autophagy*. 2024 Aug;20(8):1815-1824. doi: 10.1080/15548627.2024.2333717. Epub 2024 Mar 28. PMID: 38545813; PMCID: PMC11262205.

SELECTED PUBLICATIONS

- Sebastián D, Beltrà M, Irazoki A, Sala D, Aparicio P, Aris C et al. TP53INP2-dependent activation of muscle autophagy ameliorates sarcopenia and promotes healthy aging. *Autophagy*. 2024;20(8):1815-1824. IF: 14,600. (Q1). xx
- Ciscar A, Sánchez E, Vila M, Ruiz de Leon P, Gomez M, Troyano D et al. Assessment of the effectiveness of a polypropylene onlay mesh in the prevention of laparoscopic trocar-site incisional hernia in high-risk patients. A randomized clinical trial. *Hernia*. 2024;28(6):2187-2194. IF: 2,600. (Q1). xx
- Lopez J, Chivite I, Serena M, Szymanski C, Benhsain D, Martins AI et al. Implementation of COGNIVITRA, an Information- and

Communications-Technology-Based Solution for Dual-Task Training, in Patients at Risk of Cognitive Impairment. *Appl. Sci.-Basel*. 2024;14(17):2,500. (Q1).

- Pesantes E, Hernando R, Lores C, Cámara J, Arévalo E, Lores L. Utility of exhaled nitric oxide to guide mild asthma treatment in atopic patients and its correlation with asthma control test score: a randomized controlled trial. *BMC Pulm. Med*. 2024;24(1):421-421. IF:2,600. (Q2).

SELECTED PROJECTS

- Eficacia analgésica y seguridad clínica de la aplicación tópica de sevoflurano en el tratamiento de heridas crónicas. Parc Sanitari de Sant Joan de Déu -Serveis de Salut Mental. 2024-2025. IP:Pere Coca Alves.
- Efectes de l'exposició quotidiana a contaminants atmosfèrics en pacients de COVID-19 i d'altres. Agaur - Agència de Gestió d'Ajuts Universitaris i de Recerca. 2021-2025. IP: Rosana Hernando Salvador.
- AINN: Integrating AI in Stroke Neurorehabilitation. (101057655). European Commission. 2022-2026. IP:Raffaele Fiorillo.
- Establecimiento de un algoritmo mitocondrial para predecir el riesgo de progresión a la enfermedad de Alzheimer en pacientes con deterioro cognitivo leve. 2015. Promotor propio. IP: Antonio Callen Soto.
- Ajuts per al finançament del Programa Investigo per ala contractació de persones demandants d'ocupación en la realització d'activitats de recerca i innovació. Agaur - Agència de Gestió d'Ajuts Universitaris i de Recerca. 2023-2025. IP: Antonio Callen Soto.

SELECTED CLINICAL STUDIES

- A double-blinded extension study to evaluate the long-term safety and tolerability of itepekimab in patients with chronic obstructive pulmonary disease (COPD) who participated in either EFC16750 or EFC16819 clinical studies. (LTS18133). Sanofi-Aventis S.A. 2024 IP:Rosana Hernando Salvador.
- Estudio Fase 3, aleatorizado, controlado con placebo, con doble ciego y de grupos paralelos para

evaluar la eficacia, la seguridad y la tolerabilidad de SAR440340/ REGN3500/itepekimab (anti-IL-33) en pacientes con enfermedad pulmonar obstructiva crónica (EPOC) de moderada a grave. (EFC16819 AERIFY2). Sanofi-Aventis S.A. 2021. IP: Rosana Hernando Salvador.

- PHRASE - FEASIBILITY STUDY. Eodyne Systems S.L. 2024. IP: Raffaele Fiorillo.

7.2

MENTAL HEALTH AREA

7.2.1

Mental Health and Society

Impact and Prevention of Mental Disorders

Health Technology Assessment in Primary Care and Mental Health (PRISMA)

Psychological Research in Fibromyalgia and Chronic Pain (AGORA Group)



Impact and Prevention of Mental Disorders

Josep Maria Haro Abad, MD, PhD


36

PROJECTS

29 competitive projects
7 non competitive projects


1

CLINICAL TRIALS &
OBSERVATIONAL STUDIES

1 commercial clinical trials
0 academic clinical trials


119

PUBLICATIONS


749

IMPACT FACTOR

6,3 average impact factor


75%

PUBLICATIONS IN 1ST QUARTILE


35%

PUBLICATIONS IN 1ST DECILE


29%

LEADERSHIP

MEMBERS

STAFF RESEARCHER

Ingrid Gete Alejandro, Patricia Morillas Varela, Marcel•la Esquerre Soler, Debora Gonzalez Muñoz-Caballero, Jordi Rodeiro Boliart, Mariona Pérez Anton, Clara Szymanski Cortés, Helena Sainz Elias, Emilio Tomas Lavilla, Francina Mesquida Veny, Rachid El Hafi Elmokhtari , Fajar Matloob Ahmed Butt , Marta Franch Roca, Lydia Hanaa Faris , Iago Giné Vázquez, Ivet Bayes Marin, Blanca Mellor Marsa, Maria Victoria Moneta , Ziggi Santini

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RESEARCHER

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POSTDOC ASSOCIATED RESEARCHERS

Giuliana Longworth , Júlia Sangüesa Boix, Andrea Estefanía Miranda Mendizabal, Rodrigo Antunes Lima, Joan Domènech Abella

TÉCNICO

Sonia Canals Oliver

The research group "Impact and Prevention of Mental Disorders", recognized as a Consolidated Group by the Government of Catalonia (2021 SGR 01469), is organized into two main lines of research: the epidemiology of mental disorders (incidence and prevalence, risk factors, potentially vulnerable populations), coordinated by Dr. Beatriz Olaya, and the promotion of emotional well-being and prevention of mental disorders, coordinated by Dr. Josep Maria Haro. These two lines are closely interrelated, as the results of the first inform and support the second. For example, studies on the impact of loneliness on the mental health of older adults have led to the design of interventions targeting different types of loneliness.

The aim of the first research line is to determine the impact of mental disorders on the general population as well as on specific population groups, such as migrants, older adults, or people affected by COVID-19. The group is part of the World Mental Health Surveys initiative.

The main objective of the second line is to develop programs for mental health promotion and prevention of mental disorders in specific populations. The programs developed so far (e.g., the EMPOWER project on workplace mental health, the IMPROVA project targeting adolescents, the RESPOND project for healthcare professionals, and the MiO project for unaccompanied migrant minors) are characterized by their combination of e-health and m-health tools with face-to-face interventions, which facilitates their implementation and scalability at lower cost.

SELECTED PUBLICATIONS

- Gabarrell A, Coll L, Alias SB, Pascual RM, Haro JM, Domènech J. Reducing loneliness and depressive symptoms in older adults during the COVID-19 pandemic: A pre-post evaluation of a psychosocial online intervention. PLoS One. 2024;19(12):2,900. (Q1).
- de Miquel C, Haro JM, van der Feltz CM, Ortiz A, Chen T, Sinokki M et al. Differential attrition and engagement in randomized controlled trials of occupational mental health interventions in person and online: A systematic review and meta-analysis. Scand. J. Work Environ. Health. 2024;50(8):588-601. IF:4,700. (Q1).
- González L, Monistrol A, Vindrola C, Aguilar S, Carreras B, Haro JM et al. Long-Term Emotional Impact of the COVID-19 Pandemic and Barriers and Facilitators to Digital Mental Health Tools in Long-Term Care Workers: Qualitative Study. J. Med. Internet Res. 2024;26(5):5,800. (Q1).
- Antunes R, Condominas E, Sánchez A, Olaya B, Koyanagi A, de Miquel C et al. Physical Activity Participation Decreases the Risk of Depression in Older Adults: The ATHLOS Population-Based Cohort Study. Sports Med Open. 2024;10(1):1-1. IF:4,100. (Q1).

SELECTED PROJECTS

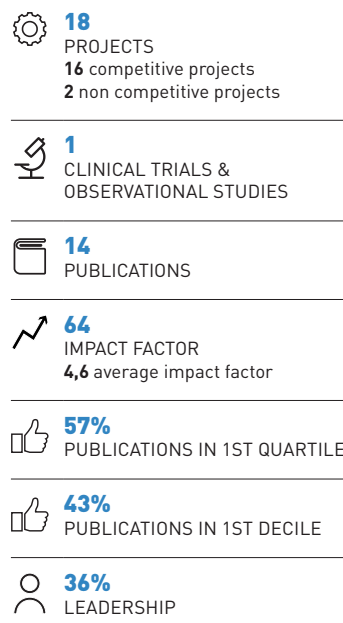
- IMPROVA - e-Intervention Enhancing Mental Health in Adolescents. (10108093). European Commission; Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 2023-2027. IP: Josep Maria Haro Abad.
- Xarxa d'Innovació de Noves Tecnologies en Salut Mental (TECSAM). (2021 XARDI 00005). Agaur - Agència de Gestió d'Ajuts Universitaris i de Recerca. 2023-2025. IP: Josep Maria Haro Abad.
- Plataforma online para promover el bienestar emocional y la salud en el lugar de trabajo: Estudio observacional en empresas de la región de Catalunya. Instituto de Salud Carlos III (ISCIII). 2024-2027. IP: Beatriz Olaya Guzmán.
- (EM)POWERYOU(TH): A CO-CREATED MODEL TOWARDS A NON-DISCRIMINATION CULTURE. European Commission. 2024-2026. IP: Paula Cristobal Narvaez.

SELECTED CLINICAL STUDIES

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

Health Technology Assessment in Primary Care and Mental Health (PRISMA)

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



MEMBERS

STAFF RESEARCHER

Marta Menendez Boscasa, Marina Fuente Moreno, Ana María Besoain Cornejo, Paula Arroyo Uriarte, Carmen Corral Partearroyo

MANAGEMENT

Sandra Martinez Mudarra

COLLABORATOR RESEARCHER

Salvatore Fabrizio Contaldo, Maria del Carmen Gallardo González, Silvia Ramírez Perdomo, Montserrat Iracheta Todó, Ana Fernández Sánchez, Maria Antonia March Pujol, Juan Manuel Mendive Arbeloa, Maria Teresa Peñarribia Maria, Ramon Sabes Figuera, Luís Salvador Carulla

RESEARCHER

Claudia Macarena Palma Vázquez, Alexandra Lelia Dima , Víctor Chavarría Romero, Luisa Baladon Higuera, Vanessa Barneda , Maria Iglesias Gonzalez, Cristina López Ortiz, Enric Vicens Pons

POSTDOC ASSOCIATED RESEARCHERS

Laura Elina del Carpio , Mercè Soler Font, Maria Montserrat Gil Girbau, Carlos Peña Salazar, Ignacio Aznar Lou

TECHNICIAN

Marcos Antonio Catalan Vega

In 2024, our research group reached three major milestones. First, within the framework of the IMA-cRCT Project, funded by the European Research Council Starting Grant programme, we completed the clinical trial that evaluated the health and economic impact of shared decision-making as well as its implementation process (www.iniciadores.es). The information gathered will be used to transfer the intervention into clinical practice in collaboration with the Institut Català de la Salut. Second, the ECONOS unit cost repository has been launched, developed in collaboration with CIBER Epidemiology and Public Health (<https://econos.org/>). This repository compiles the official tariffs of public health services across Spain, representing a major advancement for national economic evaluation studies by facilitating researchers' access to unit cost information and standardizing these types of studies. Finally, the mixed-methods study B-LONG has been completed, demonstrating that one in every four new prescription of benzodiazepines are taken more time than that recommended by technical sheet. Additionally, motivations and reasons behind this chronification were also explored from users and professionals perspectives, highlighting group of factors related with the healthcare system as professionals, system organization and coordination between professionals but also with users. The data collected will be used to prioritize populations for interventions and to develop theory-based, context-adapted interventions.

These and other achievements have been accompanied by several publications produced by our research group and the development of six complementary projects. In addition, the group has led the drafting of the evaluation proposal for the Strategic Plan of the National Pact for Mental Health Committee, also contributing to the evaluation of health policies in Catalonia.

SELECTED PUBLICATIONS

- - Soler M, Ribera A, Aznar I, Sanchez A, Slof J, Vela E et al. Costs during the first year after stroke by degree of functional disability: A societal perspective. Eur. Stroke J. 2024;IF:5,900. (Q1).
- - Soler M, Aznar I, Almansa J, Peña P, Silva M, Serra C et al. Cost-Effectiveness of a Multi-faceted Workplace Intervention to Reduce Musculoskeletal Pain in Nursing Staff: A Cluster-Randomized Controlled Trial (INTEVAL_Spain). J Occup Rehabil.
- Mortier P, Conde S, Alayo I, Amigo F, Ballester L, Cirici R et al. Premature Death, Suicide, and Nonlethal Intentional Self-Harm After Psychiatric Discharge. JAMA Netw. Open. 2024;7(6)IF:10,500. (Q1).
- Fuente M, Dima AL, Rubio M, Baladon L, Chavarría V, Fabrizio S et al. Evaluation of adherence to antipsychotics: A real-world data study using four different dosing assumptions. Br J Clin Pharmacol. 2024;90(6):1480-1492. IF:3,100. (Q2).

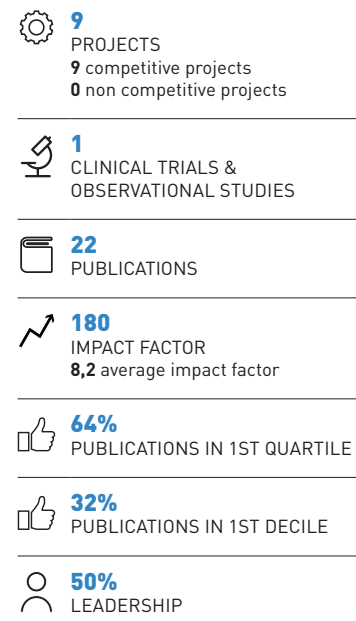
SELECTED PROJECTS

- Motius en la cronificació de l'Ús de Benzodiazepines: Estudi Qualitatiu (Estudi B-LONG). Provincia San Juan de Dios de España. 2024-2025. IP: Maria Montserrat Gil Girbau.
- 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. (101104469). European Commission. 2023-2028. IP: Alexandra Lelia Dima.
- EquityCancer-LA_Improving equity in access to early diagnosis of cancer: implementation research in different healthcare systems of Latin America. (965226). European Commission. 2021-2026. IP: Maria Rubio Valera.
- IMA-cRCT_Effectiveness and cost-effectiveness of the Initial Medication Adherence intervention: cluster randomized controlled trial and economic model. (948973). European Commission. 2021-2025. IP: Maria Rubio Valera.
- clozapina vs tratamiento de práctica clínica habitual en psicosis resistente a tratamiento en personas adolescentes y adultos jóvenes con discapacidad intelectual. (CLOZ-AID). Fundación

Pública Andaluza para la Gestión de la Investigación en Salud de Sevilla. 2022. IP: Carlos Peña Salazar.

Psychological Research in Fibromyalgia and Chronic Pain (ÀGORA Group)

Juan Vicente Luciano Devis, PhD



MEMBERS

ASSISTANT RESEARCHER

Carla Rodríguez Freire

COLLABORATOR RESEARCHER

Albert Feliu Soler, Xavier Borràs Hernández

RESEARCHER

Jesús Montero Marin, Juan Pablo Sanabria Mazo, Lluís Torruella Barraquer, Eugenia Cardeñosa Valera, Antoni Rozadilla Sacanell

POSTDOC ASSOCIATED RESEARCHERS

Adrián Pérez Aranda

In 2024, the main highlight has been the execution of the qualitative study titled "Disseny i avaluació de l'efectivitat d'una intervenció d'Arts en Salut per millorar la qualitat de vida i la capacitat funcional respecte el dolor de persones amb fibromiàlgia. Estudi de metodologia mixta", funded by the Servei de Promoció de la Salut, Subdirecció Regional a Girona.

Additionally, it is worth noting that our group welcomed predoctoral researcher Zachary Zeiger through the MSCA-COFUND TOUCH program ("Towards the next generation of excellent young doctoral researchers on mental health by developing an intersectoral & transdisciplinary approach"). His doctoral dissertation will be linked to the GreenME project ("GreenME: Advancing Greencare in Europe – An integrated multi-scalar approach for the expansion of nature-based therapies to improve mental health equity").

Dr. Luciano received the "Premio Aficro-Vall" for Scientific Advances in the Understanding of Fibromyalgia, awarded by the Royal Academy of Medicine and Surgery of Valladolid, for his study titled "Una nueva herramienta digital para la fibromialgia".

Throughout the year, the group has primarily focused its efforts on the data analysis phase of the IMPACT clinical trial, which evaluates the effectiveness and cost-utility of two third-wave cognitive-behavioral therapies in patients with chronic low back pain and comorbid depression. Additionally, we have continued data collection for the INNOVA project, a randomized clinical trial assessing the effectiveness and cost-utility of Low-Dose Naltrexone versus placebo in the treatment of fibromyalgia-related pain.

Finally, we would like to highlight the continuation of our research line on central sensitization in collaboration with Dr. Randy Neblett, clinician and researcher at the Productive Rehabilitation Institute of Dallas for Ergonomics. This partnership is yielding multiple high-impact scientific publications.

SELECTED PUBLICATIONS

- Montero J, Hinze 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. 2024;:1-9. IF:8,800. (Q1).

- Neblett R, Sanabria JP, Luciano JV, Mircic M, Colovic P, Bojanic M et al. Is the Central Sensitization Inventory (CSI) associated with quantitative sensory testing (QST)? A systematic review and meta-analysis. Neurosci. Biobehav. Rev. 2024;161:105612-105612.
- Gendreau RM, McCracken LM, Williams DA, Luciano JV, Dai Y, Vega N et al. Self-guided digital behavioural therapy versus active control for fibromyalgia (PROSPER-FM): a phase 3, multicentre, randomised controlled trial. Lancet. 2024;404(10450):364-374. IF:98,400. (Q1).
- Sanabria JP, Francesco D, Cardenosa E, Ferrer M, Edo S, Borrás X et al. Economic evaluation of videoconference group Acceptance and Commitment Therapy and Behavioral Activation Therapy for Depression versus usual care among adults with chronic low back pain plus comorbid depressive symptoms. J. Pain. 2024;25(7):104472-104472. IF:4,000. (Q1).

SELECTED PROJECTS

- 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 Depress. (PI23/00021). Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD; Instituto de Salud Carlos III (ISCIII). 2024-2026. IP: Jesús Montero Marin.
- 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). (PI22/00829). Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD; Instituto de Salud Carlos III (ISCIII). 2023-2025. IP: Juan Vicente Luciano Devis.
- CIBER Epidemiología y salud pública. (CB22/02/00052). Instituto de Salud Carlos III (ISCIII). 2023-2024. IP: Juan Vicente Luciano Devis.
- Effectiveness, cost-utility and

neurobiological effects of low-dose naltrexone in patients with fibromyalgia (INNOVA project). (ICI20/00080). Instituto de Salud Carlos III (ISCIII). 2021-2025. IP: Juan Vicente Luciano Devis.

SELECTED CLINICAL STUDIES

- Ensayo clínico farmacológico controlado con placebo, aleatorizado, doble ciego y 12 meses de tratamiento para evaluar la efectividad, coste-utilidad y efectos neurobiológicos de la Naltrexona a dosis baja en pacientes con fibromialgia (Proyecto INNOVA). (FSJD-INNOVA-2020). Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 2022 IP: Antoni Rozadilla Sacanell.

7.2

MENTAL HEALTH AREA

7.2.2

Scientific Base and Approach to Mental Disorders

Etiopathogenesis and Treatment of Severe Mental
Disorders (MERITT)



Etiopathogenesis and Treatment of Severe Mental Disorders (MERITT)

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



30

PROJECTS

25 competitive projects

5 non competitive projects



1

CLINICAL TRIALS &
OBSERVATIONAL STUDIES


27

PUBLICATIONS



91

IMPACT FACTOR

3,4 average impact factor



59%

PUBLICATIONS IN 1ST QUARTILE



7%

PUBLICATIONS IN 1ST DECILE



70%

LEADERSHIP

MEMBERS

STAFF RESEARCHER

Marina Peniza Soriano, Lin Chen ,
Ariadna Corbella Sotil, Iris Cherta
Jordà, Arnau Carmona Feliu, Júlia
Rolduà Ros, Naomi Naidés Averard,
Francisco Vidal Domenech, Gemma
Riquelme Alacid, Alícia Colomer
Salvans, Marta Domínguez del Campo,
Regina Vila Badia

COLLABORATOR RESEARCHER

Maria Elena Huerta Ramos

RESEARCHER

Nuria Tous Andreu, Noemí del Prado
Sánchez, José Manuel Fernández
Rodríguez, Jaume Martínez Mas,
Alvaro Muro Alvarez, Aitor-Eneko Olivé
Albiztur, Jesús Pérez Pazos, María
Ribas Siñol, Vicente Tort Herrando,
María José Escandell Morcillo, Belen
Ramos Jose Maria, Hilari Andres
Mora, Marta Coromina Sadurní, Ruth
Cunill Clotet, Gemma Escartin Martin,
Gemma Escuder Romeva, Mar García

Franco, Marcia Irazábal Giménez,
María Trinidad Peláez Martínez, Elena
Rubio Abadal, Sonia Vilamala Anton,
Silvia Angel Buil, Alvaro Armendariz
Lacasa, Irene Birulés Muntané, Sonia
Cazorla Cavaller, Núria del Cacho
Ortega, Ester Gonzalez Martinez,
Elisabeth López

POSTDOC ASSOCIATED RESEARCHERS

Victoria Espinosa Lorenzo, Christian
Stephan-Otto Attolini

PREDOC ASSOCIATED RESEARCHERS

Maria Lamarca Sanchez, Marina
Verdaguer Rodriguez, Luciana Beatriz
Diaz Cutraro

In 2024, our group has demonstrated
remarkable productivity and impact in
both research publications and project
initiatives. We have successfully
published 33 articles in high-impact
journals, 20 of which are in Q1. These
publications reflect our commitment
to advancing scientific knowledge and
contributing to the understanding
and treatment of psychosis and
other psychological conditions. Our
research encompasses studies
on biomarkers for schizophrenia,
emotional intelligence in first-episode
psychosis, the efficacy of probiotics in
autism spectrum disorders, and the
importance of early intervention in
psychosis, among others.

In addition to our prolific publication
record, we have been actively engaged
in 33 significant projects, three of
which are funded by international
calls, with the PERMEPSY project
being coordinated by our group.
Many of the national projects have
received funding from prestigious
bodies such as Instituto de Salud
Carlos III, la Caixa, and AGAUR,
among others. Seven of these projects
are dedicated to predoctoral and
postdoctoral hiring. These projects
highlight our dedication to innovative
and impactful investigations aimed at
improving mental health outcomes.
Noteworthy projects include research
of trauma and recovery in first-
episode psychosis, the development
of personalized metacognitive
psychological treatments for psychosis
(PERMEPSY, EMCf, THALASSA),
virtual reality for the treatment
of people with schizophrenia and
resistant voices (VR-AVATAR), suicide
prevention (PROSIA), COVID cognitive

deficits, autism attention and social
rehabilitation, and the needs of
women in forensic contexts, all of
which adopt a gender-sensitive
approach. These initiatives not only
advance our understanding of mental
health disorders but also aim to
provide tangible benefits to patients
through improved treatment options
and outcomes.

Overall, the achievements of our group
in 2024 underscore our commitment
to excellence in research and our
ongoing efforts to make meaningful
contributions to the field of mental
health.

SELECTED PUBLICATIONS

- Peláez MT, López R, Espinosa V, Balsells S, Ochoa S, Osma J. Efficacy of the unified protocol for transdiagnostic treatment of comorbid emotional disorders in patients with ultra high risk for psychosis: Results of a randomized controlled trial. J Affect Disord. 2024;367:934-943. IF:4,900. (Q1).
- Núñez C, Stephan C, Roldán A, Grasa EM, Escartí MJ, Aguilar García EJ et al. Orbitofrontal cortex hypergyrification in hallucinating schizophrenia patients: Surface ratio as a promising brain biomarker. Eur Neuropsychopharmacol. 2024;89:47-55. IF:6,100. (Q1).
- Lamarca M, Espinosa V, Acuña V, Vila R, Balsells S, Moritz S et al. Reducing self-stigma in psychosis: A systematic review and meta-analysis of psychological interventions. Psychiatry Res. 2024;342:116262-116262. IF: 4,200. (Q1).
- Cuñat O, Arranz B, Vila R, Serra C, del Cacho N, Butjosa A et al. Relationship Between Exposure to Emotional Neglect and the Inflammatory Biomarkers Neutrophil-to-Lymphocyte, Monocyte-to-Lymphocyte, and Platelet-to-Lymphocyte Ratios in Patients With First-Episode Psychosis. J Clin Psychiatry. 2024;85(2)IF:4,500. (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. (230227). European Commission. 2024-2025. IP: Susana Ochoa Güerre.

- Protective and Risk factors On Suicide in Young people. A population-based study (PROSIA-Y). (SR23-00370). Fundació Bancària " La Caixa". 2023-2025. IP: Judith Usall i Rodié.
- Towards a personalized medicine approach to psychological treatment for psychosis (PERMEPSY). (AC22/00010). Instituto de Salud Carlos III (ISCIII). 2023-2025. IP: Susana Ochoa Güerre.
- PLATEA. Millorant l'atenció a les persones adultes amb trastorn de l'espectre autista. (DDS008/22/000196). Generalitat de Catalunya. 2022-2025. IP: Nuria Tous Andreu.

7.3

TRANSVERSAL PROGRAM

7.3.1

Health Technologies and Innovation

Medical Technologies: Bioinformatics and Biomedical Signals

Medical Technologies: Computer Graphics: Serious Games and Gamification

Medical Technologies: Biomaterials and Tissue Engineering

Medical Technologies: Biosignal Analysis for Rehabilitation and Therapy

Medical Technologies: Instrumentation and eHealth

Medical Technologies: Biomechanics

Patient Engagement in Research

Innovation in Health Technologies

Medical Technologies: Bioinformatics and Biomedical Signals

Alexandre Perera Lluna, PhD

 **8**
PUBLICATIONS

 **45**
IMPACT FACTOR
5,6 average impact factor

 **100%**
PUBLICATIONS IN 1ST QUARTILE

 **38%**
PUBLICATIONS IN 1ST DECILE

 **25%**
LEADERSHIP

MEMBERS

RESEARCHER

Jordi Fonollosa Magrinya, Jon Garrido Aguirre, Jesús Escrivá Muñoz, Giovana Elizabeth Gavidia Bovadilla, Pedro Gomis Román, Montserrat Vallverdú Ferrer

ASSISTANT RESEARCHER

Joshua Llano Viles, Pol Sola de los Santos

PREDOC ASSOCIATED RESEARCHERS

Pol Canal Noguer, Maria Barranco Altirriba

TECHNICIAN

Enrico Manzini, Maria Maqueda

SELECTED PUBLICATIONS

- Rodriguez H, Ormazabal A, Casado M, Arias AY, Oliva C, Barranco M et al. Cerebrospinal Fluid Homovanillic and 5-Hydroxyindoleacetic Acids in a Large Pediatric Population; Establishment of Reference Intervals and Impact of Disease and Medication. Clin. Chem. 2024;70(12):1443-1451. IF:7,100. (Q1).
- Alegria A, Lopez DM, Casals LC, Fonollosa J, Macarulla M. The dilemma of variables assumptions in thermal comfort calculations for educational buildings: To Simplify or Not?. J. Build. Eng. 2024; 84IF:6,700. (Q1).

- Barranco M, Alonso N, Weber RJM, Lloyd GR, Hernandez M, Yanes O et al. Lipidome characterisation and sex-specific differences in type 1 and type 2 diabetes mellitus. Cardiovasc. Diabetol. 2024;23(1):109-109. IF:8,500. (Q1).
- Cernoša I, Trincado F, Canal P, Kruusmaa K, Perera A. Use of Enzymatically Converted Cell-Free DNA (cfDNA) Data for Copy Number Variation-Linked Fragmentation Analysis Allows for Early Colorectal Cancer Detection. Int. J. Mol. Sci. 2024;25(6)IF:4,900. (Q1).

Medical Technologies: Computer Graphics: Serious Games and Gamification

Raul Benítez Iglesias, PhD

 **5**
PUBLICATIONS

 **50**
IMPACT FACTOR
10,1 average impact factor

 **40%**
PUBLICATIONS IN 1ST QUARTILE

 **20%**
PUBLICATIONS IN 1ST DECILE

 **60%**
LEADERSHIP

MEMBERS

RESEARCHER

Maria Amor Duch Guillen, Mercè Ginjaume Egido, Núria Pla García, Josep Sempau Roma

POSTDOC ASSOCIATED RESEARCHERS

Christian Mata Miquel

SELECTED PUBLICATIONS

- Sun BO, Ni M, Li Y, Song Z, Wang H, Zhu H et al. Inositol 1,4,5-Trisphosphate Receptor 1 Gain-of-Function Increases the Risk for Cardiac Arrhythmias in Mice and Humans. Circulation. 2024;IF:35,600. (Q1).
- Guna R, Sikha OK, Benítez R. Interpreting CNN predictions using conditional Generative Adversarial Networks. Knowledge-Based Syst. 2024;302IF:7,200. (Q1).
- Philipp W, Yashwanthika R, Sikha OK, Benítez R. Generation of Rule-Based Explanations of CNN Classifiers Using Regional Features. Neural Process. Lett. 2024;56(5) IF:2,600. (Q3).
- Narayanan VS, Sikha OK, Benítez R. IARS SegNet: Interpretable Attention Residual Skip Connection SegNet for Melanoma

Segmentation. IEEE Access.
2024;12:126122-126134. IF:3,400.
[Q2].

Medical technologies: Biomaterials and Tissue Engineering

Cristina Canal Barnils, PhD

 **29**
PUBLICATIONS

 **186**
IMPACT FACTOR
6,4 average impact factor

 **79%**
PUBLICATIONS IN 1ST QUARTILE

 **41%**
PUBLICATIONS IN 1ST DECILE

 **62%**
LEADERSHIP

MEMBERS

RESEARCHER

Andrea Malandrino , Albert Espona
Noguera, José Manuel García Torres,
Montserrat Español Pons, Francesc
Xavier Gil Mur, Jordi Guillem Martí,
Jose María Manero Planella, Carles
Mas Moruno, Marta Pegueroles Neyra,
Daniel Rodríguez Rius

POSTDOC ASSOCIATED RESEARCHERS

Irene Lodoso Torrecilla, Francesco
Tampieri , Cédric Labay , Juan Tornin
Cavielles

INVESTIGADOR PRE-DOC

Carla Arca García, Patricia Armero
Jurado, Nerea Garcia de Albeniz
Lopez de Aberasturi, Linh Johansson
, David Alejandro Naranjo Tovar,
Tania Vilella i Crosas, David Piñera
Avellaneda, Laura del Mazo Barbara,
Victor Chausse Calbet, Claudia García
Mintegui, Xavier Solé Martí, Mar
Bonany Mariñosa, Judit Buxadera
Palomero, Miguel Mateu Sanz, Joanna
Magdalena Konka , Lluís Oliver
Cervelló, Yago Raymond Llorens, Elisa
Rupérez de Gracia

TECHNICIAN

Meritxell Sánchez Hervás, Noelia
Aparicio Bádenas, Meritxell Molmeneu
Trias, Miquel Punset Fusté

The Biomaterials, Biomechanics,

and Tissue Engineering Research
Group [BBT] brings together a
multidisciplinary team of researchers
with complementary backgrounds,
including engineers, chemists,
physicists, and biologists, ensuring
the ability to tackle scientific
challenges in the biomedical field
from a comprehensive and integrated
perspective.

During 2024, BBT members published
32 articles in JCR-indexed journals
and presented their work in more
than 35 plenary sessions, invited
talks, oral presentations, and posters
at international conferences and
workshops. They also delivered over
11 outreach talks and defended 4
doctoral theses. Team members
received 8 scientific awards.

BBT has carried out 5 European
projects (including an ERC Advanced
Grant and a COST Action involving
over 280 members from 28 European
countries), 6 projects funded by the
Spanish State Research Agency
(AEI), 2 by ACC10, and is part of two
“R&D&I Networks” of the Government
of Catalonia. Additionally, the group
has been actively involved in the
design, management, organization,
and execution of R&D&I projects for
national and international companies,
as well as the implementation of
specific analysis and/or experimental
characterization studies and services,
with a biomedical focus.

SELECTED PUBLICATIONS

- Colombi S, Sáez I, Borrás N,
Estrany F, Pérez MM, García
JM et al. Glyoxal crosslinking of
electro-responsive alginate-based
hydrogels: Effects on the properties.
Carbohydr. Polym. 2024;337:122170-
122170. IF:10,700. [Q1].
- Zivanic M, Espona A, Verswyvel H,
Smits E, Bogaerts A, Lin A et al.
Injectable Plasma-Treated Alginate
Hydrogel for Oxidative Stress
Delivery to Induce Immunogenic
Cell Death in Osteosarcoma. Adv.
Funct. Mater. 2024;34(14)IF:18,500.
[Q1].
- Mateu M, FuentesLópez CV, Uribe
J, Haugen HJ, Pandit A, Ginebra
MP et al. Redefining biomaterial
biocompatibility: challenges

for artificial intelligence and text mining. Trends Biotechnol. 2024;42(4):402-417. IF:14,300. (Q1).

- Van L, Chausse V, Parmentier L, Brancart J, Pegueroles M, Van S et al. 3D-printed shape memory poly(alkylene terephthalate) scaffolds as cardiovascular stents revealing enhanced endothelialization. Adv Healthc Mater. 2024;13(13)IF:10,000. (Q1).

Medical Technologies: Biosignal Analysis for Rehabilitation and Therapy

Miquel A. Mañanas Villanueva, PhD

 **6**
PUBLICATIONS

 **19**
IMPACT FACTOR
3,2 average impact factor

 **100%**
PUBLICATIONS IN 1ST QUARTILE

 **17%**
PUBLICATIONS IN 1ST DECILE

 **33%**
LEADERSHIP

MEMBERS

ASSISTANT RESEARCHER

Mónica Rojas Martínez

STAFF RESEARCHER

Joan Francesc Alonso Lopez, Sergio Romero Lafuente

At BIOART research group we are dedicated to the development and translation of innovative digital health solutions across critical and chronic healthcare needs. Our granted project portfolio demonstrates a strong commitment to leveraging technology for improved patient outcomes and healthcare efficiency.

A key focus area is critical care, exemplified by "MV-Optimizer," which aims to valorize and transfer a digital decision support system for managing mechanical ventilation in the Intensive Care Unit (ICU). This project seeks to empower clinicians with intelligent tools to optimize ventilator settings, potentially reducing complications and improving patient recovery. Complementing this is another project centered on a "Digital and intelligent decision-support system for managing safe mechanical ventilation for the patient and reducing costs in the ICU," further underscoring their expertise in leveraging digital intelligence for enhanced ICU management and resource optimization.

Beyond critical care, BIOART was actively involved in addressing broader healthcare challenges. The "PREPARE" project – Proactive Response and Efficient Planning with AI for Resilient Emergencies in hospitals – highlights our commitment to utilizing artificial intelligence to bolster hospital preparedness and response capabilities during emergency situations, ensuring more effective and resilient healthcare systems.

In the realm of women's health, the "WomenUp" project focuses on "Empowering Women with Urinary Incontinence by an Innovative Home Technology with continuous medical supervision." This initiative demonstrates BIOART's dedication to developing patient-centric solutions that leverage technology to improve the quality of life for individuals managing chronic conditions through accessible and remotely supervised interventions.

Finally, their research extends to the investigation of neurological disorders with the project focusing on a "Comprehensive approach of high-density EEG and EMG to assess central and peripheral nervous system alterations associated with fibromyalgia." This project showcases BIOART's multidisciplinary approach, integrating advanced neurophysiological techniques with digital analysis to gain a deeper understanding of complex conditions like fibromyalgia.

In summary, the BIOART research group is characterized by its commitment to developing and implementing cutting-edge digital health technologies across a spectrum of critical and chronic healthcare areas, from optimizing mechanical ventilation in the ICU to empowering women with innovative home-based therapies and advancing our understanding of neurological disorders. Their work emphasizes the translation of research into practical solutions with the potential for significant impact on patient care and healthcare systems.

SELECTED PROJECTS

- S Fernández I, Mijancos G, Bachiller A, Núñez P, Rodríguez V, Beño RM et al. Relation between task-related activity modulation and cortical inhibitory function in schizophrenia

and healthy controls: a TMS-EEG study. Eur Arch Psychiatry Clin Neurosci. 2024;274(4):837-847. IF:3,500. (Q1).

- Savulescu C, Prats A, Brolin K, Uusküla A, Bergin C, Fleming C et al. Effectiveness of the autumn 2023 COVID-19 vaccine dose in hospital-based healthcare workers: results of the VEBIS healthcare worker vaccine effectiveness cohort study, seven European countries, season 2023/24. Eurosurveillance. 2024;29(44)IF:9,900. (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 Psychiatry Clin Neurosci. 2024;275(3):785-797. IF:3,500. (Q1).

Medical Technologies: Instrumentation and eHealth

Xavier Rosell Ferrer, PhD

 **3** PUBLICATIONS

 **35** IMPACT FACTOR
11,7 average impact factor

 **67%** PUBLICATIONS IN 1ST QUARTILE

 **33%** PUBLICATIONS IN 1ST DECILE

 **67%** LEADERSHIP

MEMBERS

STAFF RESEARCHER

Ramon Bragós Badia, Mireya Fernández Chimenó, Miguel Angel García Gonzalez, Lexa Nescolarde Selva, Juan Ramos Castro, Pere Joan Riu Costa

The Instrumentation and eHealth group has continued its collaboration with various hospitals on the following topics: with Hospital Sant Joan de Déu and the Autonomous University of Barcelona on the development of a point-of-care system for ammonia assessment; with the Cardiology Department of Hospital de la Santa Creu i Sant Pau on cardiac arrhythmia diagnostics; and, at the same hospital, with the Pulmonology Department on the evaluation of a minimally invasive method for distinguishing tumor tissues in the lung. A new three-year research project has been secured in this latter area.

Medical Technologies: Robotics and Vision

Alicia Casals Gelpi, PhD

 **7** PUBLICATIONS

 **30** IMPACT FACTOR
4,2 average impact factor

 **57%** PUBLICATIONS IN 1ST QUARTILE

 **14%** PUBLICATIONS IN 1ST DECILE

 **57%** LEADERSHIP

MEMBERS

EXTERNAL COLLABORATOR

Carlos Morata
Collaborator researcher
Antonio Benedicto Blanes, Laureano Tinoco

RESEARCHER

Joan Aranda López, Josep Fernández Ruzafa, Manel Frigola Bourlon, Antonio Benito Martínez Velasco

INVESTIGADOR PRE-DOC

Narcís Sayols Baixeras

The main focus of research has been human-machine interaction either to control a robotic system or for monitoring, research of application in assistance and rehabilitation by controlling a robotized wheelchair, monitoring the patient using crutches or monitoring and assisting a user of smart walker (rollator). From the perception perspective the research has been the interpretation of user intention and status to provide a compliant control to the robotic device for effective and safe operation. Research in force control, eye tracking, BCI, visual perception and multimaterial 3D printing sensing applying machine learning techniques. In relation to surgical robotics new prospective on moving towards automating some phases of a surgical procedure.

Creation of the company MobilityBrain to transfer the research in mobility assistance to fragile users. The aim of the company is the fabrication of the so called "Donkey Rollator" that supports fragile users in ambulation assistance. The main activity of MobilityBrain this year has been the protection of Industrial Property by the preparation and submission of patents and utility models. Additionally, the company has registered to the Agencia Española del Medicamento as manufacturer of accessory devices for healthcare products.

With respect to the spin-off RobSurgicalSystems, an achievement has been the submission of the documentation to get the CE certification and the extension of the clinical trials in different Catalan hospitals for a multicentric study. In addition, at international level the first surgical intervention with the robot took place in the annual meeting of the Society of Robotic Surgery in Orlando, USA in June 2024.

SELECTED PUBLICATIONS

- Sayols N, Hernansanz A, Sozzi A, Piccinelli N, Falezza F, Farsoni S et al. Dynamic Global/Local multi-layer motion planner architecture for autonomous Robots. Robot. Auton. Syst. 2024;180 IF: 4,300. (Q1).
- Wu D, Zhang RC, Pore A, Dall'Alba D, Ha XT, Li Z et al. A review on machine learning in flexible surgical and interventional robots: Where we are and where we are going. Biomed. Signal Process. Control. 2024;93IF:4,900. (Q1).
- Sayols N, Hernansanz A, Parra JA, Eixarch E, Xambó S, Gratacós E et al. Robust tracking of deformable anatomical structures with severe occlusions using deformable geometrical primitives. Comput. Meth. Programs Biomed. 2024;251:108201-108201. IF:4,900. (Q1).
- Marien Cristina Narvaez D, Salazar M, Aranda J. Assessment of Gait Patterns during Crutch Assisted Gait through Spatial and Temporal Analysis. Sensors. 2024;24(11) IF:3,400. (Q2).

Medical Technologies: Biomechanics

Josep Maria Font Llagunes, PhD

 **6** PUBLICATIONS

 **25** IMPACT FACTOR
4,1 average impact factor

 **67%** PUBLICATIONS IN 1ST QUARTILE

 **50%** PUBLICATIONS IN 1ST DECILE

 **33%** LEADERSHIP

MEMBERS

ASSISTANT RESEARCHER

Marta Rey Prieto

RESEARCHER:

Ana Barjau Condomines, Daniel Clos Costa, Rosa Pàmies Vilà

POSTDOC ASSOCIATED RESEARCHERS:

Ana Carolina Cardoso de Sousa, Massimo Cenciarini , Joan Lobo Prat

INVESTIGADOR PRE-DOC:

Alessandra Favata , Filippo Maceratesi, Jesús de Miguel Fernández, Antonio Rodríguez Fernández, Míriam Febrer Nafria

In 2024, the BIOMEC research group continued its work on several ongoing competitive research projects. Notably, research progressed on the NIMBLE project, focused on neuromusculoskeletal modeling and simulation to better understand motor function recovery after robot-assisted therapy in individuals with spinal cord injury. The group also advanced the ABLE Daily Exo project, which aims to develop smart robotic exoskeletons to support people with disabilities in performing daily activities. This project is conducted in partnership with the spin-off ABLE Human Motion. Additionally, collaboration with Sant Joan de Déu Barcelona Children's Hospital was strengthened through continued work on the ArmTracker project, which is developing a wearable

device to monitor upper limb activity in children affected by Duchenne muscular dystrophy and spinal muscular atrophy. This project has been submitted for funding in the ongoing AGAUR Producte call. In 2024, the group secured new funding from the prestigious Marie Skłodowska-Curie Actions (MSCA) programme of the European Union for the Doctoral Network TAILOR, which focuses on training researchers in advanced rehabilitation technologies. Scientific output remained strong, with 12 articles published in JCR-indexed journals, 20 presentations delivered at international conferences, and 5 book chapters authored. The group maintained its active involvement in innovation and collaboration networks, including Xartec Salut, led by IRIS-UPC, and i4KIDS, led by Sant Joan de Déu Barcelona Children's Hospital. BIOMEC members also received one scientific awards in recognition of their research contributions.

SELECTED PUBLICATIONS

- Velasco RJ, Blik A, Font JM, Vanderborght B, Beckerle P. Compensating elastic faults in a torque-assisted knee exoskeleton: functional evaluation and user perception study. J Neuroeng Rehabil. 2024;21(1)IF:5,200. (Q1).
- Rodríguez A, den AV, Cucinella SL, Lobo J, Font JM, Marchal L. Immersive virtual reality for learning exoskeleton-like virtual walking: a feasibility study. J Neuroeng Rehabil. 2024;21(1):195-195. IF:5,200. (Q1).
- Favata A, Gallart R, Pàmies R, Torras C, Font JM. IMU-Based Systems for Upper-Limb Kinematic Analysis in Clinical Applications: A Systematic Review. IEEE Sens. J. 2024;24(18):28576-28594. IF:4,300. (Q1).
- Gil J, Herrera D, Torricelli D, Gil Á, Opisso E, Vidal J et al. A new modular neuroprosthesis suitable for hybrid FES-robot applications and tailored assistance. J Neuroeng Rehabil. 2024;21(1):153-153. IF:5,200. (Q1).

Patients Engagement in Research

**Joana Claverol Torres, MSc
& Begonya Nafria Escalera, MSc**


11

PROJECTS

10 competitive projects
1 non competitive projects


2

PUBLICATIONS


31

IMPACT FACTOR

15,5 average impact factor


50%

PUBLICATIONS IN 1ST QUARTILE


50%

PUBLICATIONS IN 1ST DECILE


0%

LEADERSHIP

MEMBERS

STAFF RESEARCHER

Estibaliz Urarte Rodríguez, Júlia Giner Gràcia, Elisa Mora de Checa, Victor Royo Calavera, Claudia Alsina Steinemann

During 2023, our research team was involved in six competitive projects, all of them based on the active participation of patients or caregivers in health research. Our contribution to these projects has allowed us to strengthen the capabilities of our institution at the European level, providing more evidence about the benefits of including patient and caregiver insights as key elements in the design and execution of various types of projects.

One of the most relevant projects was Conect4children, granted by the Innovative Health Initiative (IHI) in 2018, which will ensure its sustainability with the creation of a non-profit spin-off that will deliver different services to the European research community. Patient and

Public Involvement in pediatric clinical trials will be one of the core services of this spin-off, named c4c-S. In delivering these services, IRSJD will play a key role as the central contact point and will provide the infrastructure of the European Young Person's Advisory Groups to deliver the services required by academic institutions and pharmaceutical companies.

Another relevant project was EU-CAYAS.net, the European Childhood Cancer Survivors Platform, which allowed the creation of an infrastructure to connect and provide information to this target population at the European level. Our research team was involved in key outputs such as a position paper about the long-term follow-up of childhood cancer survivors, based on the identification of unmet needs from Spanish patients and in collaboration with other European countries.

Our final goal in contributing to these international projects is to share good practices and deliver the lessons learned to the scientific community. In this sense, we have been involved in eight articles, seven of which were published in 2023. Three out of the seven articles were produced in the context of the Conect4children project.

SELECTED PUBLICATIONS

Reidemeister S, Nafria Escalera B, Marín D, Balayla J, Klingmann I, Klingmann V. Young patients' involvement in a composite endpoint method development on acceptability for paediatric oral dosage forms. Res Involv Engagem. 2023 Nov 29;9(1):108.

- Dhaenens BAE, Mahler F, Batchelor H, Dicks P, Gaillard S, Nafria B, Kopp-Schneider A, Ribeiro MA, Schwab M, Sparber-Sauer M, Leubner J, de Wildt SN, Oostenbrink R. Optimizing expert and patient input in pediatric trial design: Lessons learned and recommendations from a collaboration between conect4children and European Patient-Centric Clinical Trial Platforms. Clin Transl Sci. 2023 Aug;16(8):1458-1468. FI:3.9 (Q3)

- Faulkner SD, Somers F, Boudes M, Nafria B, Robinson P. Using Patient Perspectives to Inform Better Clinical Trial Design and Conduct: Current Trends and Future Directions. Pharmaceut Med. 2023 Mar;37(2):129-138.
- Cheng K, Mahler F, Lutsar I, Nafria Escalera B, Breitenstein S, Vassal G, Claverol J, Noel Palacio N, Portman R, Pope G, Bakker M, van der Geest T, Turner MA, de Wildt SN; c4c Expert Group Leads. Clinical, methodology, and patient/carer expert advice in pediatric drug development by conect4children. Clin Transl Sci. 2023 Mar;16(3):478-488. FI:3.9 (Q3)

SELECTED PROJECTS

- c4c_conect4children (COllaborative Network for European Clinical Trials For Children). (777389). European Commission. 2018-2025. IP:Joana Claverol Torres.
- EJP RD: European Joint Programme on Rare Diseases. (825575). European Commission. 2019-2024. IP:Joana Claverol Torres.
- Science4Pandemics: Cizitens engagement digital platform for collective intelligence in pandemics. (220365). EIT Health e.V; Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 2022-2024. IP:Begoña Nafria Escalera.
- EU Network of Youth Cancer Survivors. (101056918). European Commission. 2022-2024. IP:Begoña Nafria Escalera.
- Patient-Specific 3D Printed Soft Models for Liver Surgical Planning and Hands-On Training. Gels. 2023 Apr 16;9(4):339. FI: 4.6 (Q1)
- Valls-Estève A, Adell-Gómez N, Pasten A, Barber I, Munuera J, Krauel L. Exploring the Potential of Three-Dimensional Imaging, Printing, and Modeling in Pediatric Surgical Oncology: A New Era of Precision Surgery. Children (Basel). 2023 May 3;10(5):832. FI:2.4 (Q2)

SELECTED CLINICAL STUDIES

- i4KIDS-EUROPE_Inclusive and Interconnected Ecosystem to Boost Paediatric Innovation in Europe-i4KIDS-EUROPE. (101096505). European Commission. 2023-2025.

Innovation in Health Technologies

Arnau Valls Esteve



16

PROJECTS

13 competitive projects

3 non competitive projects



7

PUBLICATIONS



24

IMPACT FACTOR

3.4 average impact factor



43%

PUBLICATIONS IN 1ST QUARTILE



57%

LEADERSHIP

MEMBERS

ASSISTANT RESEARCHER

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TECHNICIAN

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In 2024, the HSJD Research Group on Innovation in Health Technologies strengthened its role in competitive research at national and international levels consolidating its activity in three strategic areas: (1) the application of 3D and bioprinting for personalized medicine, (2) advanced medical image processing, radiomics, and AI for enhanced diagnostic precision and (3) the use of new technologies to improve health outcomes. The 3D4Health (3D4H) Unit key milestones include a new collaboration with the GMAT group (IQS) to develop biomechanical computational models using finite element analysis for custom implants

and surgical planning in maxillofacial cleft surgery (BIOMOD; Plan Complementario). The 3DCartiBone project (RETOS 2024) was launched to develop human-origin bioinks (SoHO) for osteochondral facial reconstruction using 3D bioprinting, in collaboration with IQS, the Blood and Tissue Bank, and CIM-UPC. Additionally, a multicenter international clinical trial (3DSURGHELP; NCT05781919) was launched evaluating immersive virtual reality in neuroblastoma surgical planning. The unit also achieved ISO 13485 certification and holds a custom-made medical device manufacturing license (Class II), reinforcing its capacity to contribute to patient-specific medical device research and development. The Pediatric Computational Imaging Center (PeCIC), in collaborating with Diagnostic Imaging Department, hospital clinicians and academic institutions, led advanced quantitative imaging analyses for the SPIOMET clinical trial (SPIOMET4HEALTH, H2020, Grant ID: 899671; PI: Lourdes Ibáñez), aimed at evaluating hepatic fat composition to assess therapeutic response. It contributed to neuroimaging research in rare pediatric genetic disorders, including analysis of experimental models of synaptopathies affecting neuronal communication (FIS - ISCIII, PI24/00469) and pediatric parkinsonism (La Marató de TV3, PCP00301) both PI Àngels García-Cazorla, providing imaging biomarkers for new personalized treatments. PeCIC also led advances in neonatal neuroimaging research characterizing the premature brain (BMATURE, FIS - ISCIII, PI18/00110; PI: Thais Agut); and identified brain structure abnormalities in newborns who underwent heart surgery (FIS - ISCIII, PI19/00118, PI: Marta Camprubí). Additionally, PeCIC progressed diagnostic software development in cerebrovascular diseases (Vasculomics, INNOVADORS - AGAUR), retinopathy of prematurity, and cardiotoxicity detection (AI-CARONTE, Next Generation, TED2021-132025B-C44). Finally, the group secured two Horizon Europe projects as coordinator—ADD4KIDS and i4KIDS-4RARE—to foster the development of more efficient models of innovation adoption in pediatrics in Europe and to support the research of new

orphan medical devices, contributed to the development of 12 high-impact scientific publications and over 10 international conferences.

SELECTED PUBLICATIONS

- Namli T, Sinaci AA, Gönül S, Ruiz C, Garcia P, Modrego A et al. A scalable and transparent data pipeline for AI-enabled health data ecosystems. *Front. Med.* 2024;11IF:3,100. (Q1).
- Caballero R, Pasten A, Giménez C, Raquel B, Carmona RM, Mora J et al. Beyond Needles: Pioneering Pediatric Care with Virtual Reality (VR) for TIVAD Access in Oncology. *Cancers.* 2024;16(12)IF:4,500. (Q1).
- Valls A, Tejo A, Adell NE, Lustig P, Fenollosa F, Buj I et al. Advanced Strategies for the Fabrication of Multi-Material Anatomical Models of Complex Pediatric Oncologic Cases. *Bioengineering-Basel.* 2024;11(1)IF:3,800. (Q2).
- Núñez C, Stephan C, Roldán A, Grasa EM, Escartí MJ, Aguilar García EJ et al. Orbitofrontal cortex hypergyrification in hallucinating schizophrenia patients: Surface ratio as a promising brain biomarker. *Eur Neuropsychopharmacol.* 2024;89:47-55. IF:6,100. (Q1).

SELECTED PROJECTS

- PHEMS: Pediatric Hospitals as European drivers for multi-party computation and synthetic data generation capabilities across clinical specialties and data types. (101094195). European Commission. 2023-2026. IP: Arnau Valls Esteve.
- i4KIDS-EUROPE_Inclusive and Interconnected Ecosystem to Boost Paediatric Innovation in Europe-i4KIDS-EUROPE.
- European Commission. 2022-2025. IP: Arnau Valls Esteve.
- Add4Kids_Accelerating Demand-Driven tools for pediatric innovation adoption - A collaborative roadmap for Europe. European Commission. 2023-2025. IP: Arnau Valls Esteve.
- 3DCartiBone: Desarrollo de biotintas formuladas con sustancias de origen humano para su uso en bioimpresión-3D osteocondral.
- Ministerio De Ciencia E Innovacion. 2024-2027. IP: Josep Rubio Palau.

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