

SJD

Sant Joan de Déu
Institut de Recerca

**ANNUAL
SCIENTIFIC
REPORT**

2020





SJD
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Institut de Recerca

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



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FOREWORD



Governance and structures
Global numbers 2020
Global numbers 2020-2015
Institutional awards



Governance and structures

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Global numbers 2020



486 TOTAL PROJECTS

- 65 Competitive autonomic projects
- 228 Competitive national projects
- 57 Competitive international projects
- 6 Non competitive autonomic projects
- 119 Non competitive national projects
- 11 Non competitive international projects



688 TOTAL MEMBERS

- 53 Group leader
- 286 Staff researcher
- 66 Postdoc - associate researcher
- 123 PhD student
- 160 Assistant researcher & Technician



231 TOTAL CLINICAL TRIALS & OBSERVATIONAL STUDIES

- 18 Phase I
- 56 Phase II
- 78 Phase III
- 3 Phase IV
- 6 Other clinical trial
- 70 Observational studies



12M BUDGET

- 73% Private
- 27% Public



590 PUBLICATIONS

Articles & reviews published in scholarly journals indexed in the ISI Web of Science

- 2652 Impact Factor
- 61% Publications in first quartile
- 4,5 Mean impact factor
- 50% Articles with main contributing authors

Global numbers 2015-2020



PROJECTS

2015	251
2016	303
2017	360
2018	378
2019	470
2020	486



RESEARCH STAFF

2015	321
2016	483
2017	552
2018	514
2019	594
2020	688



CLINICAL TRIALS & OBSERVATIONAL STUDIES

2015	132
2016	124
2017	140
2018	147
2019	222
2020	231



BUDGET

2015	5.2
2016	6.5
2017	7.9
2018	9.2
2019	10.9
2020	12



PUBLICATIONS

2015	302 (1138 IF)
2016	376 (1442 IF)
2017	401 (1909 IF)
2018	443 (2287 IF)
2019	469 (2260 IF)
2020	590 (2652 IF)

Institutional awards

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.

In 2020, IRSJD began the implementation of the processes designed in 2019, but as a result of the pandemic, awareness-raising actions were stopped. And the Training Program was adapted to the online format.

As main milestones in 2020, the Equality Plan was designed and the first Internal Review was passed.

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.

IRISCAT ALLIANCE

The Sant Joan de Déu Research Institute is one of the Catalan research centres to join the IRISCAT Alliance

This Alliance of centres associated with the Catalan Institute of Health (ICS) was set up, at the initiative of the Department of Health of the Government of Catalonia, to delineate a coordinated strategy for the promotion of translational and clinical research, increasing competitiveness and, at the same time, strengthening this southern European reference hub.

IRISCAT (Instituts de Recerca i Innovació en Salut de Catalunya - Health Research and Innovation Institutes in Catalonia) aims to develop a coordinated strategy to harness and maximise collaborative synergies. Its vision is to boost both the translational and clinical research being carried out in the Catalan health system in order to, ultimately, improve the health of the population.



2

STAFF

Research staff

Research staff

**688**

228 men (33,14%) 460 women (66,86%)

53 GROUP LEADER

30 men (56,60%) 23 women (43,40%)

286 STAFF RESEARCHER

109 men (38,11%) 177 women (61,89%)

66 POSTDOC ASSOCIATE RESEARCHER

22 men (33,33%) 44 women (66,67%)

123 PhD STUDENT

30 men (24,39%) 93 women (75,61%)

160 TECHNICIAN AND ASISTANT RESEARCHERS

37 men (23,13%) 123 women (76,88%)





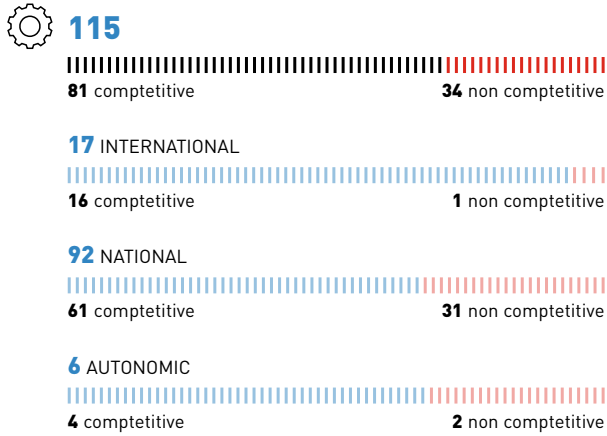
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PROJECTS AND CLINICAL TRIALS

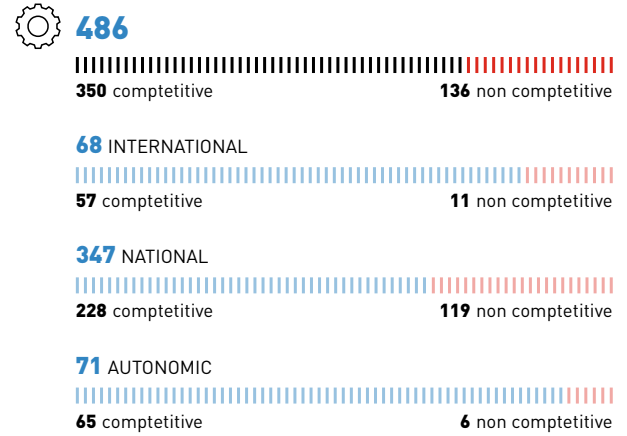


- New projects
- Active projects
- New clinical trials and observational studies
- Active clinical trials and observational studies

New projects

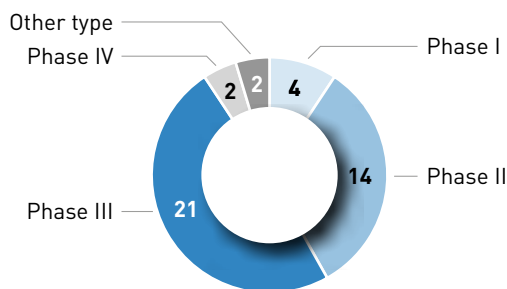


Active projects



New clinical trials and observational studies

Clinical Trials by Type



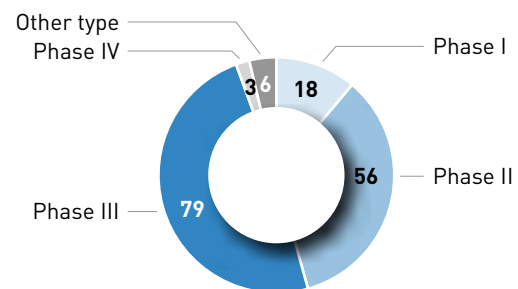
64

CLINICAL TRIALS AND OBSERVATIONAL STUDIES BY RESEARCH AREA

- 17 NEUROLOGY**
(10 clinical trials & 7 observational studies)
- 6 ONCOLOGY**
(6 clinical trials)
- 6 PAEDIATRICS**
(6 clinical trials)
- 6 DERMATOLOGY**
(5 clinical trials & 1 observational study)
- 5 CLINICAL HAEMATOLOGY**
(2 clinical trials & 3 observational studies)
- 4 ENDOCRINOLOGY**
(3 clinical trials & 1 observational study)
- 3 CARDIOLOGY**
(2 clinical trials & 1 observational study)
- 3 ALLERGY AND CLINICAL IMMUNOLOGY**
(2 clinical trials & 1 observational study)
- 3 GASTROENTEROLOGY, HEPATOLOGY AND NUTRITION**
(3 observational studies)
- 3 EMERGENCY ROOM AND INTERNAL MEDICINE**
(3 clinical trials)
- 2 GYNAECOLOGY AND OBSTETRICS**
(1 clinical trial & 1 observational study)
- 2 NEPHROLOGY**
(1 clinical trial & 1 observational study)
- 2 ORTHOPAEDICS AND TRAUMATOLOGY**
(1 clinical trial and 1 observational study)
- 1 PSYCHIATRY AND PSYCHOLOGY**
(1 clinical trial)
- 1 OPHTHALMOLOGY**
(1 observational study)

Active clinical trials and observational studies

Clinical Trials by Type



231

CLINICAL TRIALS AND OBSERVATIONAL STUDIES BY RESEARCH AREA

- 48 ONCOLOGY**
(41 clinical trials & 7 observational studies)
- 42 PAEDIATRICS**
(33 clinical trials & 9 observational studies)
- 41 NEUROLOGY**
(33 clinical trials & 8 observational studies)
- 12 NEUROLOGY**
(3 clinical trials & 9 observational studies)
- 11 CLINICAL HAEMATOLOGY**
(5 clinical trials & 6 observational studies)
- 10 EMERGENCY ROOM AND INTERNAL MEDICINE**
(6 clinical trials & 4 observational studies)
- 10 DERMATOLOGY**
(8 clinical trials & 2 observational studies)
- 7 ALLERGY AND CLINICAL IMMUNOLOGY**
(3 clinical trials & 4 observational studies)
- 7 GASTROENTEROLOGY, HEPATOLOGY AND NUTRITION**
(4 clinical trials & 3 observational studies)
- 6 GYNAECOLOGY AND OBSTETRICS**
(2 clinical trials & 4 observational studies)
- 6 NEONATOLOGY**
(6 clinical trials)
- 3 ANAESTHESIA**
(3 observational studies)
- 5 NEPHROLOGY**
(2 clinical trials & 3 observational studies)
- 5 PSYCHIATRY AND PSYCHOLOGY**
(3 clinical trials & 2 observational studies)
- 4 ORTHOPAEDICS AND TRAUMATOLOGY**
(2 clinical trials & 2 observational studies)
- 4 PNEUMOLOGY**
(2 clinical trials & 2 observational studies)
- 3 OPHTHALMOLOGY**
(3 clinical trials)
- 2 RHEUMATOLOGY**
(2 observational studies)
- 2 CARDIOLOGY**
(2 clinical trials)
- 2 REHABILITATION AND PHYSICAL MEDICINE**
(2 clinical trials)
- 1 SURGERY**
(1 clinical trial)



4

SCIENTIFIC PRODUCTION AND RESULTS



Scientific publications
Highest impact factor journals
Patents, utility models and spin-offs
Thesis

Scientific publications

	Output	Total IF	Mean IF	%Q1	%D1
Article	589	2649	4,5	61%	22%
Editorial material	3	6	2,0	0%	0%
Letter	19	138	7,3	42%	21%
Review	1	3	3,0	100%	0%
Others	16	103	6,4	56%	25%
Total	628	2899	4,6	52%	14%



Highest impact factor journals

Originals articles in fist decil with IRSJD main contribution: 53

Original article	Journal	IF	Program
Mora J, Modak S. Nivolumab in paediatric cancer: children are not little adults. <i>Lancet Oncol</i> 2020. 21(4):474-476.	LANCET ONCOLOGY	33,752	Paediatric cancer
Parra M, Ramon M, Lerin C, Jimenez JC. Size Does Matter: Litter Size Strongly Determines Adult Metabolism in Rodents. <i>Cell Metab</i> 2020. 32(3):334-340.	CELL METABOLISM	21,567	Adaptative response, metabolism and immunobiology
Mora J, Chan GC, Morgenstern DA, Nysom K, Bear M, Dalby LW et al. Efficacy and updated safety results from pivotal phase II trial 201 of naxitamab (Hu3F8): A humanized GD2-targeted immunotherapy for the treatment of refractory/relapsed (R/R) high-risk (HR) neuroblastoma (NB). <i>Ann Oncol</i> 2020. 31:1448-1448.	ANNALS OF ONCOLOGY	18,274	Paediatric cancer
Santini ZI, Jose PE, York E, Koyanagi A, Nielsen L, Hinrichsen C et al. Social disconnectedness, perceived isolation, and symptoms of depression and anxiety among older Americans (NSHAP): a longitudinal mediation analysis. <i>Lancet Public Health</i> 2020. 5(1):62-70.	LANCET PUBLIC HEALTH	16,292	Neuroscience
Garcia A, Verdura E, Julià NA, Anderson EN, Goicoechea L, Planas L et al. Impairment of the mitochondrial one-carbon metabolism enzyme SHMT2 causes a novel brain and heart developmental syndrome. <i>Acta Neuropathol</i> 2020. 140(6):971-975.	ACTA NEUROPATHOLOGICA	14,251	Neuroscience
Zarei M, Pizarro J, Barroso E, Palomer FX, Vazquez M. Targeting FGF21 for the Treatment of Nonalcoholic Steatohepatitis. <i>Trends Pharmacol Sci</i> 2020. 41(3):199-208.	TRENDS PHARMACOL SCI	13,503	Adaptative response, metabolism and immunobiology
Palomer FX, Román MS, Pizarro J,P, Villarroya F, Valenzuela BI et al. SIRT3-mediated inhibition of FOS through histone H3 deacetylation prevents cardiac fibrosis and inflammation. <i>Signal Transduct Target Ther</i> 2020. 5(1):14-14.	SIGNAL TRANSDUCTION AND TARGETED THERAPY	13,493	Adaptative response, metabolism and immunobiology
Sánchez S, Figuerola E, Blanco ME, Sánchez M, Táboas P, Gomez S et al. RING1B recruits EWSR1-FLI1 and cooperates in the remodeling of chromatin necessary for Ewing sarcoma tumorigenesis. <i>Sci Adv</i> 2020. 6(43):3058-3058.	SCIENCE ADVANCES	13,116	Paediatric cancer
Peyrou M, Cereijo R, Quesada T, Campderros L, Gavalda A, Liñares L et al. The kallikrein-kinin pathway as a mechanism for auto-control of brown adipose tissue activity. <i>Nat Commun</i> 2020. 11(1): 2132-2132.	NATURE COMMUNICATIONS	12,121	Adaptative response, metabolism and immunobiology
Deyà A, Flinn AM, Gennery AR. Neonatal thymectomy in children-accelerating the immunologic clock?. <i>J Allergy Clin Immunol</i> 2020. 146(2): 236-243.	JOURNAL OF ALLERGY AND CLINICAL IMMUNOLOGY	10,228	Adaptative response, metabolism and immunobiology
Meel MH, de Gooijer MC, Metselaar DS, Sewing A, Zwaan K, Waranecki P et al. Combined Therapy of AXL and HDAC Inhibition Reverses Mesenchymal Transition in Diffuse Intrinsic Pontine Glioma. <i>Clin Cancer Res</i> 2020. 26(13):3319-3332.	CLINICAL CANCER RESEARCH	10,107	Paediatric cancer

Highest impact factor journals

Original article	Journal	IF	Program
Nuñez C, Callen A, Lombardini F, Compta Y, Alzheimer's Disease Neuroimaging I, Stephan C. Different Cortical Gyrification Patterns in Alzheimer's Disease and Impact on Memory Performance. <i>Ann Neurol</i> 2020. 88(1):67-80.	ANNALS OF NEUROLOGY	9,037	Neuroscience
Riggioni C, Alvaro M, Alsina L. Biologics as a therapeutic approach for a Th17-mediated severe dermatitis in skin barrier disorders. <i>Allergy</i> 2020. 75(11):3007-3008.	ALLERGY	8,706	Adaptative response, metabolism and immunobiology
Montolió S, Casas E, Prat J. An Unusual Case of Unilateral Multiple Periorbital Dermoid Cyst. <i>Ophthalmology</i> 2020. 127(3):304-304.	OPHTHALMOLOGY	8,47	Applied Clinical Research
Sandra R, Caldu X, Cristina C, Pueyo R, Garolera M, Jurado MA. Is cognitive training an effective tool for improving cognitive function and real-life behaviour in healthy children and adolescents? A systematic review. <i>Neurosci Biobehav Rev</i> 2020. 116:268-282.	NEUROSCIENCE AND BIOBEHAVIORAL REVIEWS	8,33	Neuroscience
Noguera A, Calzada J, Brinkmann F, Basu R, Bilogortseva O, Buettcher M et al. Tuberculosis Disease in Children and Adolescents on Therapy With Antitumor Necrosis Factor-? Agents: A Collaborative, Multicenter Paediatric Tuberculosis Network European Trials Group (ptbnet) Study. <i>Clin Infect Dis</i> 2020. 71(10): 2561-2569.	CLINICAL INFECTIOUS DISEASES	8,313	Adaptative response, metabolism and immunobiology
Helena M, Villaplana A, López R, Eva Maria Grasa B, Barajas A, Esther T et al. The Role of Personal Identity on Positive and Negative Symptoms in Psychosis: A Study Using the Repertory Grid Technique. <i>Schizophr Bull</i> 2020. 46(3):572-580.	SCHIZOPHRENIA BULLETIN	7,958	Neuroscience
Castillo H, Monterrubio C, Pascual G, Gomez S, Garcia DJ, Hontecillas L et al. Treatment-driven selection of chemoresistant Ewing sarcoma tumors with limited drug distribution. <i>J Control Release</i> 2020. 324: 440-449.	JOURNAL OF CONTROLLED RELEASE	7,727	Neuroscience
Deyà A, Gordón Y, Molina C, Vlaga A, Piquer M, Manel O et al. Single-cycle rituximab-induced immunologic changes in children: Enhanced in neuroimmunologic disease?. <i>Neurol Neuroimmunol Neuroinflamm</i> 2020. 7(4):724-724.	NEUROLOGY-NEUROIMMUNOLOGY & NEUROINFLAMMATION	7,724	Adaptative response, metabolism and immunobiology
Paredes AJ, Julià NA, Montero R, Yubero D, Cascajo MV, Garcia A et al. Laboratory Diagnosis of a Case with Coenzyme Q(10) Deficiency. <i>Clin Chem</i> 2020. 66(11):1465-1467.	CLINICAL CHEMISTRY	7,292	Neuroscience
Felez M, Raine LB, Haro JM, Wijndaele K, Koyanagi A. Temporal trends in leisure-time sedentary behavior among adolescents aged 12-15 years from 26 countries in Asia, Africa, and the Americas. <i>Int J Behav Nutr Phys Act</i> 2020. 17(1):102-102.	INTERNATIONAL JOURNAL OF BEHAVIORAL NUTRITION AND PHYSICAL ACTIVITY	6,714	Neuroscience
Andrés L, Borràs X, Feliu A, Adrián A, Angarita N, Moreno P et al. Peripheral immune aberrations in fibromyalgia: A systematic review, meta-analysis and meta-regression. <i>Brain Behav Immun</i> 2020. 87:881-889.	BRAIN BEHAVIOR AND IMMUNITY	6,633	Neuroscience

Highest impact factor journals

Original article	Journal	IF	Program
Cobo T, Aldecoa V, Figueras F, Herranz A, Ferrero SI, Izquierdo M et al. Development and validation of a multivariable prediction model of spontaneous preterm delivery and microbial invasion of the amniotic cavity in women with preterm labor. <i>Am J Obstet Gynecol</i> 2020. 223(3):421.e1-421.e14.	AMERICAN JOURNAL OF OBSTETRICS AND GYNECOLOGY	6,502	Adaptative response, metabolism and immunobiology
Natera D, Muchart J, Debora Coritza Itzep P, Ortez CI, González L, Gallano P et al. Epilepsy in LAMA2-related muscular dystrophy: An electro-clinico-radiological characterization. <i>Epilepsia</i> 2020. 61(5):971-983.	EPILEPSIA	6,04	Neuroscience
Sánchez B, Gaínza M, Barcia C, Amengual M, Loddenkemper T. The burden of decisional uncertainty in the treatment of status epilepticus. <i>Epilepsia</i> 2020. 61(10):2150-2162.	EPILEPSIA	6,04	Neuroscience
Perello C, Català A,C, Vega N, Camós M, Perez S et al. FMS-like tyrosine kinase 3 (FLT3) modulates key enzymes of nucleotide metabolism implicated in cytarabine responsiveness in pediatric acute leukemia. <i>Pharmacol Res</i> 2020. 151:104556-104556.	PHARMACOLOGICAL RESEARCH	5,893	Paediatric cancer
Stickley A, Sumiyoshi T, Narita Z, Hans OH, DeVlylder JE, Jacob L et al. Physical injury and psychotic experiences in 48 low- and middle-income countries. <i>Psychol Med</i> 2020. 50(16):2751-2758.	PSYCHOLOGICAL MEDICINE	5,813	Neuroscience
Soveral I, Crispi F, Walter C, Guirado L, García P, Cook A et al. Early cardiac remodeling in aortic coarctation: insights from fetal and neonatal functional and structural assessment. <i>Ultrasound Obstet Gynecol</i> 2020. 56(6):837-849.	ULTRASOUND IN OBSTETRICS & GYNECOLOGY	5,571	Adaptative response, metabolism and immunobiology
Luciano JV, Sanabria JP, Feliu A, Forero CG . The pros and cons of bifactor models for testing dimensionality and psychopathological models: A commentary on the manuscript "A systematic review and meta-analytic factor analysis of the depression anxiety stress scales". <i>Clin Psychol-Sci Pr</i> 2020. 27(4):e12386.	CLINICAL PSYCHOLOGY-SCIENCE AND PRACTICE	5,541	Neuroscience
Arca G, Arnaez J, Agut T, Nuñez C, Stephan C, Valls A et al. Neuron-specific enolase is correlated with lesion topology, relative infarct volume and outcome of symptomatic NAIS. <i>Arch Dis Child Fetal Neonatal Ed</i> 2020. 105(2):132-137.	ARCHIVES OF DISEASE IN CHILDHOOD-FETAL AND NEONATAL EDITION	5,436	Neuroscience
Jacob L, Hans OH, Shin JI, Haro JM, Vancampfort D, Stubbs B et al. Informal caregiving, chronic physical conditions, and physical multimorbidity in 48 low- and middle-income countries. <i>J Gerontol A Biol Sci Med Sci</i> 2020. 75(8):1572-1578.	JOURNALS OF GERONTOLOGY SERIES A-BIOLOGICAL SCIENCES AND MEDICAL SCIENCES	5,236	Neuroscience
Domènech B, Marfany G. The Relevance of Oxidative Stress in the Pathogenesis and Therapy of Retinal Dystrophies. <i>Antioxidants (Basel)</i> 2020. 9(4):347.	ANTIOXIDANTS	5,014	Neuroscience
Paredes AJ, Montero R, Codina A, Jou C, Fernández G, Joan F et al. Coenzyme Q(10) Treatment Monitoring in Different Human Biological Samples. <i>Antioxidants (Basel)</i> 2020. 9(10)	ANTIOXIDANTS	5,014	Neuroscience

Highest impact factor journals

Original article	Journal	IF	Program
Matalí JL, Ania R, Oberst U, Lleras M, Bertomeu P, Elena M. Seclusion in adolescents with IGD: New diagnostic criteria or measure of severity?. <i>Comput Hum Behav</i> 2020. 110:106394-106394.	COMPUTERS IN HUMAN BEHAVIOR	5,003	Neuroscience
Salas M, López R, Barajas A, Lorente E, Esther T, Barrigón ML et al. Gender differences in response to metacognitive training in people with first-episode psychosis. <i>J Consult Clin Psychol</i> 2020. 88(6):516-525.	JOURNAL OF CONSULTING AND CLINICAL PSYCHOLOGY	4,632	Neuroscience
Minguela J, Ginebra MP, Llanes L, Mas C, Roa JJ. Influence of grinding/polishing on the mechanical, phase stability and cell adhesion properties of yttria-stabilized zirconia. <i>J Eur Ceram Soc</i> 2020. 40(12):4304-4314.	J EUR CERAM SOC	4,495	Health Technologies and Innovation
Minguela J, Slawik S, Mücklich F, Ginebra MP, Llanes L, Mas C et al. Evolution of microstructure and residual stresses in gradually ground/polished 3Y-TZP. <i>J Eur Ceram Soc</i> 2020. 40(4):1582-1591.	J EUR CERAM SOC	4,495	Health Technologies and Innovation
Irene M, López R, Cuadras D, Esther T, Barrigón ML, Barajas A et al. Cognitive Insight in First-Episode Psychosis: Changes during Metacognitive Training. <i>J Pers Med</i> 2020. 10:(4)	JOURNAL OF PERSONALIZED MEDICINE	4,433	Neuroscience
Vega N, Benito R, Esperanza E, Llop M, Robledo C, Vicente C et al. Helpful Criteria When Implementing NGS Panels in Childhood Lymphoblastic Leukemia. <i>J Pers Med</i> 2020. 10(4):244-244.	JOURNAL OF PERSONALIZED MEDICINE	4,433	Paediatric cancer
Jacob L, Smith L, Jackson SE, Haro JM, Shin JI, Koyanagi A. Secondhand Smoking and Depressive Symptoms Among In-School Adolescents. <i>Am J Prev Med</i> 2020. 58(5):613-621.	AMERICAN JOURNAL OF PREVENTIVE MEDICINE	4,42	Neuroscience
Koyanagi A, Smith L, Hans OH, Yang L, Jackson SE, Haro JM et al. Second-hand smoking and obesity among non-smoking adolescents aged 12-15 years from 38 low- and middle-income countries. <i>Nicotine Tob Res</i> 2020. 22(11):2014-2021.	NICOTINE & TOBACCO RESEARCH	4,079	Neuroscience
Jacob L, Cogné M, Tenovuo O, Røe C, Andelic N, Majdan M et al. Predictors of Access to Rehabilitation in the Year Following Traumatic Brain Injury: A European Prospective and Multicenter Study. <i>Neurorehabil Neural Repair</i> 2020. 34(9):814-830.	NEUROREHAB NEURAL RE	3,982	Neuroscience
Tor J, Dolz M, Sintés A, de la Serna E, Puig O, Muñoz D et al. Neuropsychological profile of children and adolescents with psychosis risk syndrome: the CAPRIS study. <i>Eur Child Adolesc Psychiatry</i> 2020. 29(9):1311-1324.	EUROPEAN CHILD & ADOLESCENT PSYCHIATRY	3,941	Neuroscience
Velasco E, Simó S, Ríos M, López MG, Manuel C, Urrea M et al. Benefits of a Pediatric Antimicrobial Stewardship Program in Antimicrobial Use and Quality of Prescriptions in a Referral Children's Hospital. <i>J Pediatr</i> 2020. 225:222-222.	JOURNAL OF PEDIATRICS	3,7	Adaptative response, metabolism and immunobiology
Soler A, Gamell A, Santiago B, Manuel C, Calvo C, Cobo E et al. Diagnostic Accuracy of QuantiFERON-TB Gold Plus Assays in Children and Adolescents with Tuberculosis Disease. <i>J Pediatr</i> 2020. 223:212-215.e1.	JOURNAL OF PEDIATRICS	3,7	Adaptative response, metabolism and immunobiology

Highest impact factor journals

Original article	Journal	IF	Program
Cañizo D, Izquierdo M, Inarejos E, Bejarano M, Suñol M, Morillo A. Intrauterine Intestinal Volvulus. <i>J Pediatr</i> 2020. 219:278-279.	JOURNAL OF PEDIATRICS	3,7	Adaptative response, metabolism and immunobiology
Jacob L, Kostev K. Urinary and fecal incontinence in stroke survivors followed in general practice: A retrospective cohort study. <i>Ann Phys Rehabil Med</i> 2020. 63(6):488-494.	ANNALS OF PHYSICAL AND REHABILITATION MEDICINE	3,657	Neuroscience
Jacob L, Smith L, Thoumie P, Haro JM, Stickley A, Koyanagi A. Association between intelligence quotient and disability: The role of socioeconomic status. <i>Ann Phys Rehabil Med</i> 2020. 63(4):296-301.	ANNALS OF PHYSICAL AND REHABILITATION MEDICINE	3,657	Neuroscience
Lara E, Moreno D, Martín N, Maria M, Rico LA, Olaya B et al. Exploring the effect of loneliness on all-cause mortality: Are there differences between older adults and younger and middle-aged adults?. <i>Soc Sci Med</i> 2020. 258:113087-113087.	SOCIAL SCIENCE & MEDICINE	3,616	Neuroscience
Santini ZI, Jose PE, Koyanagi A, Meilstrup C, Nielsen L, Madsen KR et al. Formal social participation protects physical health through enhanced mental health: A longitudinal mediation analysis using three consecutive waves of the Survey of Health, Ageing and Retirement in Europe (SHARE). <i>Soc Sci Med</i> 2020. 251:112906-112906.	SOCIAL SCIENCE & MEDICINE	3,616	Neuroscience
Herranz N, Violant V, Balaguer A, Noreña A. Applying Qualitative Research to Develop a Guide for Parents of Newborns With Hypoxic-Ischemic Encephalopathy. <i>Int J Qual Meth</i> 2020. 19:1-12.	INTERNATIONAL JOURNAL OF QUALITATIVE METHODS	3,576	Neuroscience
Joan L, Enkaoua A, Rodríguez A, Sharifrazi N, Medina J, Font JM et al. Evaluation of an exercise-enabling control interface for powered wheelchair users: a feasibility study with Duchenne muscular dystrophy. <i>J Neuroeng Rehabil</i> 2020. 17(1):142-142.	JOURNAL OF NEUROENGINEERING AND REHABILITATION	3,519	Health Technologies and Innovation
Stickley A, Waldman K, Ueda M, Koyanagi A, Sumiyoshi T, Narita Z et al. Childhood neglect and suicidal behavior: Findings from the National Comorbidity Survey Replication. <i>Child Abuse Negl</i> 2020. 103:104400-104400.	CHILD ABUSE & NEGLECT	2,569	Neuroscience

Patents, utility models and spin-offs

New patents, license agreements and utility models

Válvula para respiradores

Date: 09/06/2020
Country: Spain
Number: ES1247466U
Inventors: Enric Palau Forte, Arnau Valls Esteve, Martí Pons Odena, Carlos Alaez Vasconcellos, Lluís Font Vizcarra, Adrián Bermúdez Castel, Xoel Pena Pérez, Marc Murcia Laguna.
Proprietors: Hospital Sant Joan de Déu Barcelona

Plasma-treated hydrogel compositions and uses thereof

Date: 18/06/2020
Country: Spain
Number: EP20382527
Inventors: Cédric Labay, Xavier Solé-Martí, Maria Pau Ginebra & Cristina Canal
Proprietors: Universitat Politècnica de Catalunya

Devices to assess infarcted myocardial tissue by measuring electrical impedance during the cardiac cycle

Date of grant: 08/07/2020
Number: EP3435858
Inventors: Francesc Xavier Rossell, Juan Cinca Cuscullola, Ramón Bragós Bardia, Gerard Amorós Figuers, Esther Jorge Vizuete, Tomàs García Sánchez & Benj Sánchez Terrones
Proprietors: Universitat Politècnica de Catalunya & Fundació Institut de Recerca de l'Hospital de la Santa Creu i Sant Pau

Uso de vectores virales oncolíticos en el tratamiento del retinoblastoma

Date: 16/09/2020
European Patent
Number: EP3512533B1
Inventors: Manuel María Cascallo Piqueras, Miriam Bazan Peregrino, Ángel Montero Carcaboso, Guillermo Luis Chantada
Proprietors: VCN Bioscience SL, Hospital Sant Joan de Déu Barcelona

Método de clasificación en subgrupos moleculares de pacientes con meduloblastoma

Date: 25/09/2020
Country: Spain
Number: ES2690160B2
Inventors: Cinzia Lavarino, Soledad Gómez González
Proprietors: Hospital Sant Joan de Déu Barcelona

Combined therapy against cancer

Date: 24/11/2020
Country: Spain
Number: EP20383022.9
Inventors: Juan Tornin & Cristina Canal
Proprietors: Universitat Politècnica de Catalunya

Portfolio of spin-offs

OMADRE

2019 · <https://www.omadre.com/>
Dr. Jaume Pérez Payarols (IRSJD)
The company Omadre was created to provide hospitals with the tools required for the efficient management of mother's milk, increasing the safety of existing processes in this way.

ABLE Human Motion

2018 · <https://www.ablehumanmotion.com/>
Co-funders: Dr. Alfons Carnicero, Dr. Alex García & Dr. Josep Maria Font
ABLE Human Motion is a medical device spin-off from Universitat Politècnica de Catalunya (UPC) that is developing and will commercialize robotic exoskeletons to enhance mobility and independence of people with lower-limb paralysis. We have created ABLE, the first lightweight, easy-to-use and affordable exoskeleton that allows walking again after a spinal cord injury. It helps palliating health complications while boosting self-confidence and independence.

DBGEN Ocular Genomics

2018 · <https://dbgen.com/>
Co-funders: Dr. Roser González-Duarte and Dr. Gemma Marfany
DBGen is a company focused on the genetic diagnosis of hereditary eye disorders, providing the highest level of quality, diagnostic effectiveness and close contact with patients, ophthalmologists, and enterprises in need of its services. At DBGEn, we offer high-quality, reliable and accessible genetic diagnosis, allowing the clinical diagnosis to be assured and guidance to be provided to the patient with respect to emerging therapies for genetic disorders of the eyes. Genetic diagnosis is indispensable to identify family members possessing a genetic defect, permitting the most suitable advice to be given in each case.

CEBIOTEX

2012 · <http://www.cebiotex.com/>
Dr. Joan Bertran Llavina (CEO) &
Dr. Angel Montero (IRSJD)

Cebiotex has developed and characterised at preclinical level, in vitro and in vivo, nonwoven nanofiber membranes for the local release of active ingredients in the local treatment of the surgical site after tumour excision surgery. The purpose of the local release of drugs is to achieve high concentrations of active ingredients in the area where the release device is placed, avoiding systemic toxicity and increasing the effectiveness of the drug against possible tumoral remnants. The activity of Cebiotex is based on the interaction of researchers from two Catalan institutions: the Polytechnic University of Catalonia (UPC) and Sant Joan de Déu Barcelona Children's Hospital (HSJD).

BCN Innova

2008 · <http://www.bcninnova.com/>
Dr. Joan Prat (IRSJD)

BCN Innova, a spin-off company of Sant Joan de Déu-Barcelona Children's Hospital, has developed a device (GazeLab) that substantially improves the diagnosis and treatment of strabismus, reducing the number of second operations that are now performed to achieve the expected results. GazeLab offers two main benefits: 1. It allows objective exploration on a revolutionary level of precision, with much better results than the subjective-measurement model that has prevailed until now. 2. It provides a 50% reduction in the number of second operations, obviating those which are surgically unnecessary.



Thesis

Thesis author	Title	University	Thesis directors	Month of lecture
Maria Montserrat Gil Girbau	El problema de la no iniciación del tratamiento farmacológico: evaluación con métodos cualitativos	Universitat de Barcelona	Dra. Marian March Pujol and Dra. Maria Rubio Valera	January
Irene Piquer García	Estudi de l'oncostatina m i de la termogènesi del teixit adipós marró, abans i després de la cirurgia bariàtrica	Universitat de Barcelona	Dr. Carles Lerin	January
Joan Birules Muntané	Language factors modulate audiovisual speech perception	Universitat de Barcelona	Dr. Ferran Pons and Dra. Laura Bosch	January
Immaculada Insa Pineda	Análisis de la psicopatología parental de los niños con TDAH	Universitat de Barcelona	Dr. José Ángel Alda	January
Adrián Pérez Aranda	Identificación de subtipos de pacientes con fibromialgia y análisis de la eficacia y coste-utilidad del programa de reducción del estrés basado en mindfulness	Universitat de Barcelona	Dr. Juan Vicente Luciano Devis and Dr. Albert Feliu Soler	February
Azahara Civera Tregón	Fisiopatología mitocondrial en la neuropatía de Charcot-Marie-Tooth asociada al gen GDAP1	Universitat de Valencia	Dr. Francesc Palau	March
Jordina Tor Fabra	Riesgo de psicosis en población infanto-juvenil. Características clínicas y cognitivas	Universitat de Barcelona	Dr. Luis San and Dra. Anna Sintés	March
Helena García Mieres	Analysis of personal constructs in psychotic disorders	Universitat de Barcelona	Dr. Guillem Feixas Viaplana and Dra. Susana Ochoa Güerre	May
Cristina Parra Cotanda	Experiencia del paciente pediátrico en urgencias	Universitat de Barcelona	Dr. Carles Luaces Cubells and Dra. Victoria Trenchs Sainz de la Maza	June
Carme Alejandre Galobardes	Bronquiolitis aguda: validació d'una escala de gravetat i ús de biomarcadors per a la optimització del tractament	Universitat de Barcelona	Dra. Mònica Balaguer Gargallo and Dra. Iolanda Jordan Garcia	June
Catalina Perelló Reus.	Functional and biochemical links between nucleoside transporters and nucleotide metabolism	Universitat de Barcelona	Dr. Marçal Pastor Anglada and Dra. Sandra Pérez Torras	June
Laura Andrés Rodríguez	Caracterització del perfil immunoinflamatori i efectes del mindfulness en pacients amb fibromiàlgia	Universitat Autònoma de Barcelona	Dr. Xavier Borràs Hernández, Dr. Albert Feliu Soler and Dr. Juan Vicente Luciano Devis	July

Thesis

Thesis author	Title	University	Thesis directors	Month of lecture
Noelia Beneto Gandia	iPSCs, CRISPR/Cas9 y protocolos de diferenciación basados en factores de transcripción para generar nuevos modelos neuronales y astrocíticos del síndrome de Sanfilippo	Universitat de Barcelona	Dr. Isaac Canals Montferrer & Dr. Daniel Grinberg	July
Clara Boces Pascual	Implications of the tumoral miRNome on the expression of the Nucleoside Concentrative Transporter hCNT1	Universitat de Barcelona	Dr. Marçal Pastor Anglada and Dra. Sandra Pérez Torras	July
Vasileios Toulis	Zebrafish and mouse models for studying deubiquitinating enzyme genes as candidates for retinal dystrophies	Universitat de Barcelona	Dr. Gemma Marfany	July
Rafael Torrúbia	Pronòstic neuropsicològic en pacients pediàtrics amb epilèpsia refractària lesional focal	Universitat de Barcelona	Dra. Anna López Sala and Dra. Gemma García Fructuoso	July
Silvia Vidal Falcó	Caracterización clínica y molecular del síndrome de Rett: elucidar los casos no resueltos	Universitat de Barcelona	Dra. Judith Armstrong	July
Gemma Ferrer Curriu	Nous factors implicats en la patologia cardíaca i l'obesitat	Universitat de Barcelona	Dr. Francesc Villarroya Gombau & Dra. Anna Planavila Porta	July
Segio Fernando Massora	Clinical and microbiological epidemiology of Streptococcus pneumoniae among children in Mozambique before and after pneumococcal conjugate vaccine introduction	Universitat de Barcelona	Dra. Carmen Muñoz Almagro	July
Laura Pineda Cirera	Genètica i epigenètica de les addiccions i trastorns comòrbids	Universitat de Barcelona	Dra. Noelia Fernández Castillo & Bru Cormand	September
Carles Vilaplana Carnerero	Problemas de Adherencia al Inicio de Tratamientos para la Enfermedad Cardiovascular y Diabetes	Universitat de Barcelona	Dra. Marian March Pujol and Dra. Maria Rubio Valera	September
Alejandro Manzanares Quintela	Estudio de la toxicidad local y sistémica de matrices de nanofibras cargadas con SN-38 en rata Wistar	Universitat de Barcelona	Dr. Angel Montero Carcaboso	September
Elisenda Cortès i Saladelafont	Sistemes de neurotransmissió en transtorns pediàtrics	Universitat de Barcelona	Dra. Àngels Garcia-Cazorla	September
Celia Helena Ruperez Gonzalo	Papel de las cardiocinas FGF21 y Metrnl en la hipertrofia cardíaca	Universitat de Barcelona	Dr. Francesc Villarroya Gombau & Dra. Anna Planavila Porta	September

Thesis

Thesis author	Title	University	Thesis directors	Month of lecture
Susana Forné González	Canvis cognitius i cerebrals associats a una intervenció fonològica intensiva en alumnes amb dificultats lectores	Universitat Autònoma de Barcelona	Dr. Óscar Vilarroya Oliver and Dra. Anna López Sala	October
Víctor José de Diego	Evaluación Cuantitativa Clínica y Radiológica en Pacientes PMM2-CDG a Través de una Red Nacional de Profesionales	Universitat de Barcelona	Dra. Mercedes Serrano & Dra. Belén Pérez-Dueñas (VHIR)	October
Laura Cortes Laguna	Valoración de la exposición prenatal a antidepresivos y ansiolíticos mediante su determinación en matrices biológicas alternativas	Universitat de Barcelona	Dra. Maria Dolores Gómez Roig & Dr. Oscar García-Algar	November
Míriam Febrer Nafria	Optimal control prediction of assisted walking using torque-driven models	Universitat Politècnica de Catalunya	Dr. Josep Maria Font Llagunes and Dr. Benjamin Jon Fregly	November
Mireia Fernandez Arias	Estudio genético de trombofilias en pacientes con antecedentes obstétricos desfavorables	Universitat de Barcelona	Dra. Maria Dolores Gómez Roig & Dra. Edurne Mazarico	November
Jordi Moncunill Mira	La malaltia periodontal en gestants associada al part preterme	Universitat de Barcelona	Dr. Jaume Miranda Rius	November
Samantha Morón Ros	Papel de la enterocina FGF15/19 en la plasticidad adiposa y cardíaca	Universitat de Barcelona	Dr. Francesc Villarroya Gombau & Dr. Aleix Gavaldà Navarro	November
Montserrat Izquierdo Renau	Análisis del crecimiento postnatal de los recién nacidos muy prematuros y su modulación nutricional	Universitat de Barcelona	Dra. Isabel Iglesias-Platas and Dr. Martin Iriondo	December
Inès Hamouda	Synthesis and characterization of plasma-treated liquid and hydrogels for bone cancer therapy	Universitat Politècnica de Catalunya	Dr. Cristina Canal and Dr. Cédric Labay	December
Cristina Domènech Abella	La qualitat de vida en les persones que pateixen esquizofrènia. Resultats de les escales genèriques i específiques	Universitat de Barcelona	Dr. Josep Maria Haro Abad	December
Sofia Félix	Pneumococcal adaptation during invasion	Universidade Nova de Lisboa	Dra. Carmen Muñoz Almagro	December
Eneritz Velasco	Utilidad de las técnicas de inmunodiagnóstico de la infección tuberculosa en niños menores de 5 años	Universitat de Barcelona	Dr. Antoni Noguera Julián & Dra. Clàudia Fortuny Guasch	December



5

CORE FACILITIES



Core facilities

The Institut de Recerca Sant Joan de Déu makes available to its researchers a set of fundamental services and infrastructures for the performance of their projects. In order to facilitate high-level research, the IRJSD offers its professionals technical, scientific and support services as well as the most suitable infrastructures required to carry out their work:

Scientific core facilities

- Biological Sample Processing and Molecular Analysis
- Confocal Microscopy and Cellular Imaging Unit
- Clinical Trials Unit
- Library
- Methodology and statistics
- Neuroimaging
- Neurological tissues Biobank for research
- Neuropsychological evaluations
- Paediatric Biobank for research
- Patient Engagement in Research Area
- Sequencing Unit
- Animal housing facility
- Unit of Desing, Analysis and Interpretation of Omic data (DAIOmics)

Management support services

- Administration and corporate finance
- Human Area
- Clinical Research Ethics Committee
- Research management and Promotion
- Management of knowledge and communication





6

TRAINING, COMMUNICATION AND PARTICIPATION

Seminars
Training programme
Communication and public engagement
News



Seminars

5
SEMINARS

114
ATTENDEES IN 2020

Relation of research seminars and IRSJD day of debates

14 JANUARY

Decreased visual acuity in patients with myelin fibers without macular involvement

Ana Díaz Cortes, MD

28 JANUARY

RRI: Open Access and Science Education

Ana Maria Merino & Marta Fortuny

11 FEBRUARY

The gut microbiome as a therapeutic target in patients with Prader-Willi syndrome

Montse Amat, MD

25 FEBRUARY

Efficacy of AGHO in the management of purple fulminant lesions in a pediatric patient with sepsis

Gemma Pérez Acevero, PhD student

27 FEBRUARY

Nano Rare Disease Day 2020

Organise: Nanomed Spain with IBEC & IRSJD

As a result of the pandemic some of the activities were canceled and others readapted to the new situation.

Training programme

12
COURSES IN 2020

143
ATTENDEES IN 2020

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

- Competitive financing opportunities
- How Publish a scientific article
- Systematic reviews and meta-analysis
- Improving your Paragraph & Sentences
- Writing Retreat
- Giving an effective scientific talk
- Time organization and management
- Leadership- Management of teams
- Revise and Resubmit your article
- Productive conversations
- Specialization session - RGPD in Research
- Carrer Development for Scientists

Communication and public engagement

Activities

19
ACTIVITIES ORGANIZED

22
RESEARCHERS

800
AUDIENCE REACHED

Participation in:

- International Day of Women and Girls in Science
- Europeans Researcher's Night
- Setmana de la Ciència

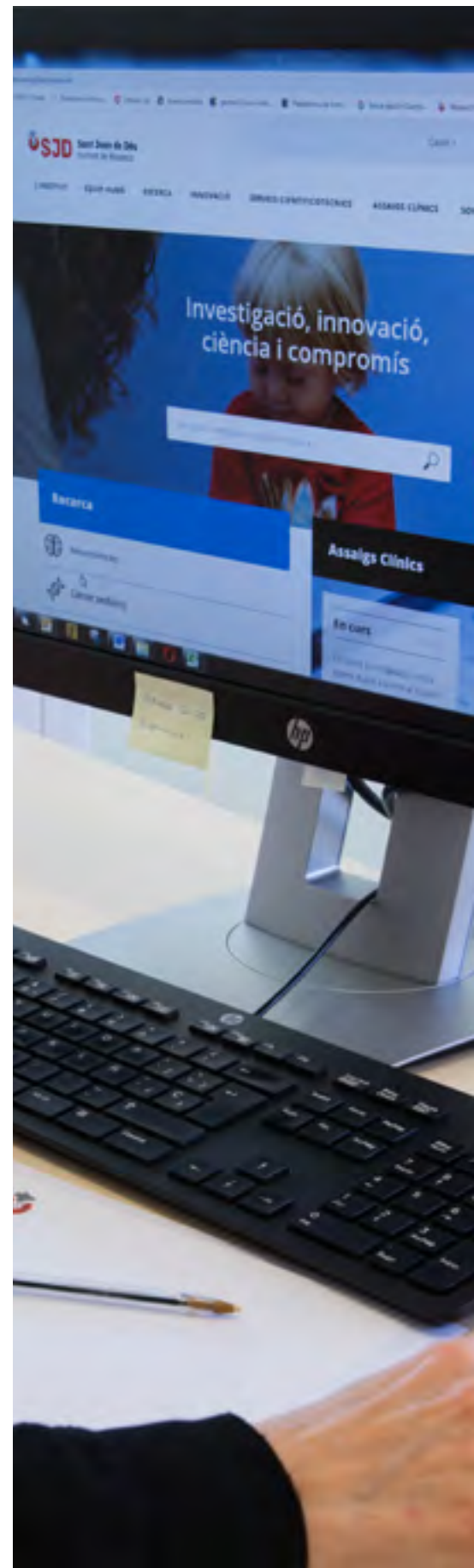
As a result of the pandemic some of the activities were canceled and others readapted to the new situation.

Internet and Social media

LINKEDIN
11.047 FOLLOWERS

TWITTER
680 FOLLOWERS

WEBSITE
42.336 USERS
230.947 NUMBER OF VISITS TO PAGES



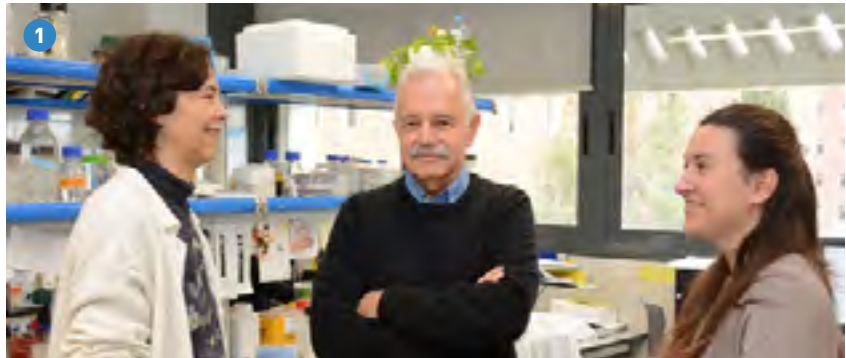
News

January

We believe that the use of computer games in children with cerebral palsy can improve their quality of life

February

New advances on the genetic bases and clinical picture of KAT6A syndrome (photo 1)



March

A research project developed at Sant Joan de Déu has been chosen as the most important of 2019 in Spain (photo 2)



April

Sant Joan de Déu begins four lines of research for the study of COVID-19

May

EIT Health funds a project led by Sant Joan de Déu to respond to COVID19

June

Kids Corona Project presents the preliminary results



July

Care robotics can help patients with Duchenne muscular dystrophy (DMD)

August

Reproduce various stages of Ewing's sarcoma in mice (photo 3)

News

September

Dr Maria Rubio awarded a scientific excellence grant from the European Research Council (ERC) (photo 4)

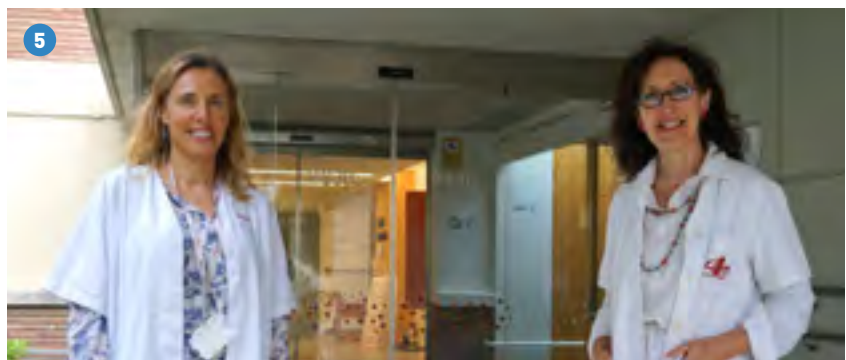
Institut de Recerca Sant Joan de Déu and ICFO create a joint lab to improve neonatal and paediatric health care



October

Researchers discover a new genetic disease of the nervous and cardiac systems (photo 5)

Gene crucial for growth of Ewing sarcoma uncovered



November

The “Translational Diagnostic Program” promotes diagnosis in rare diseases (photo 6)

Sant Joan de Déu Research Institute recognized as CERCA center (photo 7)



December

ALBA Synchrotron technology allows the study of subcellular alterations in patients with muscular dystrophy





7

SCIENTIFIC ACTIVITY

- 7.1. NEUROSCIENCE
- 7.2. ADAPTIVE RESPONSE, METABOLISM AND IMMUNOBIOLOGY
- 7.3. PAEDIATRIC CANCER
- 7.4. HEALTH TECHNOLOGIES AND INNOVATION
- 7.5. APPLIED CLINICAL RESEARCH





7.1

NEUROSCIENCE

- Metabolic and mitochondrial medicine
- Applied research in neuromuscular diseases
- Pediatric neurometabolism: neural communication mechanisms and personalized therapies
- Neurogenetics and Molecular Medicine
- Neonatal brain
- Neuropsychology
- Cognitive neuroscience
- Attention, Perception and Language Acquisition (APAL)
- Human molecular genetics I
- Human molecular genetics II
- Etiopathogenesis and treatment of severe mental disorders (MERITT)
- Research in child and adolescent mental health
- Epidemiology of mental disorders and aging
- Health technology assessment in primary care and mental health (PRISMA)
- Psychological research group on fibromyalgia and chronic pain (AGORA GROUP)
- Cerebral imprints of gender, development and pathology



Neuroscience



53 TOTAL NEW PROJECTS

- 1 Competitive autonomic projects
- 31 Competitive national projects
- 6 Competitive international projects
- 1 Non competitive autonomic projects
- 13 Non competitive national projects
- 1 Non competitive international projects



328 PUBLICATIONS

JCR indexed articles & reviews

- 1304 Impact Factor
- 62% Publications in first quartile
- 4 Mean impact factor
- 52% Articles with main contributing authors



210 TOTAL ACTIVE PROJECTS

- 25 Competitive autonomic projects
- 112 Competitive national projects
- 17 Competitive international projects
- 2 Non competitive autonomic projects
- 51 Non competitive national projects
- 3 Non competitive international projects



16 RESEARCH GROUPS

Metabolic and mitochondrial medicine

Rafael Artuch Iriberry, MD, PhD

 **33**
PUBLICATIONS WITH IF

 **36%**
FIRST QUARTILE PUBLICATIONS

 **24%**
FIRST DECILE PUBLICATIONS

The group has maintained its scientific activity during this period as its principal investigators continue with ongoing projects receiving public funding. Of special note is the HTD (health technology development) project for the development of a biosensor for point-of-care ammonia and amino acid monitoring. We have also incorporated a full-time researcher from the Centre for Biomedical Network Research on Rare Diseases (CIBERER) whose research activity focuses on advanced genomic testing.

The same volume of publications as previous years has been maintained, with a strong translational component and collaboration with national and international groups. We have published, for example, clinical guidelines drawn up based on the findings of the European registries of rare genetic diseases, a description of new genes associated with what are considered rare diseases in humans, and the validation of biomarkers for the investigation of inherited metabolic diseases.

We are in active collaboration with several patient associations and participate in their annual meetings and scientific committees. During this period, we set up the scientific GenRare committee as a CIBERER platform to compile the various rare diseases registries (Dr Artuch is president of this committee). Dr Artuch has been appointed director of the CIBERER Metabolic and Mitochondrial Medicine Research Programme, which brings together 17 research groups.

Our hospital laboratories have undergone major changes since 2015. Together with Dr Palau's group, we have laid the foundations

of an omics science laboratory in a clinical context. With regard to metabolomic studies, we are collaborating with different groups, some are CIBERER groups, on the phenotyping of cell and animal models. This is prompting much scientific activity, and our vision for the future is to consolidate our metabolomic platform and provide biochemical phenotyping services to both CIBER and external research groups, depending on the scientific interest of the research proposal.

MEMBERS

STAFF RESEARCHER

Jaume Campistol Plana, Camila García Volpe, Rosa Gassió Subirachs, Aida Ormazabal Herrero, Mercedes Serrano Gimaré, Cristina Sierra March, Roser Urreiziti Frexedas, Délia Yubero Siles

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Abraham José Paredes Fuentes

ASSISTANT RESEARCHER

Gregorio Alexander Nolasco Tovar

TECHNICIAN

Angela Yasmina Arias Dimas, Adriana Balen Valeiro, Yahel Calzadilla Borrás, Aroa Fernández de Miguel, Juan Moreno García, Tania Pardal Chofle

SELECTED PROJECTS

- Avances en el diagnóstico molecular de los defectos de la fosforilación oxidativa mitocondrial: validación de nuevos biomarcadores. (FI18/00253). Instituto de Salud Carlos III (ISCIII). 2019-2023. PI: Artuch Iriberry, R.
- Biosensores para la monitorización de Enfermedades Metabólicas Hereditarias. Desarrollo y evaluación de prototipos funcionales para validación conceptual. (DTS18/00075). Instituto de Salud Carlos III (ISCIII). 2019-2021. PI: Artuch Iriberry, R.
- FIS 2017_Atrofia cerebelosa en la infancia: desarrollo de herramientas clínico-radiológicas para un fenotipado de precisión, algoritmo diagnóstico integral e identificación de nuevos genes. (PI17/00101). Instituto de Salud Carlos III (ISCIII). 2018-2021. PI: Serrano, M.

- Diagnóstico molecular de los defectos de la fosforilación oxidativa mitocondrial: patogénesis de las deficiencias de CoQ10. (PI17/00109). Instituto de Salud Carlos III (ISCIII). 2018-2021. PI: Artuch Iriberry, R.

SELECTED CLINICAL TRIALS & OBSERVATIONAL STUDIES

- An open-label, multicenter study to investigate the safety, tolerability, pharmacokinetics and pharmacodynamics of R07248824 in participants with angelman syndrome. Comercial. (BP41674). Roche Diagnostics International Ltd; Roche Farma, S.A. 2020-. PI: Serrano, M.
- Estudio de fase IV, abierto y de una sola cohorte, de los resultados neurocognitivos (NC) a largo plazo en niños de 4 a 5 años con fenilcetonuria tratados con dihidrocloruro de sapropterina (Kuvan®) durante 7 años. Comercial. (EMR 700773-002). Merck KGaA; Parexel International S.L. 2014-. PI: Campistol Plana, J.
- Ensayo clínico fase II, para evaluar la efectividad y la seguridad de la acetazolamida en el tratamiento del síndrome cerebeloso en pacientes con deficiencia de PMM2-CDG. No Comercial. F. Inocente Inocente 2017. 2017-. PI: Serrano, M.
- Pruebas clínicas y básicas sobre la carencia de fosfomanomutasa (PMM2-CDG). (GLY-000). And Glycomine, Inc; Voisin Consulting. 2020-. PI: Serrano, M.

SELECTED PUBLICATIONS

- Garcia-Cazorla A, Verdura E, Juliá N, Anderson EN, Goicoechea L, Planas L, et al. Impairment of the mitochondrial one-carbon metabolism enzyme SHMT2 causes a novel brain and heart developmental syndrome. Acta Neuropathol.2020;140(6):971-975. IF:14,251(Q1).
- Alvarez A, Blanco P, Meneses E, Wahba M, Pollock AH, Jose J, et al. Annexin A6 Is Critical to Maintain Glucose Homeostasis and Survival During Liver Regeneration in Mice. Hepatology. 2020;72(6):2149-2164. IF:14,679 (Q1).
- Paredes AJ, Julià NA, Montero R,

Yubero D, Cascajo MV, Garcia A, et al. Laboratory Diagnosis of a Case with Coenzyme Q(10) Deficiency. *Clin Chem*.2020;66(11):1465-1467. IF:7,292 (Q1).

- Paredes AJ, Montero R, Codina A, Jou C, Fernández G, Joan F, et al. Coenzyme Q(10) Treatment Monitoring in Different Human Biological Samples. *Antioxidants (Basel)*.2020;9(10):979. IF:5,014 (Q1).

Applied research in neuromuscular diseases

Cecilia Jiménez Malebrera, PhD

 **22**
PUBLICATIONS WITH IF

 **41%**
FIRST QUARTILE PUBLICATIONS

 **23%**
FIRST DECILE PUBLICATIONS

The research interests of the Neuromuscular Disorders (NMD) Applied Research Group span from the basic pathophysiology of this rare disease group to clinical and therapeutic aspects, culminating in clinical trials.

It is both a national (CSUR) and a European (European Reference Network, EURO-NMD) reference centre for paediatric neuromuscular diseases, as well as being a member of the international Treat-NMD network. In 2020, we consolidated our work on the pre-clinical development of advanced therapies with very promising results. This involved a therapeutic strategy based on the application of the CRISPR/Cas system to edit mutations in collagen VI genes. We are a highly innovative group that explores the most advanced technologies in an attempt to resolve the questions raised with our research. We have engaged in various funded collaborations with technology centres such as IBEC and ICFO in order to attain more physiological *in vitro* models and precise systems so we can gauge the effectiveness of

these therapies. Also this year, we had a unique opportunity to be able to carry out a project at the ALBA Synchrotron light source facility. Finally, in 2020, we were awarded funding from the La Marató Foundation for a technology development project for spinal muscular atrophy, which will be coordinated by one of our researchers, Daniel Natera-De-Benito.

MEMBERS

STAFF RESEARCHER

Julita Medina, Andrés Nascimento Osorio, Carlos Ignacio Ortez Gonzalez, Irene Beatriz Zschaecck Luzardo

POSTDOC ASSOCIATED RESEARCHERS

Daniel Natera de Benito, Selena Trifunov

PHD STUDENTS

Cristina Jou

ASSISTANT RESEARCHER

Maria del Carmen Badosa Gallego, Laura Carrera García, Jessica Exposito Escudero, Sonia Segovia Simon

TECHNICIAN

Anna Codina Bergadà, Aristides Lopez Marquez

SELECTED PROJECTS

- Medicina Personalizada para las Distrofias Musculares Congénitas: Desarrollo de terapias avanzadas, modelos fisiológicos y herramientas diagnósticas precisas. (PI19/00122). Instituto de Salud Carlos III (ISCIII). 2020-2022. PI: Jimenez Mallebrera, C.
- 6MWT+: The Six Minutes Walking Test PLUS System. (20686). EIT Health e.V. 2019-2020. PI: Medina, J.
- Biomarcadores precoces pronósticos y de respuesta a tratamiento en la Atrofia Muscular Espinal. (Galicia AME). Asociacion galiciAME. 2019-2021. PI: Jimenez Mallebrera, C.
- CuidAME: Longitudinal Data Collection from Patients with Spinal Muscular Atrophy in Spain in a nationwide Registry. Biogen International GmbH. 2019-2025. PI: Nascimento Osorio, A.
- Historia natural, diagnóstico y tratamiento de las distrofias musculares por déficit de colágeno VI. (F. NOELIA). Fundación Noelia. 2017-2022. PI: Jimenez Mallebrera, C.

SELECTED CLINICAL TRIALS & OBSERVATIONAL STUDIES

- 6MWT+: The Six Minutes Walking Test PLUS System.No Comercial. (6MWT). Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 2019-. PI: Medina, J.
- A Phase IIb Randomized, Double-blind, Parallel Group, Placebo- and Active-controlled Study with Double-Blind Extension to Assess the Efficacy and Safety of Vamorolone in Ambulant Boys with Duchenne Muscular Dystrophy (DMD). Comercial. (VBP15-004). Reveragen Biopharma Inc. 2019-. PI: Nascimento Osorio, A.
- Estudio de fase 2 con tratamiento activo para evaluar la eficacia y la seguridad de SRK-015 en pacientes con atrofia muscular espinal de inicio tardío. TOPAZ. Comercial. (SRK-015-002). Medpace Spain, S.L.; Scholar Rock Inc. 2019-. PI: Nascimento Osorio, A.
- Diseño y validación psicométrica de un conjunto de cuestionarios "TOOLBOX" para evaluar los resultados de salud en atrofia muscular espinal desde el punto de vista del paciente. ESTUDIO SMA-TOOL. ML41962. Roche Farma, S.A. 2020-. PI: Medina, J

SELECTED PUBLICATIONS

- Alonso J, Gonzalez L, Bello L, Guglieri M, Straub V, Gallano P, et al. New genotype-phenotype correlations in a large European cohort of patients with sarcoglycanopathy. *Brain*. 2020;143:2696-2708. IF:11,337 (Q1).
- Coratti G, Messina S, Lucibello S, Pera MC, Montes J, Pasternak A, et al. Clinical Variability in Spinal Muscular Atrophy TypeIII. *Ann Neurol*. 2020;88(6):1109-1117. IF: 9,037 (Q1).
- Dominguez C, Badosa C, Madruga M, Martí I, Paradas C, Ortez CI, et al. Growth Differentiation Factor 15 is a potential biomarker of therapeutic response for TK2 deficient myopathy. *Sci Rep*. 2020; 10(1):10111-10111. IF:3,998 (Q1).
- Natera D, Muchart J, Itzep DC, Ortez CI, González L, Gallano P, et al. Epilepsy in LAMA2-related muscular dystrophy: An electro-clinico-radiological characterization. *Epilepsia*. 2020; 61(5):971-983. IF:6,040 (Q1).

Pediatric neurometabolism: neural communication mechanisms and personalized therapies

M^a Angels García Cazorla, MD, PhD

 **30**
PUBLICATIONS WITH IF

 **43%**
FIRST QUARTILE PUBLICATIONS

 **20%**
FIRST DECILE PUBLICATIONS

MEMBERS

STAFF RESEARCHER

Judith Silvia Armstrong Morón, Núria Brandi Tarrrau, Alejandra Darling, Carme Fons Estupiña, Anna López Sala, M^adel Mar O'Callaghan Gordo, Federico Ramos, Roser Colomé Roura, Silvia Maria Meavilla Olivas, Jordi Muchart López

POSTDOC ASSOCIATED RESEARCHERS

Alfonso Luis De Oyarzabal Sanz, Alba Tristan Noguero

PHD STUDENTS

Uliana Musokhranova Matveeva, Natalia Alexandra Julia Palacios, Noelia Rivera Sánchez, Clara Xiol Viñas

TECHNICIAN

Cristina Grau Páez

SELECTED PROJECTS

- Convocatòria d'ajuts per a la contractació de personal investigador novell (FI-2020). Beneficiari: Ainhoa Pascual (co-financiado por el FSE). [2020 FI_B_00888]. Agaur - Agència de Gestió d'Ajuts Universitaris i de Recerca. 2020-2023. PI: Armstrong Moron, J.
- Medicina personalizada en los defectos genéticos de la neurotransmisión en pediatría, nuevo enfoque basado en el metabolismo de la sinapsis neuronal. (FI19049). Federación Española de Enfermedades Raras. 2020-2021. PI: Garcia Cazorla, A.

- Desarrollo de una plataforma colaborativa para la investigación en enfermedades de los neurotransmisores. (De Neu 2018_AEN). DE NEU, Asociación de Enfermedades de los Neurotransmisores. 2019-2020. PI: Garcia Cazorla, A.
- Medicina personalizada en los defectos genéticos de la neurotransmisión en pediatría. Nuevo enfoque basado en el metabolismo de la sinapsis neuronal. (PI18/00111). Instituto de Salud Carlos III (ISCIII). 2019-2021. PI: Garcia Cazorla, A.

SELECTED CLINICAL TRIALS & OBSERVATIONAL STUDIES

- Ensayo de extensión abierta para investigar la seguridad a largo plazo de la solución oral de Cannabidiol (GWP42003-P, CBD-OS) en pacientes con síndrome de Rett. Comercial. GWND19002_Ext. GW Research. 2020-. PI: O'Callaghan Gordo, M
- A multicenter, multinational, randomized, double-blind, placebo-controlled study to assess the efficacy, pharmacodynamics, pharmacokinetics, safety, and tolerability of venglustat in late onset GM2 gangliosidosis (Tay-Sachs disease and Sandhoff disease) together with a separate basket for ultra-rare diseases within a similar glucosylceramide-based sphingolipid pathway. Comercial. EFC15299. Sanofi-Aventis S.A. 2020. PI: O'Callaghan Gordo, M
- Estudio de cohorte prospectivo y retrospectivo para perfeccionar y ampliar el conocimiento de pacientes con formas crónicas de deficiencia de esfingomielinasa ácida (ASMD). Comercial. PIR16183 - EXPAND. Sanofi-Aventis S.A. 2020-. PI: O'Callaghan Gordo, M

SELECTED PUBLICATIONS

- Garcia-Cazorla A, Verdura E, Julià-Palacios NA, Anderson EN, Goicoechea L, Planas L, et al. Impairment of the mitochondrial one-carbon metabolism enzyme SHMT2 causes a novel brain and heart developmental syndrome. Acta Neuropathol. 2020;140(6):971-975. IF:14,251(Q1).
- Balestrini S, Mikati MA, Garcia RA,

- Carboni M, Hunanyan AS, Kherallah B, et al. Cardiac phenotype in ATP1A3-related syndromes A multicenter cohort study. Neurology. 2020;95(21):2866-2879. IF:8,770(Q1).
- Cristofoli F, Moss T, Moore HW, Devriendt K, Flanagan H, May M, Jones J, et al. De novo variants in LMNB1 cause pronounced syndromic microcephaly and disruption of nuclear envelope integrity. Am J Hum Genet. 2020;107(4):753-762. IF:10,502 (Q1).
- Ng J, Cortés E, Abela L, Termsarasab P, Mankad K, Sudhakar S, et al. DNAJC6 Mutations Disrupt Dopamine Homeostasis in Juvenile Parkinsonism-Dystonia. Mov Disord. 2020;35(8):1357-1368. IF:8,679 (Q1).

Neurogenetics and molecular medicine

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

 **19**
PUBLICATIONS WITH IF

 **74%**
FIRST QUARTILE PUBLICATIONS

 **32%**
FIRST DECILE PUBLICATIONS

MEMBERS

STAFF RESEARCHER

Guerau Fernandez Isern, Antonio F Martinez Monseny, Joan Maynou Fernández, Mónica Roldan Molina

POSTDOC ASSOCIATED RESEARCHERS

Cristina Batlle Carreras, Lara Cantarero Abad, Laura Marti Sanchez, Loreto Martorell Sampol, Jordi Pijuan Marquilles, Maria Rodriguez Sanz

PHD STUDENTS

Elena Juárez Escoto

ASSISTANT RESEARCHER

Mercè Bolasell Girgas, Jodie Kane, Alba Pascual Rodríguez

TECHNICIAN

Daniel Castillo mestres, Jordi Genovès Escarré, Paola Pacheco Fernández

SELECTED PROJECTS

- El cerebro clínico del síndrome Coffin-Siris: Estudio integral de un trastorno del neurodesarrollo. Hospital Sant Joan de Déu - Esplugues HSJD. 2020-2023. PI: Palau, F.
- Genes y fenotipos de síndromes parkinsonianos: estudio clínico y experimental. (PI19/00126). Instituto de Salud Carlos III (ISCIII). 2020-2022. PI: Hoenicka, J.
- El modelo de genómica clínica - genómica funcional en la innovación diagnóstica de las enfermedades neurogenéticas. (BR201701). Hospital Sant Joan de Déu - Esplugues HSJD. 2018-2021. PI: Hoenicka, J.
- Translational diagnostics program for undiagnosed and rare diseases: bringing together clinical

phenotype, genome, and biological function and structure. CIBER de Enfermedades Raras, Programa ACCI 2020-2021. PI: Palau, F.

SELECTED PUBLICATIONS

- Cantarero L, Juarez-Escoto E, Civera-Tregón A, Rodríguez-Sanz M, Benitez R, Hoenicka J, Palau F. Mitochondria-lysosome membrane contacts sites are defective in GDAP1-related Charcot-Marie-Tooth neuropathy. Human Molecular Genetics. 2020;29(22): 3589–3605. IF: 5,100 (Q1).
- Koeneke A, Ponce G, Troya J, Palomo T, Hoenicka J. Ankyrin Repeat and Kinase Domain Containing 1 Gene, and Addiction Vulnerability. Int J Mol Sci. 2020;21(7):2516. IF: 4,556 (Q1).
- Muñoz DC, Mollá B, Calap P, García JL, Pallardo FV, Palau F, Gonzalez

P. Cofilin dysregulation alters actin turnover in frataxin-deficient neurons. Sci Rep. 2020;10(1):5207-5207. IF:3,998 (Q1).

- Paredes AJ, Montero R, Codina A, Jou C, Fernández G, Joan F, et al. Coenzyme Q(10) Treatment Monitoring in Different Human Biological.

Neonatal brain

Alfredo Garcia-Alix Pérez, MD, PhD

16 PUBLICATIONS WITH IF

44% FIRST QUARTILE PUBLICATIONS

12% FIRST DECILE PUBLICATIONS

MEMBERS

STAFF RESEARCHER

Thais Agut Quijano, Ana Alarcon Allen, Nuria Herranz Rubia, Sílvia Planas Román, Maria del Mar Vella Aparicio

POSTDOC ASSOCIATED RESEARCHERS

Nuria Carreras

ASSISTANT RESEARCHER

Jonathan Francisco Olival Tremaria

TECHNICIAN

Nerea Liñan Rosa

MANAGEMENT

Maria Jose Coll Lobarte

SELECTED PROJECTS

- Estudio CRIB (Cribado de citomegalovirus congénito en recién nacidos sanos e ingresados - Barcelona). (PI19/00095). Instituto de Salud Carlos III (ISCIII). 2020-2022. PI: Alarcon Allen, A.
- Elaboración de un atlas morfométrico normalizado de la maduración cerebral del recién nacido prematuro y valoración del impacto de la patología cerebral en el proceso madurativo. (PI18/00110). Instituto de Salud Carlos III (ISCIII). 2019-2021. PI: Agut Quijano, T.



- Contratos Rio Hortega. (CM18/00258). Instituto de Salud Carlos III (ISCIII). 2019-2021. PI: Garcia-Alix, A.
- Rare Coding Genetic Variants Associated with neonatal arterial ischemic stroke. [201714.10]. Fundació La Marató de TV3. 2018-2021. PI: Garcia-Alix, A.
- Desarrollo de un algoritmo basado en neuroimagen multimodal para el pronóstico personalizado del infarto arterial cerebral neonatal. (BECA BOMBERS 2017). OSSJD - Obra Social Sant Joan de Déu. 2017-2021. PI: Garcia-Alix, A.

SELECTED CLINICAL TRIALS & OBSERVATIONAL STUDIES

- Estudio multicéntrico aleatorizado, abierto, fase IIb para comparar la eficacia, seguridad y farmacocinética (PK) de la dosis óptima y la dosis estándar de vancomicina en neonatos y niños de < a 90 días de vida con sospecha de sepsis o sepsis confirmada por gérmenes gram-positivos. NeoVanc. No Comercial. (602041 NEOVANC). Fondazione Penta Onlus. 2018-. PI: Alarcon, A.
- A Randomized, Double-blind, Placebo-controlled Single-ascending Dose Trial to Evaluate the Safety, Tolerability, and Pharmacokinetics of GWP42003-P in Conjunction with Hypothermia in Neonates with Moderate or Severe Hypoxic Ischemic Encephalopathy. Commercial. GWEP1560. GW Research. 2019-. PI: Alarcon, A.

SELECTED PUBLICATIONS

- Balada R, Tebé C, León M, Arca G, Alsina M, Castells AA, et al. Enquiring beneath the surface: can a gene expression assay shed light into the heterogeneity among newborns with neonatal encephalopathy? *Pediatr Res.* 2020;88(3):451-458. IF:2,747(Q1).
- León MZ, Arnaez J, Valls A, Arca G, Agut T, Alarcon A, Garcia-Alix A. Cerebrospinal fluid levels of neuron-specific enolase predict the severity of brain damage in newborns with neonatal hypoxic-ischemic encephalopathy treated with hypothermia. *PLoS One.* 2020;15(6):e0234082. IF:2,740 (Q2).
- Arca G, Arnaez J, Agut T, Nuñez C, Stephan C, Valls A, Garcia-Alix

A. Neuron-specific enolase is correlated with lesion topology, relative infarct volume and outcome of symptomatic NAIS. *Arch Dis Child Fetal Neonatal Ed.* 2020;105(2):132-137. IF: 5,436(Q1).

- Nuñez C, Arca G, Agut T, Stephan C, Garcia-Alix A. Precise neonatal arterial ischemic stroke classification with a three-dimensional map of the arterial territories of the neonatal brain. *Pediatr Res.* 2020;87(7):1231-1236. IF:2,747(Q1).

Isabel García-García, Anna Prunell i Castañe, Adrià Bermudo Gallaguet

TECHNICIAN

Gemma Monté Rubio

SELECTED PROJECTS

- Exercise the Mind and Brain. A Multimodal intervention in stroke. Fundació La Marató de TV3. 2018-2021. PI: Mataró, M.
- Executive function training in childhood obesity: food choice, quality of life and brain connectivity (TOUCH). FMTV - Fundació La Marató de TV3. 2017-2020. PI: Jurado, MA
- Entrenamiento ejecutivo en parálisis cerebral: participación, calidad de vida y conectividad cerebral. Ministerio de Economía y Competitividad. PSI2016-75979-R. 2016- 2021. PI: Pueyo Benito, R

SELECTED PUBLICATIONS

- Crespo AM, Canento T, Hernández M, Cáceres C, González A, Ispuerto L, et al. The Barcelona-Asymptomatic Intracranial Atherosclerosis (AsIA) study: Subclinical cervico-cerebral stenosis and middle cerebral artery pulsatility index as predictors of long-term incident cognitive impairment. *Atherosclerosis.* 2020;312:104-109. FI: 3,919 (Q1).
- Luis-Ruiz S, Caldú X, Sanchez Castañeda C, Pueyo R, Garolera M, Jurado MA. Is cognitive training an effective tool for improving cognitive function and real-life behaviour in healthy children and adolescents? A systematic review. *Neurosci Biobehav Rev.* 2020;116:268-282. FI: 8,330 (Q1).
- Prats X, Jurado MA, Ottino J, García-García I, Segura B, Caldú X, et al. Inflammatory agents partially explain associations between cortical thickness, surface area, and body mass in adolescents and young adulthood. *Int J Obes (Lond).* 2020;44:1487-1496. FI: 4,419 (Q1).
- Roig F, Castells A, Lamonja N, Torán P, Pera G, García A, et al. Effects of Aerobic Exercise, Cognitive and Combined Training on Cognition in Physically Inactive Healthy Late-Middle-Aged Adults: The Projecte Moviment Randomized Controlled Trial. *FRONT AGING NEUROSCI.* 2020;12:590168. FI: 4,362 (Q1).

Neuropsychology

Roser Pueyo Benito, PhD

 **5** PUBLICATIONS WITH IF

 **67%** FIRST QUARTILE PUBLICATIONS

 **17%** FIRST DECILE PUBLICATIONS

During 2020, the Neuropsychology group published six articles in international journals, four in first quartile and 2 in second quartile journals. We have six ongoing research projects, funded through competitive calls, and are overseeing eight doctoral theses. We have submitted an application for a COST Action funding, the resolution of which is still pending, and continue to receive ICREA Acadèmia funding granted to one of our members.

MEMBERS

STAFF RESEARCHER

Montse Blasco Sierra, Xavier Caldú Ferrús, Alba Castells Sánchez, María García Galant, Maria Angeles Jurado Luque, Noemí Lamonja Vicente

POSTDOC ASSOCIATED RESEARCHERS

Olga Laporta Hoyos

PHD STUDENTS

Júlia Ballester Plané, Sandra Luís Ruiz, Maria Mataró Serrat, Jonatan Ottino González, Xavier Prats Soteras, Roser Pueyo Benito, Cristina Sánchez Castañeda, Júlia Miralbell Blanch,

Cognitive neuroscience

Carles Escerca Micó, PhD

**5**

PUBLICATIONS WITH IF

**40%**

FIRST QUARTILE PUBLICATIONS

In 2020, and despite the inevitable consequences of lockdown due to the COVID-19 pandemic, our research group has been able to continue its collaboration with the "Foetal Environment and Obstetric Complications" research group led by Dr Gómez-Roig. More specifically, we have begun the recruitment of subjects for the ONA Project. This project is funded by the Ministry of Science and Innovation and aims to characterise the mechanisms in the brain by which language sounds are coded after birth and how these develop during the first year of life, as well as the repercussions of intrauterine growth restriction on these neurological mechanisms. Within the framework of this collaboration, we have also initiated a project with funding from the Alicia Koplowitz Foundation to detect the effects of social alcohol consumption during pregnancy on the brain of the newborn child. Researchers in our group have demonstrated alterations in eye movements (vergence) when reading in children with reading difficulties (Jiménez et al., 2020), and have also been involved in improving standards to allow safe EEG recordings in research and clinical settings in the context of the COVID-19 pandemic (Campanella et al., 2020). The group's principal investigator, Dr Carles Escerca, was awarded the ICREA Acadèmia distinction for the year 2020.

MEMBERS

STAFF RESEARCHER

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

POSTDOC ASSOCIATED RESEARCHERS

Natàlia Gorina Careta

PHD STUDENTS

Sonia Arenillas Alcón, Alejandro Lerer, Marta Puertollano Rodríguez, Teresa Ribas Prats

SELECTED PROJECTS

- Ajut per incentivar i consolidar la recerca d'excel·lència ja existent a les universitats públiques de Catalunya. Programa ICREA Acadèmia 2020. Fundació Institució Catalana de Recerca i Estudis Avançats (ICREA). 2016-2020. PI: Escera, C.
- Brainlab-Grup de Recerca Cosolidat en Neurociència Cognitiva. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2017-2021. PI: Escera, C.
- Codificación de estímulos referenciados a uno mismo versus estímulos referenciados a entes externos: Consecuencias a corto y largo plazo. Ministerio de Economía y Competitividad. 2018-2020. PI: San Miguel Insua, I.
- Caracterización de la respuesta de seguimiento de frecuencia (RSF) en recién nacidos como posible biomarcador de desarrollo neurocognitivo. Ministerio de Ciencia, Innovación y Universidades. 2019-2021. PI: Escera, C.
- Sincronización de movimientos oculares y sincronización de las neuronas. Ministerio de Ciencia, Innovación y Universidades. 2019-2021. PI: Supèr, H.
- Papel de los genes y de factores epigenéticos en la modulación de potenciales cerebrales asociados al procesamiento del lenguaje y de la música. Ministerio de Ciencia, Innovación y Universidades. 2019-2021. PI: Via Garcia, M.
- Trastornos del espectro alcohólico fetal (TEAF): Identificación precoz y biomarcadores de riesgo para alteraciones neurocognitivas mediante el potencial de seguimiento de frecuencia (PSF)", Fundación Alicia Koplowitz. 2020-2022. PI: Escera, C.
- Contracte/Conveni recerca o serveis. Braingaze, S.L. 2013-2033. PI: Supèr, H.

SELECTED PUBLICATIONS

- Crespo AM, Canento T, Hernández M, Cáceres C, González A, Ispuerto L, et al. The Barcelona-Asymptomatic

Intracranial Atherosclerosis (AsIA) study: Subclinical cervico-cerebral stenosis and middle cerebral artery pulsatility index as predictors of long-term incident cognitive impairment. *Atherosclerosis*. 2020;312:104-109. FI: 3,919 (Q1).

- Font M, Cornella M, Costa J, Hervás A, Leung S, Rueda I, Escera C. Increased subcortical neural responses to repeating auditory stimulation in children with autism spectrum disorder. *Biol Psychol*. 2020;149:107807. FI: 2,763 (Q1).
- Jiménez EC, Romeo A, Pérez L, Solé M, Bustos P, Cañete J, et al. Eye vergence responses in children with and without reading difficulties during a word detection task. *Vision Res*. 2020;169:6-11. FI: 2,610 (Q2).
- López Caballero F, Martín P, Ribas T, Gorina N, Bartrés D, Escera C. Effects of cTBS on the Frequency-Following Response and Other Auditory Evoked Potentials. *Front Hum Neurosci*. 2020;14:250. FI: 2,673 (Q2).

Attention, Perception and Language Acquisition (APAL)

Laura Bosch Galceran, PhD

**2**

PUBLICATIONS WITH IF

**100%**

FIRST QUARTILE PUBLICATIONS

Our main activity has focused on implementing an assessment for patients with bilateral profound sensorineural hearing loss prior to cochlear implant placement surgery. Pre-implantation measures include the use of cognitive, motor and language development scales, questionnaires for parents on patient's social/adaptive behaviour, together with experimental tasks with eye-tracking technology to evaluate the child's ability to follow the adult's gaze and to focus on the speaker's face,

two types of behaviour associated with future language development. So far, the data point to differences between our study patients and the control group in terms of tracking the adult gaze, which would suggest that auditory sensory deficits affect social cognition aspects that are essential for communication and learning words. The study will also include post-implantation measures, with tasks to evaluate the ability to learn words in order to help identify key factors for optimal oral language learning after implantation.

MEMBERS

STAFF RESEARCHER

Ferran Pons Gimeno, Marta Ramon Casas

POSTDOC ASSOCIATED RESEARCHERS

Joana Birulés Muntané

PHD STUDENTS

Laia Marcet Jiménez, Carlota Saumell Andreu

ASSISTANT RESEARCHER

Jessica Sánchez-Galán Frauca

SELECTED PROJECTS

- Variabilidad en el procesamiento audiovisual del habla en la infancia: rol de la experiencia lingüística, maduración neurológica y capacidad sensorial. Ministerio de Ciencia, Innovación y Universidades (MICINN) 2019-2021. PIs: Pons Gimeno, F; Bosch Galceran, L.
- Contracte/Conveni recerca o serveis Fundació Privada Betània-Patmos. 2019-2023. PI: Pons Gimeno, F.
- Resonancia magnética funcional e imagen de tensor de difusión en la valoración prequirúrgica del paciente pediátrico con hipoacusia prelingual neurosensorial profunda bilateral de detección en el cribado neonatal como potenciales biomarcadores de desarrollo de lenguaje oral tras la colocación de un implante coclear. Sociedad Española de Neuro-radiología. (Noviembre 2017-2020). PI: Rebollo, M. Researcher in the group: Bosch, L.

SELECTED PUBLICATIONS

- Birules J, Bosch L, Pons F, Lewkowicz DJ. Highly proficient L2 speakers still need to attend to a

talker's mouth when processing L2 speech. LANG COGN NEUROSCI. 2020;35:1314-1325. FI:1,925(Q1).

- Martínez-Nadal S, Bosch L. Cognitive and Learning Outcomes in Late Preterm Infants at School Age: A Systematic Review. Int J Environ Res Public Health. 2020;18:74. FI: 2,849(Q1).

Human molecular genetics I

Daniel Raúl Grinberg Vaisman, PhD

23 PUBLICATIONS WITH IF

61% FIRST QUANTILE PUBLICATIONS

22% FIRST DECILE PUBLICATIONS

In 2020 we identified new genes and mutations responsible for intellectual disability in patients initially diagnosed with Opitz C or Bohring-Opitz syndrome (TRAF7, DPH1, ASXL1, KAT6A). We conducted functional studies on the effect of *DKK1* gene variants in the context of osteoporosis. We have also participated in multicentre studies on mutations in RASopathies and psychiatric disorders. We have studied the genetics of cocaine addiction, proposing a new pharmacological target, the epigenetics of drug addiction, and also the genetics of autism, ADHD, obsessive-compulsive disorder, migraine, Parkinson's, epilepsy and aggressive behaviour. In the field of lysosomal storage diseases, we have generated induced pluripotent stem cells (iPSCs) for Sanfilippo syndrome type B using the CRISPR/Cas9 technique and have differentiated iPSCs from Sanfilippo C into neurons and astrocytes. We have also been involved in the development of IT tools for exome analysis. Finally, we have made further progress in the project involving the generation and study of neural models from iPSCs derived from patients with Williams-Beuren Syndrome or 7q11.23 duplication syndrome.

MEMBERS

STAFF RESEARCHER

Susana Balcells Comas, Bru Cormand Rifà, Raquel Rabionet Janssen

POSTDOC ASSOCIATED RESEARCHERS

Roser Corominas Castiñeira, Noelia Fernández Castillo, Marina Mitjans Niubo

PHD STUDENTS

Ester Antón Galindo, Laura Castilla Valmanya, Núria Martínez Gil, Eva Rojo Francàs, Nerea Ugartondo Asensio

TECHNICIAN

Mónica Cozar Morillo

SELECTED PROJECTS

- GENIUS: GENetic Influences on functional outcome after Stroke. (Reg. 70/307 Proj. 201726). Fundació La Marató de TV3.2018-2021. PI: Rabionet Janssen, R.
- Estudios genéticos y funcionales hacia aproximaciones terapéuticas para varias enfermedades óseas y síndromes de discapacidad intelectual. Ministerio de Ciencia, Innovación y Universidades. 2020-2023. PI: Balcells Comas, S.
- Uncovering the genetic roots of ASD and ADHD (GRASAD). Unió Europea. 2020-2022. PI: Cormand Rifà, B.
- Modelado de síndromes de aneusomía en 7q11.23 con neuronas derivadas de iPSC. MINISTERIO DE CIENCIA, INNOVACIÓN y UNIVERSIDADES. Programa Estatal de I+D+i Orientada a los Retos de la Sociedad (RTI2018-101960-A-I00) 2019-2021. PI: Corominas Castiñeira, R.

SELECTED PUBLICATIONS

- Beneto N, Cozar M, Gort L, Pacheco L, Vilageliu L, Grinberg D, Canals I. Generation of two NAGLU-mutated homozygous cell lines from healthy induced pluripotent stem cells using CRISPR/Cas9 to model Sanfilippo B syndrome. Stem Cell Res. 2020;42:101668. FI: 4,489 (Q1).
- Castilla L, Selmer KK, Dimartino C, Raquel J, Blanco B, Yang S, et al Phenotypic spectrum and transcriptomic profile associated with germline variants in TRAF7. Genet Med. 2020;22:1215-1226. FI: 8,904 (Q1).
- Kuebler B, Aran B, Flores R, Pérez-Jurado LA, Veiga A, Cuscó I, Corominas R. Derivation of induced

pluripotent stem cells (iPSCs) by retroviral transduction of skin fibroblasts from four patients suffering 7q11.23 microduplication syndrome. *Stem Cell Res.* 2020;49:102092. FI: 4,495 (Q1).

- Navas E, Vicente C, Mirra S, Burguera D, Fernandez-Castillo N, Ferrán JL, et al. Characterization of an eutherian gene cluster generated after transposon domestication identifies Bex3 as relevant for advanced neurological functions. *Genome Biol.* 2020;21:267. FI: 10,806 (Q1).

and, above all, to discover why their mutation causes hereditary blindness. Furthermore, we have discovered that the causative gene of cerebellar neurodegenerative disease (ATXN3) also plays a very prominent role in the retina, opening up a new line in the study of cerebellum-retina genetic biomarkers. We have also collaborated in the characterisation of a gene derived from genetic transposable elements, BEX3, which has a very relevant neurological function during development and may be associated with cognitive and behavioural alterations.

MEMBERS

STAFF RESEARCHER

Serena Mirra

PHD STUDENTS

Izarbe Aisa Marin, Elena Borrego Domènech, Laura Sánchez-Bellver

ASSISTANT RESEARCHER

Rocío García-Arroyo

Human molecular genetics II

Gemma Marfany Nadal, PhD

 **8** PUBLICATIONS WITH IF

 **75%** FIRST QUARTILE PUBLICATIONS

 **37%** FIRST DECILE PUBLICATIONS

Our group has two main research lines: increasing the genetic diagnosis of rare diseases affecting the retina and the generation of animal models to study the functioning of the causative genes, describe the clinical symptoms of patients and investigate possible precision therapies. We apply next-generation sequencing (NGS) techniques to the genetic diagnosis of retinal dystrophy via a spin-off generated as knowledge transfer, achieving up to 85% success. We have also generated a mouse model to study photoreceptor cell death in hereditary retinal dystrophies. We have just published a study in which we generated a mouse model using genome editing techniques (CRISPR-Cas9) in mice with two causative genes (CERKL and NR2E3) to generate a retinitis pigmentosa and S-cone syndrome models, which we characterised at an electrophysiological level. We are currently conducting more in-depth molecular studies with a view to elucidating the function of these genes

SELECTED PROJECTS

- Targeting regulatory signalling pathways in retinal neurosensory genetic disorders: a window for therapy. Ministerio de Ciencia, Innovación y Universidades. 2020-2023. PI: Marfany, G. (colP: Mirra, S)
- Dinámica mitocondrial y metabólica en un modelo de retinitis pigmentosa. ¿una nueva vía terapéutica? ACCI 2019 CIBERER ISCIII. 2020-2021. PI: Mirra, S. (Grupo 2: Artuch, R)
- Fundación de una spin-off de la UB dedicada al diagnóstico genético de enfermedades hereditarias de la visión. 2018-2020. Fundadoras: Gonzalez Duarte, R & Marfany, G.

SELECTED PUBLICATIONS

- Aísa I, Lopez MJ, Milla S, Lillo J, Navarro G, de la Villa P, Marfany G. Nr2e3 functional domain ablation by CRISPR-Cas9D10A identifies a new isoform and generates retinitis pigmentosa and enhanced S-cone syndrome models. *Neurobiol Dis.* 2020;146:105122. FI: 5,332 (Q1).
- Domènech EB, Andres R, Lopez MJ, Mirra S, García R, Milla S, et al. A New Cerkl Mouse Model Generated by CRISPR-Cas9 Shows Progressive Retinal Degeneration and Altered Morphological and

Electrophysiological Phenotype. *Invest Ophthalmol Vis Sci.* 2020;61:14. FI: 3,470 (Q1).

- Navas E, Vicente C, Mirra S, Burguera D, Fernandez N, Ferrán JL, et al. Characterization of an eutherian gene cluster generated after transposon domestication identifies Bex3 as relevant for advanced neurological functions. *Genome Biol.* 2020;21:267-267. FI: 10,806 (Q1).
- Toulis V, García S, de la Peña C, Arenas R, Abrial JF, Todi SV, Khan N, Garanto A, Costa MDC, Marfany G. The Deubiquitinating Enzyme Ataxin-3 Regulates Ciliogenesis and Phagocytosis in the Retina. *Cell Rep.* 2020;33:108360. FI: 8,109 (Q1).

Etiopathogenesis and treatment of severe mental disorders (MERITT)

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

 **27** PUBLICATIONS WITH IF

 **48%** FIRST QUARTILE PUBLICATIONS

 **30%** FIRST DECILE PUBLICATIONS

The III European Meeting on Women's Mental Health: Psychosis and Gender was held on 16 and 17 November 2020, organised by the Research and Working Group on Women and Mental Health coordinated by Judith Usall. The twelve coordinators of the MERITT group participated in the organising committee.

The group was awarded two prizes: Hestia Award for the best scientific paper. The article "*Gender differences in response to metacognitive training in people with first-episode psychosis*" was granted the award for Best Publication in the field of mental healthcare by the Hestia Chair in 2019. The authors of the article are: Salas-Sender M, López-Carrilero R,

Barajas A, Lorente-Rovira E, Pousa E, Barrigón ML, Grasa E, Ruiz-Delgado I, González-Higueras F, Cid J, Aznar A, Pélaez T, Birulés I, Moritz S, Spanish Metacognition Study Group, Ochoa S. The second prize of the XXXVII National Mental Health Nursing Congress, held on 7-10 October 2020, went to Marta Dominguez for her research paper on "Evolution of care needs and problems in a population sample cared for in a Prison Mental Health Rehabilitation Unit".

MEMBERS

STAFF RESEARCHER

Antonio Manuel Alba Muñoz, Hilari Andres Mora, Belen Arranz Martí, Adela Berrozpe Blasco, Emma Casas Anguera, Marta Coromina Sadurní, Joan Costa Escolà, Jorge Cuevas Esteban, Ruth Cunill Clotet, Noemí del Prado Sánchez, María José Escandell Morcillo, Gemma Escartin Martin, Gemma Escuder Romeva, José Manuel Fernández Rodríguez, Alexandrina Foix Sanjuan, Mar García Franco, Maria Elena Huerta Ramos, Marcia Irazábal Giménez, Raquel López Carrilero, Jaume Martínez Mas, Francisco Martínez Zambrano, Eva Miquel Fernandez, Alfonso Monje Hernández, Alvaro Muro Alvarez, Aitor-Eneko Olivé Albiztur, María Trinidad Peláez Martínez, Jesús Pérez Pazos, María Ribas Siñol, Elena Rubio Abadal, Luis San Molina, Vicente Tort Herrando, Sonia Vilamala Anton

POSTDOC ASSOCIATED RESEARCHERS

Helena García Mieres

PHD STUDENTS

Luciana Beatriz Diaz Cutraro, Silvia Marcó Garcia, America Jennifer Vera Montecinos, Elia Vila Andreu

ASSISTANT RESEARCHER

Anna Butjosa Molines, Marta Domínguez del Campo, Marina Esteban Sanjusto, Marta Ferrer Quintero, Gabriel Ledesma Iparraguirre, Clara Serra Arumí, Marina Verdaguer Rodriguez, Regina Vila Badiá

SELECTED PROJECTS

- Influencia del estilo de apego en la cognición social y sesgos cognitivos en personas con primeros episodios psicóticos, esquizofrenia crónica y controles sanos. (PI18/00212). Instituto de Salud Carlos III (ISCIII). 2019-2021. PI: Ochoa, S.
- Reguladores de la expresión génica

como predictores de diagnóstico y biomarcadores de déficits cognitivos y cambios en el grosor cortical en psicosis de inicio reciente. (PI18/00213). Instituto de Salud Carlos III (ISCIII). 2019-2021. PI: Ramos, B.

- Creació i implementació d'una plataforma digital per a la detecció, comunicació i intervenció en la població adolescent i adults joves que pateixen o tenen risc de patir trastorns psicòtics. (SA51-006943). Departament de Salut - Generalitat de Catalunya. 2019-2023. PI: Coromina, M.
- Impacto de la interacción de los factores protectores y de estrés psicosocial en la aparición y pronóstico de un primer episodio psicótico. (PI17/00111). Instituto de Salud Carlos III (ISCIII). 2018-2021. PI: Usall, J.
- Incapacitación legal en personas con trastorno mental grave: descripción del perfil clínico, neuropsicológico y elaboración de un modelo predictivo. (PI17/00113). Instituto de Salud Carlos III (ISCIII). 2018-2022. PI: Huerta Ramos, ME.
- La permeabilidad intestinal como causa de inflamación crónica de bajo grado en pacientes con esquizofrenia: relación con la dieta, el síndrome metabólico y la gravedad de la enfermedad. (PI17/00246). Instituto de Salud Carlos III (ISCIII). 2018-2021. PI: Arranz, B.

SELECTED PUBLICATIONS

- Birulés I, López-Carrilero R, Cuadras D, Pousa E, Barrigón ML, Barajas A, et al. Cognitive Insight in First-Episode Psychosis: Changes during Metacognitive Training. *J Pers Med.* 2020;10:4. FI: 4,433 (Q1).
- Bergé D, Mané A, Lesh TA, Bioque M, Barcones F, Gonzalez-Pinto AM, et al. Elevated Extracellular Free-Water in a Multicentric First-Episode Psychosis Sample, Decrease During the First 2 Years of Illness. *Schizophr Bull.* 2020;46:846-856. FI: 7,958 (Q1).
- García-Mieres H, Villaplana A, López-Carrilero R, Grasa E, Barajas A, Pousa E, et al. The Role of Personal Identity on Positive and Negative Symptoms in Psychosis: A Study Using the Repertory Grid Technique. *Schizophr Bull.* 2020;46:572-580. FI: 7,958 (Q1).
- Salas-Sender M, López-Carrilero

R, Barajas A, Lorente-Rovira E, Pousa E, Barrigón ML, et al. Gender differences in response to metacognitive training in people with first-episode psychosis. *J Consult Clin Psychol.* 2020;88:516-525. FI: 4,632 (Q1).

Research in child and adolescent mental health

Montserrat Dolz Abadia, MD, PhD

31 PUBLICATIONS WITH IF

71% FIRST QUANTILE PUBLICATIONS

29% FIRST DECILE PUBLICATIONS

MEMBERS

STAFF RESEARCHER

Jose Angel Alda, Aritz Aranbarri Paredes, Fernando Lacasa, Josep Lluís Matalí, Daniel Muñoz, Eduardo Serrano Troncoso, Francisco Villar Cabeza, Xavier Estrada, Mar Alvarez Segura, Ester Camprodon Rosanas, Maria Angeles Mairena Garcia, Marta Pardo Gallego, Anna Sintes Estévez, Esther Via Virgili, Inma Insa

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Maria Díez Juan, Laia Mollà Cusi, Jordina To Fabra, Laia Villalta Maciá

ASSISTANT RESEARCHER

Federica Lombardini, Sara Parrilla Carrasco, Ania Pérez Racana, Miriam Sanabra Gonzalez, Berta Sanfeliu Salva, Ingrid Tortadès Arumí

SELECTED PROJECTS

- Disrupción de los ritmos circadianos en población infantil con Trastornos del Neurodesarrollo (TDAH y TEA) y su impacto sobre la salud y calidad de vida. (PI19/00113). Instituto de Salud Carlos III (ISCIII). 2020-2022. PI: Alda, JA.



- First Steps: estudio piloto aleatorizado para la implementación del programa de parentalidad Incredible Years® en preescolares con autismo y retraso del lenguaje en España. Fundación Alicia Koplowitz. 2019-2021. PI: Villalta Maciá, L.
- SAVE_Support and treatment of traumatized children After Violence. (856677). European Commission. 2019-2021. PI: Alvarez Segura, M.
- Estudio multicéntrico longitudinal sobre marcadores neurobiológicos de estrés en niños y adolescentes con síndrome de riesgo de psicosis y la transición a psicosis. (PI15/00509). Instituto de Salud Carlos III (ISCIII). 2016-2020. PI: Dolz Abadia, M.

SELECTED CLINICAL TRIALS & OBSERVATIONAL STUDIES

- Ensayo controlado con placebo en sujetos con alto riesgo para la psicosis comparado con ácidos grasos omega-3 en Europa. No Comercial. PURPOSE/ABR54654. University Medical Center Utrecht. 2016-. PI: Dolz Abadia, M
- A Double-blind, Randomized, Psychoactive Placebo-controlled, Study to Evaluate the Efficacy and Safety of 3 Fixed Doses (28 mg, 56 mg and 84 mg) of Intranasal

Esketamine in Addition to Comprehensive Standard of Care for the Rapid Reduction of the Symptoms of Major Depressive Disorder, Including Suicidal Ideation, in Pediatric Subjects Assessed to be at Imminent Risk for Suicide. Comercial. ESKETINSUI2002. Janssen - Cilag, S.A. 2018-. PI: Dolz Abadia, M.

SELECTED PUBLICATIONS.

- Camprodon-Rosanas E, Ribas-Fitó N, Battle S, Persavento C, Alvarez-Pedrerol M, et al. Association Between Sluggish Cognitive Tempo Symptoms and Attentional Network and Working Memory in Primary Schoolchildren. J Atten Disord. 2020;24:1787-1795. FI: 2,826 (Q1).
- Matalí JL, Pérez-Racana A, Flores E, Lleras M, Goti J, Kaminer Y. Goal commitment evolution in a Spanish adolescent sample with cannabis use disorder. Addict Behav. 2020;107:106388. FI: 3,645 (Q1).
- Tor J, Dolz M, Sintés-Estevez A, de la Serna E, Puig O, Muñoz-Samons D, et al. Neuropsychological profile of children and adolescents with psychosis risk syndrome: the CAPRIS study. Eur Child Adolesc Psychiatry. 2020;29:1311-1324. FI: 3,941 (Q1)
- Matalí JL, Ania R, Oberst U, Lleras M, Bertomeu P, Elena M. Seclusion in adolescents with IGD: New

diagnostic criteria or measure of severity? Comput Hum Behav. 2020;110:106394. FI: 5,003 (Q1).

Epidemiology of mental disorders and aging

Josep Maria Haro Abad, MD, PhD & Ai Koyanagi, MD, PhD

 **121** PUBLICATIONS WITH IF

 **72%** FIRST QUARTILE PUBLICATIONS

 **20%** FIRST DECILE PUBLICATIONS

MEMBERS

STAFF RESEARCHER

Paula Cristobal Narvaez, Mireia Féliz Nóbrega, Albert Sánchez Niubó, Sara Siddi

POSTDOC ASSOCIATED RESEARCHERS

Beatriz Olaya Guzmán

PHD STUDENTS

Carlota de Miquel Bleier



ASSISTANT RESEARCHER

Ivet Bayes Marin, Lydia Hanaa Faris, Aina Gabarrell Pascuet, Iago Giné Vázquez, Desireé Gutiérrez Marin, Federica Lombardini, Blanca Mellor Marsa, Maria Victoria Moneta, Anna Monistrol Mula, Teresa Torres Moral, Elisabeth Catharina Wilhelmina Vorstenbosch

MANAGEMENT

Iris Cristobal Narvaez

SELECTED PROJECTS

- RESPOND_Improving the Preparedness of Health Systems to Reduce Mental Health and Psychosocial Concerns resulting from the COVID-19 Pandemic. [101016127]. European Commission. 2020-2023. PI: Haro, JM.
- Xarxa d'Innovació de Noves Tecnologies en Salut Mental - TECSAM. [2018 XARDI 00010]. Agaur - Agència de Gestió d'Ajuts Universitaris i de Recerca. 2020-2022. PI: Haro, JM.
- EMPOWER_European platform to Promote Wellbeing and Health in the workplace. [848180]. European Commission. 2020-2023. PI: Olaya, B.
- PERMIT_PERSONALISED Medicine Trials. [874825]. European Commission. 2020-2021. PI: Haro, JM.

SELECTED PUBLICATIONS

- Kim JH, Kim JY, Lee J, Jeong GH, Lee E, Lee S, et al. Environmental risk factors, protective factors, and peripheral biomarkers for ADHD: an umbrella review. *Lancet Psychiatry*. 2020;7:955-970. FI: 18,329 (Q1).
- Santini ZI, Jose PE, York Cornwell E, Koyanagi A, Nielsen L, Hinrichsen C, et al. Social disconnectedness, perceived isolation, and symptoms of depression and anxiety among older Americans (NSHAP): a longitudinal mediation analysis. *Lancet Public Health*. 2020;5:e62-e70. FI: 16,292 (Q1).
- Solmi M, Firth J, Miola A, Fornaro M, Frison E, Fusar-Poli P, et al. Disparities in cancer screening in people with mental illness across the world versus the general population: prevalence and comparative meta-analysis including 4 717 839 people. *Lancet Psychiatry*. 2020;7:52-63. FI: 18,329 (Q1).
- Wu YT, Daskalopoulou C, Muniz Terrera G, Sanchez Niubo A,

Rodríguez-Artalejo F, Ayuso-Mateos JL, et al. Education and wealth inequalities in healthy ageing in eight harmonised cohorts in the ATHLOS consortium: a population-based study. *Lancet Public Health*. 2020;5:e386-e394. FI: 16,292 (Q1).

Health technology assessment in primary care and mental health (PRISMA)

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

 **18** PUBLICATIONS WITH IF

 **44%** FIRST QUANTILE PUBLICATIONS

 **6%** FIRST DECILE PUBLICATIONS

The research carried out by this group involves the design and evaluation of new health technologies and services, with a special focus on Primary and Community Care and Mental Health. The group specialises in health economics, including the study of preventive strategies and pharmacological and non-pharmacological treatments of mental illnesses and chronic diseases with a high prevalence or social impact, such as stroke and cardiovascular disease. We also evaluate the impact of population interventions, policies and availability of care resources on health and the use of health and social services. The results of these studies are then used in the planning and economic management of health services, and health policy decision-making.

MEMBERS
STAFF RESEARCHER

Luisa Baladon Higuera, Vanessa Barneda Faudot, Víctor Chavarría Romero, Laura González Suñer, Maria

Iglesias Gonzalez, Cristina López Ortiz, Enric Vicens Pons

POSTDOC ASSOCIATED RESEARCHER

Ignacio Aznar Lou, Maria Montserrat Gil Girbau, Carlos Peña Salazar

PHD STUDENT

Paula Arroyo Uriarte, Ana María Besoain Cornejo, Cristina Carbonell Duacastella, Marina Fuente Moreno, Alba Sánchez Viñas

ASSISTANT RESEARCHER

Carmen Corral Partearroyo

TECHNICIAN

Marcos Antonio Catalan Vega

COLLABORATOR RESEARCHER

Salvatore Fabrizio Contaldo, Silvia Ramírez Perdomo

SELECTED PROJECTS

- Evaluación de la adherencia a antipsicóticos a partir de datos de la práctica clínica real. [PI19/00111]. Instituto de Salud Carlos III (ISCIII) 2020-2022. PI: Serrano Blanco, A.
- El problema de la no iniciación pediátrica: Evaluación con métodos mixtos [PI19/00108]. Instituto de Salud Carlos III (ISCIII) 2020-2022. PI: Rubio Valera, M.
- Cohorte DESVELA. Análisis de papel de las aptitudes personales como Determinantes de la incidencia de morbilidad, estilos de vida, calidad de vida, uso de servicios y mortalidad. [PI19/00115]. Instituto de Salud Carlos III (ISCIII) 2020-2022. PI: Vicens Pons, E.
- Modelado de la intervención compleja "Initial Medication Adherence" (IMA) en Atención Primaria: estudio No Iniciadores - Fase 1. Parc Sanitari de Sant Joan de Déu 2018-2020. PI: Rubio Valera, M.
- AR201903 - Evaluación de la adherencia a antipsicóticos a partir de datos. Parc Sanitari de Sant Joan de Déu 2019-2021. PI: Aznar Lou, I.
- Disseny d'un Pla d'acció per millorar la qualitat dels serveis i la salut mental al Consell Comarcal del Baix Llobregat [2019/16078]. Diputació de Barcelona 2020-2020. PI: Rubio Valera, M.
- El perfil de uso de medicamentos en los usuarios del Banco Farmacéutico. 2020. PI: Rubio Valera, M.
- Diagnosi sobre la situació de la salut mental de la població infantil i juvenil de la comarca d'Osona [2019/10503]. Diputació de Barcelona 2019-2020. PI: Serrano Blanco, A.

SELECTED PUBLICATIONS

- Arias J, Puigdomenech E, Garcia X, Valderas JM, Eiroa FJ, Fernandez T, et al. Relationship between depression and the use of mobile technologies and social media among adolescents: an umbrella review. *J Med Internet Res.* 2020;22:8. FI: 5,034 (Q1).
- Gil Girbau MM, Aznar I, Peñarrubia MT, Moreno P, Fernández A, Bellón JÁ, et al. Reasons for medication non-initiation: A qualitative exploration of the patients' perspective. *Res Social Adm Pharm.* 2020;16:663-672. FI: 2,844 (Q1).
- Parody E, Rubio M, César G, Ainhoa G, Marc C, Carbonell C, Aznar I. Economic Evaluations Informed Exclusively by Real World Data: A Systematic Review. *Int J Environ Res Public Health.* 2020;17:1171. FI: 2,849 (Q1).
- Vilaplana C, Aznar I, Peñarrubia MT, Serrano A, Fernández R, Petitbò D, et al. Initiation and Single Dispensing in Cardiovascular and Insulin Medications: Prevalence and Explanatory Factors. *Int J Environ Res Public Health.* 2020;17:10. FI: 2,849 (Q1).

Psychological research group on fibromyalgia and chronic pain (Agora Group)

Juan Vicente Luciano Devis, PhD

 **19**
PUBLICATIONS WITH IF

 **79%**
FIRST QUARTILE PUBLICATIONS

 **11%**
FIRST DECILE PUBLICATIONS

The AGORA group secured ISCIII funding to evaluate the efficacy and cost-effectiveness of two third-generation psychological treatments to improve the quality of life of

patients with lower back pain and comorbid depression (IMPACT Project). In the second half of 2020, two predoctoral researchers (Juan Pablo Sanabria Mazo and Ariadna Colomer Carbonell) joined the group to conduct their doctoral theses based on data from this project. We should also highlight that three doctoral theses were defended (Adrián Pérez Aranda, Laura Andrés Rodríguez and Mayte Serrat López) and achieved a *Cum Laude* distinction. All three involved research in fibromyalgia. Finally, we should mention that the group's principal investigator (Dr Luciano) signed a Miguel Servet II research contract funded through ISCIII call for personnel.

MEMBERS

STAFF RESEARCHER

Eugenia Cardeñosa Valera, Antoni Rozadilla Sacanell, Lluís Torruella Barraquer

POSTDOC ASSOCIATED RESEARCHERS

Adrián Pérez Aranda

PHD STUDENT

Ariadna Colomer Carbonell, Rebeca Oliván Arévalo

COLLABORATOR RESEARCHER

Xavier Borràs Hernández, Albert Feliu

SELECTED PROJECTS

- Contrato Miguel Servet Tipo II_ Beneficiario: Juan Vicente Luciano. (MSII19/00003). Instituto de Salud Carlos III (ISCIII). 2020-2023. PI: Luciano, JV.
- Coste-utilidad y efectos fisiológicos de la Terapia de Aceptación y Compromiso y la Activación Conductual en pacientes con dolor crónico y depresión mayor comórbida (Proyecto IMPACT). (PI19/00112). Instituto de Salud Carlos III (ISCIII). 2020-2022. PI: Luciano, JV.
- SGR 2017_Grupo de Investigación Psicológica en Fibromialgia y Dolor Crónico (Grupo ÁGORA). (2017 SGR 667). Agaur - Agència de Gestió d'Ajuts Universitaris i de Recerca. 2017-2021. PI: Luciano, JV.

SELECTED CLINICAL TRIALS & OBSERVATIONAL STUDIES

- Pacientes con espondiloartritis axial: Registro multinacional de

características clínicas, incluida la progresión radiológica, y carga de la enfermedad durante 5 años en contextos de la vida real. Estudio PROOF. Comercial. (10297). Abbvie Spain, S.L.U.2014-. PI: Sacabell Rozadilla, A.

- Sub-contratación de AGORA en el proyecto: Validación de medidas diagnósticas cuantitativas de sintomatología depresiva mediante biomarcadores funcionales (BIOVAL-D). IP: Dr. Carlos García Forero (UIC). Agencia financiadora: ISCIII - Proyectos de Investigación en Salud- Financiación para AGORA: 35.000€ (15.000€ contrato técnico 6 meses + 20.000€ RMN). Duración sub-contratación: 01/05/2020-30/04/2021

SELECTED PUBLICATIONS

- Andrés L, Borràs X, Feliu A, Pérez Aranda A, Angarita N, Moreno P, et al. Peripheral immune aberrations in fibromyalgia: A systematic review, meta-analysis and meta-regression. *Brain Behav Immun.* 2020;87:881-889. FI:6,633 (Q1).
- Luciano JV, Sanabria JP, Feliu A, Forero CG. The pros and cons of bifactor models for testing dimensionality and psychopathological models: A commentary on the manuscript "A systematic review and meta-analytic factor analysis of the depression anxiety stress scales". *Clin Psychol-Sci Pr.* 2020;27:e12386. FI: 5,541 (Q1).
- Pérez Aranda A, Feliu A, Mist SD, Jones KD, López Y, Oliván R, et al. Subgrouping a Large U.S. Sample of Patients with Fibromyalgia Using the Fibromyalgia Impact Questionnaire-Revised. *Int J Environ Res Public Health.* 2020;18:1. FI:2,849 (Q1).
- Serrat M, Almirall M, Musté M, Sanabria SP, Feliu A, Méndez JL, et al. Effectiveness of a Multicomponent Treatment for Fibromyalgia Based on Pain Neuroscience Education, Exercise Therapy, Psychological Support, and Nature Exposure (NAT-FM): A Pragmatic Randomized Controlled Trial. *J Clin Med.* 2020;9:3348. FI:3,303 (Q1).

Cerebral imprints of gender, development and pathology

Christian Stephan-Otto Attolini, PhD



7

PUBLICATIONS WITH IF



71%

FIRST QUARTILE PUBLICATIONS



30%

FIRST DECILE PUBLICATIONS

During 2020, we began to publish results of a new line of research focused on adult neurological diseases. Our first article on Alzheimer's disease was published in the prestigious *Annals of Neurology*. We have also instigated new collaboration efforts with, for example, the Clinical Psychiatry Research Group at Hospital Sant Pau Research Institute (Principal Investigator: Maria Portella). And we have strengthened the neonatal neurology, neurodevelopment of healthy brain and schizophrenia research lines, which will give rise to two doctoral theses and several scientific publications.

MEMBERS

STAFF RESEARCHER

Antonio Callen Soto, Maria Rosa Cambra Martí, Christian Núñez Leánez

ASSISTANT RESEARCHER

Federica Lombardini

COLLABORATOR RESEARCHER

Gildas Yanin Guillaume Brebion

SELECTED PROJECTS

- RGS@HOME: The RGS@home project: Scaling ICT based neurorehabilitation to personalized 24/7 home care - PGA nº 20689. (RGS@home). EIT Health e.V. 2019-2021. PI: Callen, A.
- COGNIVITRA: COGNitive Vitality TRaining at home.(AC18/00015). Instituto de Salud Carlos III (ISCIII). 2019-2021. PI: Callen, A.
- SGR 2017_Cerebral imprints of gender, development and pathology.

(2017 SGR 1297). Agaur - Agència de Gestió d'Ajuts Universitaris i de Recerca. 2017-2021. PI: Stephan Otto, C.

SELECTED CLINICAL TRIALS & OBSERVATIONAL STUDIES

- ACSF2004 - RGS@Home. No Comercial. (RGS@Home). 2020-. PI: Callen, A.
- Monitorización de la Movilidad de enfermos de Parkinson con fines terapéuticos. Ensayo Clínico. No Comercial. INV-PROC-A118. Consorci Sanitari de l'Alt Penedès i Garraf. 2020-. PI: Callen, A.
- European multicenter retrospective-prospective cohort study to observe Safinamide safety profile and pattern of use in clinical practice during the first post-commercialization phase SYNAPSES.Comercial. [Z7219N02 / ZAM-SAF-2016-01]. Zambon S.A. 2017-. PI: Callen, A.
- Estudio Prospectivo No Intervencionista De Pacientes Con Enfermedad De Alzheimer Leve A Moderada Y Sus Cuidadores En Cuatro Países Europeos. Comercial. (MER-ALZ-2016-01). Merck, Sharp & Dohme de España. S.A. 2016-. PI: Callen, A.

SELECTED PUBLICATIONS

- Arca G, Arnaez J, Agut T, Núñez C, Stephan-Otto C, Valls A, García-Alix A. Neuron-specific enolase is correlated with lesion topology, relative infarct volume and outcome of symptomatic NAIS. *Arch Dis Child Fetal Neonatal Ed.* 2020;105:132-137. FI: 5,436 (Q1).
- Núñez C, Arca G, Agut T, Stephan-Otto C, García-Alix A. Precise neonatal arterial ischemic stroke classification with a three-dimensional map of the arterial territories of the neonatal brain. *Pediatr Res.* 2020;87:1231-1236. FI: 2,747 (Q1).
- Núñez C, Callén A, Lombardini F, Compta Y, Stephan-Otto C; Alzheimer's Disease Neuroimaging Initiative. Different Cortical Gyrification Patterns in Alzheimer's Disease and Impact on Memory Performance. *Ann Neurol.* 2020;88:67-80. FI: 9,037 (Q1).



7.2

ADAPTIVE RESPONSE, METABOLISM AND IMMUNOBIOLOGY

Metabolic endocrinology
Metabolic diseases of paediatric origin
Molecular biology and gene regulation of adipose tissue and its pathologies
Neonatology research group
Pharmacological targets in inflammation and metabolic diseases
Study of diseases due to immune dysfunction in pediatrics (GEMDIP)
Infectious diseases and microbiome
Gut microbiota
Environment and complications in pregnancy
Cardiovascular diseases in development
Immune and respiratory dysfunction in the critical child

Adaptive response, metabolism and immunobiology



22

TOTAL NEW PROJECTS

- 14** Competitive national projects
- 1** Competitive international projects
- 1** Non competitive autonomic projects
- 6** Non competitive national projects



163

PUBLICATIONS

JCR indexed articles & reviews

- 742** Impact Factor
- 53%** Publications in first quartile
- 4,5** Mean impact factor
- 53%** Articles with main contributing authors



106

TOTAL ACTIVE PROJECTS

- 9** Competitive autonomic projects
- 67** Competitive national projects
- 5** Competitive international projects
- 2** Non competitive autonomic projects
- 20** Non competitive national projects
- 3** Non competitive international projects



16

RESEARCH GROUPS

Metabolic endocrinology

Lourdes Ibáñez Toda, MD, PhD

13
PUBLICATIONS WITH IF

70%
FIRST QUARTILE PUBLICATIONS

In the third quarter of 2020, the SPIOMET4HEALTH project was granted European Commission funding under the Horizon 2020 programme. The aim of the project, which will consist of a multicentre study involving 7 hospitals in Europe and partner countries, is to confirm the safety and benefits of a generic low-dose combined generic therapy for the treatment of polycystic ovary syndrome in adolescents and young women. This is an important milestone as there are no currently approved treatment options for this condition.

MEMBERS

STAFF RESEARCHER

Paula Casano Sancho, Marta Díaz Silva, Sílvia Xarfay Torrent

ASSISTANT RESEARCHER

Cristina García Beltran, Esther Lizarraga Mollinedo, Cristina Plou Pérez

COLLABORATER RESEARCHER

Judith Bassols Casadevall, Francis de Zegher, Abel López Bermejo, Gemma Carreras Badosa

MANGMENT

Rita Maria Martins de Sousa Maia Malpique

Mecanismos Fisiopatológicos y Marcadores de Riesgo (BR201601). Hospital Sant Joan de Déu - Esplugues HSJD. 2017-2020. IP: Ibáñez Toda, L.

SELECTED CLINICAL TRIALS & OBSERVATIONAL STUDIES

- Pioglitazona + espironolactona + metformina versus contracepció oral en adolescentes con hiperandrogenismo ovárico e hiperinsulinismo. No Comercial. PI15/01078. 2016-. PI: Ibáñez Toda, L.

SELECTED PROJECTS

- Perfil longitudinal de exosomas circulantes y de su proteoma en niños nacidos con bajo peso y peso adecuado para la edad gestacional: Utilidad como biomarcador de síndrome metabólico (PI18/00109). Instituto de Salud Carlos III (ISCIII). 2019-2021. IPS: Ibáñez Toda, L & Díaz Silva, M.
- MicroRNAs y Enfermedades Metabólicas de Origen Fetal:

SELECTED PUBLICATIONS

- Amat M, García S, Climent E, Piquer I, Corripio R, Sánchez D, et al. Effects of Bifidobacterium animalis Subsp. lactis (BPL1) Supplementation in Children and Adolescents with Prader-Willi Syndrome: A Randomized Crossover Trial. *Nutrients*. 2020;12(10):3123. IF:4,546 (Q1).



- García C, de Sousa RM, Carbonetto B, González P, Henares D, Brotons P, et al. Gut microbiota in adolescent girls with polycystic ovary syndrome: Effects of randomized treatments. *Pediatr Obes.* 2020:e12734-e12734. IF:3,429 (Q1).
- Díaz M, Bassols J, López A, de Zegher F, Ibañez L. Low Circulating Levels of miR-451a in Girls with Polycystic Ovary Syndrome: Different Effects of Randomized Treatments. *J Clin Endocrinol Metab.* 2020;105(3):204-281. IF: 5,399 (Q1).
- Xargay S, Dorado E, Benavides A, Lizárraga E, Mas B, Montesinos M, et al. Circulating IGF-1 Independently Predicts Blood Pressure in Children With Higher Calcium-Phosphorus Product Levels. *J Clin Endocrinol Metab.* 2020;105(1):610-618. IF:5,399 (Q1).

characterisation of experimental models (mouse) that effectively recapitulate human pathophysiology.

2. The design of clinical studies aimed at developing new prevention and treatment strategies.

Over the past few years, we have applied omic techniques to help further understand these processes and identify early biomarkers. More specifically, we are conducting metabolomics analyses of breast milk samples, as well as metabolome, epigenome and, more recently, metagenome analyses in a clinical cohort of prepubertal obese children. We are currently evaluating the physiological role of these biomarkers through in vitro and in vivo animal cell models. The aim is to attain a better understanding of the possible implication in the pathophysiology associated with metabolic diseases and, then, to propose new nutritional-therapeutic interventions for the treatment of childhood obesity and associated metabolic disorders.

- Encapsulated Synthetic Cellular Circuits to Restore Glycemic Control in Type 1 Diabetes. (201610-30). Fundació La Marató de TV3. 2017-2020. PI: Díaz Naderi, R.

SELECTED CLINICAL TRIALS & OBSERVATIONAL STUDIES

- A Phase 2b/3 study to evaluate the safety, tolerability, and effects of Livoletide (AZP-531), an unacylated ghrelin analog, on food-related behaviors in patients with Prader-Willi syndrome. Comercial. AZP01-CLI-003. Millendo Therapeutics SAS. 2019-. PI: Ramon Krauel, M.
- A trial comparing the effect and safety of once weekly dosing of somapacitan with daily Norditropin® in children with growth hormone deficiency. Comercial. NN8640-4263. Novo Nordisk Pharma, S.A Novo Nordisk España. 2020-. PI: Ramon Krauel, M.
- “Base de datos del foro europeo de Increlex [mecasemina (derivada del ADNr) inyectable] en el retraso del crecimiento: Registro de pacientes europeos para vigilar la eficacia y la seguridad a largo plazo de Increlex. Eu-IGFD”. Comercial. (IPS-MEC-2008-01). Ipsen Pharma, S.A. 2009-. PI: Ramon Krauel, M.
- Estudio Cooperativo Internacional del Crecimiento. Comercial. (IPS-SOM-2007-03). Ipsen Pharma. 2007-. PI: Ramon Krauel, M.

Metabolic diseases of paediatric origin

Josep Jiménez Chillarón, PhD & Carles Lerin Martínez, PhD



10
PUBLICATIONS WITH IF



90%
FIRST QUARTILE PUBLICATIONS



20%
FIRST DECILE PUBLICATIONS

Our research focuses on gaining a better understanding of the molecular mechanisms at play when nutrition and growth during very early stages of life affect the subsequent development of childhood obesity or metabolic diseases in adulthood. This paradigm is known as the Developmental Origins Of Health and Disease (DOHaD). We have brought together a multidisciplinary group for this research effort including doctors, nutritionists, biologists, biochemists and laboratory technicians. Together we carry out highly translational research involving:

1. The development and

MEMBERS

STAFF RESEARCHER

Ruben Díaz Naderi, Maria Llobet Garces, Marta Ramon Krauel

POSTDOC ASSOCIATED RESEARCHERS

Marcela Catalina Parra Vargas

PHD STUDENTS

Charlotte Martine Juton, Ivonne Palacios Marin

SELECTED PROJECTS

- Obesidad infantil: La bola de nieve que precede la avalancha metabólica (una aproximación epigenómica). Fundación Salud 2000 (Merck Salud). 2020-2022. PI: Jimenez Chillaron, JC.
- TransEpiR: Herencia no-genómica de la obesidad mediante ARNs no codificantes de pequeño tamaño. (SAF2017-84542-R). Ministerio de Economía Y Competitividad (MINECO). 2018-2021. PI: Jimenez Chillaron, JC; Co-PI: Díaz Naderi, R.
- BetAkk: Microbiota intestinal durante las primeras etapas de la vida y riesgo de obesidad y enfermedades metabólicas a largo plazo. (SAF2017-88005-R). Ministerio de Economía Y Competitividad (MINECO). 2018-2022. PI: Lerin Martinez, C.

SELECTED PUBLICATIONS

- McIntosh J, Esquerda M, Brierley J, Giugni C, McGreevy KS, Cambra FJ, et al. Safeguarding children's right to health in hospital during COVID-19. *Lancet Child Adolesc Health.* 2020;4(11):800-802. IF:8,543(Q1).
- Amat M, Garcia S, Climent E, Piquer I, Corripio R, Sánchez D, et al. Effects of *Bifidobacterium animalis* Subsp. *lactis* (BPL1) Supplementation in Children and Adolescents with Prader-Willi Syndrome: A Randomized Crossover Trial. *Nutrients.* 2020; 12(10):3123. IF:4,546(Q1).
- Parra M, Ramon M, Lerin C, Jimenez JC. Size Does Matter: Litter Size Strongly Determines Adult Metabolism in Rodents. *CELL METAB.* 2020;32(3):334-340. IF:21,567(Q1).

- Garcia S, Amat M, Climent E, Llobet M, Chenoll E, Corripio R, et al. Specific Dietary Components and Gut Microbiota Composition are Associated with Obesity in Children and Adolescents with Prader-Willi Syndrome. *Nutrients*. 2020;12(4):1063. IF:4,546(Q1).

Molecular biology and gene regulation of adipose tissue and its pathologies

Francesc Villarroya Gombau, PhD

16
PUBLICATIONS WITH IF

69%
FIRST QUARTILE PUBLICATIONS

19%
FIRST DECILE PUBLICATIONS

MEMBERS

STAFF RESEARCHER

Marta Giralto Oms, Roser Iglesias Coll, Anna Planavila Porta, Aleix Gavalda Navarro, Joan Villarroya Terrade

POSTDOC ASSOCIATED RESEARCHERS

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

PHD STUDENTS

Albert Blasco Roset, Moisès Castellà, Albert Mestres Arenas

TECHNICIAN

Mercedes Morales Rueda, Gemma Moreno Besora

SELECTED PROJECTS

- Estudios preclínicos para determinar las alteraciones en el balance energético y/o la función adipocitaria subyacentes al incremento de peso corporal en personas que viven con VIH tratadas con INStI y/o TAF . Ministerio de Ciencia, Innovación y Universidades. 2020-2023. PI: Giralto Oms, M.

- Cardioquinas y control de la función cardiaca: nuevos actores y mecanismos, estrategias de terapia génica y elucidación del secretoma cardiaco humano. Ministerio de Ciencia, Innovación y Universidades. 2019-2021. PI: Planavila Porta, A.
- Activar el tejido adiposo pardo: una nueva estrategia para la prevención/tratamiento de la hepatocarcinogénesis potenciada por la lipotoxicidad metabólica. Asociación Española Contra el Cáncer-Catalunya (AECC). 2019-2021. PI:Villarroya Gombau, F.
- Nuevos factores secretables del tejido adiposo marrón ('batoquinas') implicados en sus funciones beneficiosas para el metabolismo. Ministerio de Economía y Competitividad. 2018-2021 . PI: Villarroya Gombau, F.
- Role of the novel cardiomyokines FGF21 and Metrni on cardiac damage induced by alcoholism and arterial hypertension. Fundació La Marató de TV3. 2016-2020. PI: Planavila Porta, A.

SELECTED PUBLICATIONS

- Campderros L, Sánchez D, Villarroya J, Nescolarde L, Bayès A, Cereijo R, et al. Altered GDF15 and FGF21 Levels in Response to Strenuous Exercise: A Study in Marathon Runners. *Front Physiol*. 2020;11:550102. FI:3,367 (Q1).
- Carneros D, Medina G, Giralto M, León M, Campbell M, Moreno MJ, et al. Cardiotrophin-1 contributes to metabolic adaptations through the regulation of lipid metabolism and to the fasting-induced fatty acid mobilization. *FASEB J*. 2020;34:15875-15887. FI:4,966 (Q1).
- Frohlich J, Kovacovicova K, Mazza T, Emma MR, Cabibi D, Foti M, et al. GDF11 induces mild hepatic fibrosis independent of metabolic health. *Aging (Albany NY)*. 2020;12:20024-20046. FI:4,831. (Q1).
- González L, Álvarez M, Quesada T, Cereijo R, Campderros L, Piña E, et al. Glucocorticoid gene regulation of aquaporin-7. *Vitam Horm*. 2020;112:179-207. FI:2,557 (Q3).
- Molonia MS, Occhiuto C, Muscarà C, Speciale A, Bashllari R, Villarroya F, et al. Cyanidin-3-O-glucoside restores insulin signaling and reduces inflammation in hypertrophic adipocytes. *Arch Biochem Biophys*. 2020;691:108488. FI:3,391. (Q2).

Neonatology research group

Martin Iriondo Sanz, MD, PhD

11
PUBLICATIONS WITH IF

64%
FIRST QUARTILE PUBLICATIONS

18%
FIRST DECILE PUBLICATIONS

Our research group studies how neonatal disease and early exposure can determine both immediate and other long-term effects that will manifest in childhood or adulthood, both from a metabolic and neurodevelopmental point of view. In 2020, we attained funding with a competitive project to carry out a prospective multicentre study to validate a neonatal mortality prediction model - https://mbosio85.github.io/SEN_calc/.

Funding has also been obtained for the follow-up of a cohort of preterm infants in order to explore the effects of perinatal nutrition and growth in childhood and the identification of potential biomarkers. Additionally, together with the Cardiology (Dr Joan Sánchez de Toledo) and Neurology (Dr Carme Fons) groups at the IRSJD, a collaborative project "ICFO-SJD laboratory" has been initiated with the aim of creating a new continuous neuromonitoring device (jointlab-sjd.icfo.eu) which would enable us to determine the origin of brain lesions in critical neonatal patients. Also, and jointly with Cardiology and the Institute of Photonic Sciences (ICFO), we secured European funding within the framework of the Horizon 2020 programme (<https://tinybrains.eu/>).

MEMBERS

POSTDOC ASSOCIATED RESEARCHERS

Marta Camprubi Camprubi, Isabel Iglesias Platas, Montserrat Izquierdo Renau, Africa Pertierra Cortada

PHD STUDENTS

Carla Balcells Esponera, Débora Cañizo Vázquez, Cristina Carrasco Carrasco, Jordi Clotet Caba, Inma Cubells Serra, Beatriz Del Rey Hurtado De Mendoza, Ruth Del Rio

Florentino, Ana Morillo Palomo, Ana Remon Pérez, Alba Rivas Piorno, Sandra Salas García

TECHNICIAN

Abad Miriam López

COLLABORATOR RESEARCHER

Albert Batista Muñoz, Dolors Salvía Roiges, Marta Thió Lluch, Anna Herranz Barbero, Cristina Borrás Novell

SELECTED PROJECTS

- Estrés oxidativo y mielinización en pacientes con cardiopatía congénita: nuevos horizontes terapéuticos (PI19/00118). Instituto de Salud Carlos III (ISCIII). 2020-2023. IP: Camprubí, M.
- Consecuencias en la infancia del fallo perinatal de crecimiento en Recién Nacidos Muy Prematuros: estudio clínico y metabólico (PI20/00294). Instituto de Salud Carlos III (ISCIII). 2020-2023. IP: Iglesias Platas, I.
- Estrés oxidativo y mielinización en pacientes con cardiopatía congénita: nuevos horizontes terapéuticos. Sociedad Española de Pediatría 2019. IP: Camprubí, M.
- Predicción de supervivencia sin morbilidad neonatal y sin discapacidad moderada-grave del neurodesarrollo en recién nacidos prematuros de la red española SEN1500. (PI16/00748). Instituto de Salud Carlos III (ISCIII). 2017-2020. PI: Iriondo Sanz, M.

SELECTED CLINICAL TRIALS & OBSERVATIONAL STUDIES

- Efecto del Alopurinol en pacientes con encefalopatía hipóxico-isquémica tratados con hipotermia. ALBINO ensayo clínico multicéntrico, aleatorizado, ciego, controlado con placebo. No Comercial. (H2020-PHC-18-2015-667224). Instituto de investigación Sanitaria Hospital La Fe. 2017-. PI: Camprubí, M.
- Evaluation of Real Time Continuous Glucose Monitoring in the very preterm infant. No Comercial. (REACT RCT). University of Cambridge. 2017-2019. PI: Iglesias Platas, I.
- Recién nacidos con edad gestacional extremadamente baja asignados al azar, a ciegas, para ser resucitados resucitado con

un 21% frente al 60% de oxígeno: influencia sobre la mortalidad y las enfermedades crónicas en el período neonatal. No Comercial. (1645-CI-057). Instituto de investigación Sanitaria Hospital La Fe. 2015-. PI: Iriondo Sanz, M.

SELECTED PUBLICATIONS

- Borrás C, Herranz A, Aldecoa V, Feixas G, Balcells C, Sanchez E, et al. Infrared analyzers for the measurement of breastmilk macronutrient content in the clinical setting. *Expert Rev Mol Diagn.* 2020;20(9):867-887. IF:4,096(Q1).
- Iriondo M, Thio M, del Río R, Baucells BJ, Bosio M, Figueras J. Prediction of mortality in very low birth weight neonates in Spain. *PLoS One.* 2020;15(7):e0235794. IF:2,740(Q2).
- Dudzik D, Iglesias I, Izquierdo M, Balcells C, Del Rey B, Lerin C, et al. Plasma Metabolome Alterations Associated with Extrauterine Growth Restriction. *Nutrients.* 2020;12(4):1188. IF:4,546(Q1).
- Mank A, Carrasco C, Thio M, Clotet J, Pauws SC, DeKoninck P, et al. Tidal volumes at birth as predictor for adverse outcome in congenital diaphragmatic hernia. *Arch Dis Child Fetal Neonatal Ed.* 2020;105(3):248-252. IF: 5,436 (Q1).

Pharmacological targets in inflammation and metabolic diseases

Manuel Vázquez Carrera, PhD

 **5** PUBLICATIONS WITH IF

 **80%** FIRST QUARTILE PUBLICATIONS

 **60%** FIRST DECILE PUBLICATIONS

Our research group has shown that SIRT3, a deacetylase that

controls metabolism and protects against oxidative stress, can prevent the TNF- α -induced inflammatory and profibrotic response in cardiomyocytes. Since such responses are decisive in the progression of heart failure and diabetic cardiomyopathy, these results point to SIRT3 as a potential target for the management of these diseases. In addition and in collaboration with our Department's Pharmaceutical Chemistry Unit, we have synthesised a novel soluble epoxide hydrolase inhibitor compound that reduces endoplasmic reticulum stress and inflammation in an animal model of acute pancreatitis, a disease for which there is still no specific pharmacological treatment.

MEMBERS

STAFF RESEARCHER

F. Xavier Palomer Tarridas

POSTDOC ASSOCIATED RESEARCHERS

Emma Barroso Fernandez, Marta Montori Grau, Javier Jurado Aguilar

PHD STUDENTS

Mona Peyman, Adel Rostami, Meijian Zhang, David Aguilar Recarte

SELECTED PROJECTS

- Activación de PPARbeta/delta y HRI: explorando nuevos mecanismos compensatorios para el tratamiento de la inflamación, la resistencia a la insulina y la esteatohepatitis no alcohólica. Ministerio de Ciencia, Innovación y Universidades. 2019-2021. PI: Vázquez Carrera, M.
- Diabetes y enfermedades metabólicas. Ministerio de Sanidad y Consumo. 2007-2021. PI: Vázquez Carrera, M.
- Dianes farmacològiques en inflamació i malalties metabòliques. 2017SGR124. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2018-2021. PI: Vázquez Carrera, M.
- New HRI activators for the treatment of type 2 Diabetes Mellitus. Fundació Caixa de
- Pensions "La Caixa". 2018-2020. PI: Vázquez Carrera, M.

SELECTED PUBLICATIONS

- Barroso E, Rodríguez R, Zarei M, Pizarro J, Palomer FX, Villarroya F, Vazquez M. SIRT3

deficiency exacerbates fatty liver by attenuating the HIF1a-LIPIN 1 pathway and increasing CD36 through Nrf2. *Cell Commun Signal.* 2020;18:147. FI: 4,344 (Q2).

- Codony S, Pujol E, Pizarro J, Feixas F, Valverde E, Loza MI, Bet al. 2-Oxaadamant-1-yl Ureas as Soluble Epoxide Hydrolase Inhibitors: In Vivo Evaluation in a Murine Model of Acute Pancreatitis. *J Med Chem.* 2020;63:9237-9257. FI: 6,205 (Q1).
- Palomer FX, Román MS, Pizarro J, Villarroya F, Valenzuela BI, Crispi F, et al. SIRT3-mediated inhibition of FOS through histone H3 deacetylation prevents cardiac fibrosis and inflammation. *Signal Transduct Target Ther.* 2020;5:14. FI: 13,493 (Q1).
- Zarei M, Pizarro J, Barroso E, Palomer FX, Vazquez M. Targeting FGF21 for the Treatment of Nonalcoholic Steatohepatitis. *Trends Pharmacol Sci.* 2020;41:199-208. FI: 13,503 (Q1).



Study of diseases due to immune dysfunction in pediatrics (GEMDIP)

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

23
PUBLICATIONS WITH IF

52%
FIRST QUARTILE PUBLICATIONS

22%
FIRST DECILE PUBLICATIONS

The group is actively participating in various European multicentre trials to identify new effective treatments for rheumatological, autoinflammatory and primary immunodeficiency diseases. We have secured various competitive projects to study the pathophysiological bases of these diseases and have

published several high-impact articles. Our focus this year has been on inflammatory diseases (multisystem inflammatory syndrome and systemic lupus erythematosus) and immunodeficiencies secondary to B-cell depletion therapies (CART-19 and Rituximab) in children.

MEMBERS

STAFF RESEARCHER

Violeta Bittermann, Àngela Deyà Martínez, Clara Isabel Giménez Roca, Estibaliz Iglesias Jimenez, Juan Manuel Mosquera Angarita, Judith Sánchez Manubens, Andrea Zacarias Crovat

POSTDOC ASSOCIATED RESEARCHERS

Anna Esteve Solé

PHD STUDENTS

Rosa Bou i Torrent, Joan Calzada Hernández, Ana Pilar García García, Yiyi Luo

COLLABORATOR RESEARCHER

Juan Ignacio Arostegui Gorospe, Manel Juan Otero, Anna Mensa Vilaró, Alexandru Vlăgea, Jordi Yague Ribes

SELECTED PROJECTS

- Estudio del efecto de la exposición intrauterina a fármacos anti-TNF- α en el sistema inmunitario de hijos de madres con enfermedades reumáticas inflamatorias. (PI18/00223). Instituto de Salud Carlos III (ISCIII). 2019-2021. PI: Alsina, L.
- ImmunAID_Immune project consortium for AutoInflammatory Disorders. (779295). European Commission. 2018-2023. PI: Anton Lopez, J.
- Factores moduladores de la inmunodeficiencia primaria con susceptibilidad a las infecciones graves por gérmenes intracelulares en la edad pediátrica. (PI15/01094). Instituto de Salud Carlos III (ISCIII). 2016-2020. PI: Alsina, L.

SELECTED CLINICAL TRIALS & OBSERVATIONAL STUDIES

- Estudio piloto abierto, multicéntrico y de un solo grupo para evaluar la seguridad,

tolerabilidad, farmacocinética y eficacia de administraciones intravenosas de NI-0501, un anticuerpo monoclonal anti-interferón gamma (anti-IFN γ), en pacientes con artritis idiopática juvenil de inicio sistémico (AIJiS) que desarrollan síndrome de activación del macrófago/HLH secundaria (SAM/HLHs). Comercial.(NI-0501-06). Premier Research Group SLU; Swedish Orphan Biovitrum AB (publ). 2017-. PI: Anton Lopez, J.


- Ensayo clínico abierto controlado y aleatorizado de mofenolato mofetil (MMF) frente a ciclofosfamida para inducir la remisión en poliarteritis nodosa juvenil (PAN). No Comercial. (11/0499 (MYPAN)). CEIC Fundació Sant Joan de Déu; University College London. 2016-. PI: Anton Lopez, J.
- Estudio multicéntrico, aleatorizado, de grupos paralelos, controlado con placebo, doble ciego para evaluar la seguridad, eficacia y farmacocinética de belimumab, un anticuerpo monoclonal humano anti-BLyS, más terapia estándar en pacientes pediátricos con lupus eritematoso sistémico (LES). Comercial. (BEL114055). Glaxosmithkline, S.A. 2013-. PI: Anton Lopez, J.
- A Phase 3, Randomized, Double-Blind, Placebo-Controlled, Multicenter Study of Mavorixafor in Patients with WHIM Syndrome with Open-Label Extension. Comercial. X4P-001-103. X4 Pharmaceuticals Inc. 2020-. PI: Alsina Manrique, L.

SELECTED PUBLICATIONS

- Brunner HI, Abud C, Viola DO, Calvo I, Levy D, Anton J, et al. Safety and efficacy of intravenous belimumab in children with systemic lupus erythematosus: results from a randomised, placebo-controlled trial. *Ann Rheum Dis*. 2020;79(10):1340-1348. IF:16,102 (Q1).
- Deyà A, Gordón Y, Molina C, Vlagea A, Piquer M, Manel O, et al. Single-cycle rituximab-induced immunologic changes in children: Enhanced in neuroimmunologic disease?. *Neurol Neuroimmunol Neuroinflamm*. 2020;7(4):e724. IF:7,724(Q1).

Infectious diseases and microbiome

Carmen Muñoz Almagro, MD, PhD

 **46** PUBLICATIONS WITH IF

 **39%** FIRST QUARTILE PUBLICATIONS

 **22%** FIRST DECILE PUBLICATIONS

In 2020, all members of the research group participated in the Kids Corona platform. The Kids Corona platform is a unique initiative set up to investigate if children have some natural protection against COVID-19 and, secondly, to investigate the effects of the disease on pregnant women.

MEMBERS

STAFF RESEARCHER

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

POSTDOC ASSOCIATED RESEARCHERS

Cristina Esteva Afonso, Mariona Fernández de Sevilla Estrach, Muntsa Rocafort Junca

PHD STUDENTS

Ferran Bossacoma Busquets, Desiree Henares Bonilla, Míriam Triviño Rodríguez, Eneritz Velasco, Joan Vinent Genestar

ASSISTANT RESEARCHER

Susana Hernández Bou, Alba Redin Alonso

TECHNICIAN

Carles Cisneros Camps, Amaresh Pérez Argüello, Jesica Saucedo Verdes

COLLABORATOR RESEARCHER

Quique Bassat, Emilia Sánchez Ruiz

SELECTED PROJECTS

- Tecnologías NGS para la Vigilancia Epidemiológica Molecular de *S. pneumoniae* y para determinar su invasividad. Quo vadis y Quo invades pneumococcus? (PI19/00104). Instituto de Salud Carlos III (ISCIII). 2020-2022. PI: Muñoz Almagro, C.
- Rinovirus humano (HRV) en niños

menores de 5 años, del resfriado común a la unidad de intensivos: rol de la microbiota. (PI17/00349). Instituto de Salud Carlos III (ISCIII). 2018-2021. PI: Launes Montana, C.

- Plataforma Kids Corona Casal. Clientes Diversos. 2020-2021. PI: García, JJ.
- Setting up a sentinel system to assess the burden of whooping cough in EU/EEA. Service Agreement. European Centre for Disease Prevention and Control (ECDC). 2018-2021. PI: Muñoz Almagro, C.

SELECTED CLINICAL TRIALS & OBSERVATIONAL STUDIES

- Ensayo clínico aleatorizado, doble ciego y controlado con placebo para evaluar la seguridad, la tolerabilidad, la farmacocinética y la eficacia de una única infusión de bezlotoxumab (MK-6072, anticuerpo monoclonal humano frente a la toxina B de *C. difficile*) en niños y adolescentes de 1 a menos de 18 años que reciben tratamiento antibacteriano para la infección por *C. difficile* (MODIFY III). Comercial. (MK-6072-0001). Merck, Sharp & Dohme de España. S.A. 2017-. PI: Fortuny Guasch, C.
- Estudio multicéntrico de fase 3, aleatorizado, con grupos paralelos, enmascarado para el investigador, para investigar la seguridad y la eficiencia de fidaxomicina en suspensión oral o comprimidos cada 12 horas, y vancomicina en solución oral o cápsulas cada 6 horas durante 10 días, en sujetos pediátricos con diarrea asociada a *Clostridium difficile*. Comercial. (2819-CL-0202). Syneos Health UK Limited. 2015-. PI: Fortuny Guasch, C.
- Prevención del desarrollo de enfermedad por SARS-CoV-2 (COVID-19) mediante la administración profiláctica de emtricitabina/tenofovir disoproxilol y hidroxiclороquina en personal sanitario de alto riesgo: ensayo clínico aleatorizado, controlado con placebo. ESTUDIO EPICOS. No Comercial. PrEP COVID-19. Ministerio de Sanidad y Política Social MSPS. 2020-. PI: Noguera Julián, A.
- Estudio multicéntrico retrospectivo-prospectivo nacional del valor de los

igras en el diagnóstico de la adenitis por micobacterias no tuberculosas y de sus distintas aproximaciones terapéuticas. No Comercial. (FSJ-ADE-2015-01). Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 2015-. PI: Noguera Julián, A.

SELECTED PUBLICATIONS

- Bassat Q, Watkins K, Peterson S, Bijleveld P, Detjen A, Winn J, et al. The first Global Pneumonia Forum: recommendations in the time of coronavirus. *Lancet Glob Health*. 2020; 8(6): e762-e763. IF: 21,597(Q1).
- de Paz H, Brotons P, Esteva C, Muñoz-Almagro C. Validation of a Loop-Mediated Isothermal Amplification Assay for Rapid Diagnosis of Invasive Pneumococcal Disease. *Front Cell Infect Microbiol*. 2020;10:115-115. IF: 4,123(Q2).
- Noguera A, Calzada J, Brinkmann F, Basu R, Bilogortseva O, Buettcher M, et al. Tuberculosis Disease in Children and Adolescents on Therapy With Antitumor Necrosis Factor-? Agents: A Collaborative, Multicenter Paediatric Tuberculosis Network European Trials Group (ptbnet) Study. *Clin Infect Dis*. 2020;71(10):2561-2569. IF: 8,313(Q1).

We have shown that MVs secreted by probiotics and commensal strains serve as a mechanism to steadily prime the innate immune system. Microbiota MVs activate dendritic cells in a strain-specific manner, driving complex Treg/Th responses. Main differences were centred in the ability to elicit Th1 (protective immunity against pathogens) or Treg responses (immune tolerance). Concerning the regulatory mechanisms, we have shown that the differential immunomodulatory effects of microbiota MVs are in part mediated through regulation of miRNAs. Deep miRNA sequencing in human dendritic cells challenged with MVs from probiotic and commensal *E. coli* strains allowed identification of miRNAs differentially expressed in response to these MVs. Based on the differential expression of the target genes, we correlated some selected miRNAs with the reported cytokine profile and specific T cell responses activated by these MVs. This is the first publication on regulation of miRNAs in dendritic cells by MVs from gut microbiota. The role of MVs secreted by Gram-positive bacteria in host-microbe crosstalk has gained interest in recent years. However, knowledge on the cell uptake mechanisms is still limited. We have contributed to elucidate the internalization pathway of *Lactobacillus plantarum* MVs in intestinal epithelial cells. The main entry route was through clathrin-mediated endocytosis.

MEMBERS

STAFF RESEARCHER

Josefa Badia Palacin, Rosa Giménez Claudio

PHD STUDENTS

Natalia Díaz Garrido

SELECTED PROJECTS

- Vesículas de membrana externa de microbiota y probióticos Gram-negativos como agentes modulares de la barrera intestinal y la respuesta inmunitaria. Ministerio de Economía y Competitividad. 2016-2020. PI: Baldoma Llavines, L.
- Evaluación de nuevas actividades de vesículas secretadas por probióticos y microbiota intestinal y su potencial aplicación como postbióticos en salud humana. Ministerio de

Ciencia, Innovación y Universidades. 2020-2023. PI: Baldoma Llavines, L.

SELECTED PUBLICATIONS

- Bajic SS, Canas MA, Tolinacki M, Badia J, Sánchez B, Golic N, et al. Proteomic profile of extracellular vesicles released by *Lactiplantibacillus plantarum* BGAN8 and their internalization by non-polarized HT29 cell line. *Sci Rep*. 2020;10:21829. FI: 3,998 (Q1).
- Díaz N, Bonnin S, Riera M, Giménez R, Badia J, Baldoma L. Transcriptomic microRNA Profiling of Dendritic Cells in Response to Gut Microbiota-Secreted Vesicles. *Cells*. 2020;9:6. FI: 4,366 (Q2).
- Lázaro A, Balcells C, Quirante J, Badia J, Baldoma L, Ward JS, et al. Luminescent PtII and PtIV Platinacycles with Anticancer Activity Against Multiplatinum-Resistant Metastatic CRC and CRPC Cell Models. *Chemistry*. 2020;26:1947-1952. FI: 4,857 (Q1).

Environment and complications in pregnancy

Maria Dolores Gómez Roig, MD, PhD

15 PUBLICATIONS WITH IF

47% FIRST QUARTILE PUBLICATIONS

20% FIRST DECILE PUBLICATIONS

During 2020, we have continued our research efforts into investigating how the environment and the surroundings of pregnant women affect their health, foetal development, perinatal outcomes and postnatal health. We have continued with the recruitment of a large cohort of pregnant women in Barcelona to measure environmental contamination and learn about how this affects foetal growth, placental function and foetal neurodevelopment.

Gut microbiota

Laura Baldomà Llavínés, PhD

3 PUBLICATIONS WITH IF

67% FIRST QUARTILE PUBLICATIONS

Microbiota-based research is essential to understand human health. Gut bacteria release membrane vesicles (MVs) as an intercellular communication mechanism that allows direct delivery of factors to host cells. Relevant outcomes in this filed are:

We have also continued our line of research focused on identifying prenatal interventions in pregnant women to reduce alcohol consumption during pregnancy and observe the impact of this reduction on foetal and postnatal neurodevelopment. In the midst of Sars-Cov-2 pandemic, we studied the impact of this infection on neonatal and pregnant women's health. We drew up management and action protocols that are now widely used internationally as standard.

MEMBERS

STAFF RESEARCHER

Edda Marimon Garcia, Isabel Miró Sotelo, Cristina Molinet Coll, María José Tojo Grandio, Yesenia Zapata Masias

POSTDOC ASSOCIATED RESEARCHERS

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Laura Almeida Toledano, Marc Josep Cahuana Bartra, Giulia Casu, Diana Lucia Lip Sosa, Marta Muniesa Aurocochea, Rosalia Pascal Capdevila

ASSISTANT RESEARCHER

Silvia-Irena Ferrero Martínez, Núria Lorente Colomé, Estela Rodriguez Quinteiro

TECHNICIAN

Àgueda García Meseguer, Erica Muñoz Sanz

SELECTED PROJECTS

- BR201902 - Respuesta de seguimiento de frecuencia (RSD) como biomarcador de desarrollo neurocognitivo en recién nacidos con exposición prenatal al alcohol. Hospital Sant Joan de Déu - Esplugues HSJD. 2020-2023. PI: Gómez Roig, MD.
- ATHLETE_Advancing Tools for Human Early Lifecourse Exposome research and Translation. (874583). European Commission. 2020-2024. PI: Gómez Roig, MD.
- Traffic-related air pollution and birth weight: the roles of noise, placental function, green space, diet, physical activity, and socioeconomic status (FRONTIER). (CR-83590201). Health Effects Institute (HEI). 2018-2022. PI: Gómez Roig, MD.

SELECTED CLINICAL TRIALS & OBSERVATIONAL STUDIES

- Tratamiento del crecimiento intrauterino restringido precoz con heparina de bajo peso molecular: Ensayo Clínico Randomizado (TRACIP). No Comercial. (FSJD-TRACIP-2017). Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 2017-. PI: Mazarico Gallego, E.
- Hydroxychloroquine efficacy in preventing SARS-CoV-2 infection and CoVid-19 disease severity during pregnancy. No Comercial. CoVid-Preg. Fundació Privada ISGLOBAL. 2020-. PI: Mazarico Gallego, E.
- Estudio sobre las condiciones de uso de Cariban® y de otros antieméticos en el tratamiento de las náuseas y vómitos en el embarazo: ESTUDIO PROSPECTIVO OBSERVACIONAL LONGITUDINAL. Comercial. (LIN-DOX-2015-01). Laboratorios Inibsa, S.A.2016-. PI: Bogaña Ponsa, JM.

SELECTED PUBLICATIONS

- Fernandez S,Ortiz O,Joan Galiot Torrecillas EIX Solucions G, Pérez M,Chueca N,Gómez MD,Gómez C. Study of the fetal and maternal microbiota in pregnant women with intrauterine growth restriction and its relationship with inflammatory biomarkers: A case-control study protocol (SPIRIT compliant). Medicine (Baltimore). 2020; 99(46):e22722. IF:1,552(Q3).
- Cobo T, Aldecoa V, Figueras F,Herranz A,Ferrero SI,Izquierdo M,Murillo C,Amoedo R,Rueda C,Bosch J,Martínez RJ,Gratacós E,Palacio A. Development and validation of a multivariable prediction model of spontaneous preterm delivery and microbial invasion of the amniotic cavity in women with preterm labor.. Am J Obstet Gynecol. 2020;223(3):421.e1-421.e14. IF:6,502(Q1).
- López M,Gonce A,Meler E,Plaza AM,Hernández S,Martínez RJ,Cobo T,García F,Gómez MD,Gratacós E,Palacio A,Figueras F,O. Coronavirus Disease 2019 in Pregnancy: A Clinical Management Protocol and Considerations for Practice. Fetal Diagn Ther. 2020; 47(7):1-10. IF:2,095(Q2).

Cardiovascular diseases in development

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

 **23** PUBLICATIONS WITH IF

 **56%** FIRST QUARTILE PUBLICATIONS

 **26%** FIRST DECILE PUBLICATIONS

MEMBERS

STAFF RESEARCHER

Esther Carro Fernandez, Sergio César Diaz, Isaac Moll Adrian

ASSISTANT RESEARCHER

Débora Cañizo Vázquez

TECHNICIAN

Miriam López Abad, Bosco Alejandro Moscoso Garrido

SELECTED PROJECTS

- Analysis of implantable loop recorder data in pediatric patients with non-high-risk Brugada síndrome. Medtronic Iberica S.A. 2020-2021. PI: Sarquella Brugada, G.
- Mort sobtada infantil. (LCF/PR/GN19/50320002). Fundació Bancària " La Caixa". 2020-2023. PI: Sarquella Brugada, G.
- ECG neonatal sistemático para la detección precoz de enfermedades cardiacas relacionadas con la muerte súbita del lactante. Sociedad Española de Cardiología. 2019-2021. PI: Sarquella Brugada, G.
- Utilidad de la neuromonitorización integrada como predictor del neurodesarrollo en pacientes sometidos a cirugía cardíaca en edad pediátrica: de la clínica al modelo animal pediátrico. (PI17/02198). Instituto de Salud Carlos III (ISCIII). 2018-2021. PI: Sanchez Toledo, J.

SELECTED CLINICAL TRIALS & OBSERVATIONAL STUDIES

- Estudio abierto, fase IV, multicéntrico, para evaluar la eficacia diagnóstica de

Nuubo nECGband antes del Holter Implantable. Comercial. (Syn201401). Smart Solutions Technologies S.L. 2015-. PI: Sarquella Brugada, G.

SELECTED PUBLICATIONS

- Lopez A, Dominguez F, Lopes LR, Ochoa JP, Barriales R, Climent V, et al. Clinical Features and Natural History of PRKAG2 Variant Cardiac Glycogenosis.. J Am Coll Cardiol. 2020;76(2):186-197. IF:20,589 (Q1).
- Mazzanti A, Guz D, Trancuccio A, Pagan E, Kukavica D, Chargeishvili T, et al. Natural History and Risk Stratification in Andersen-Tawil Syndrome Type 1. J Am Coll Cardiol. 2020; 75(15):1772-1784. IF:20,589 (Q1).
- Singh Y, Tissot C, Fraga MV, Yousef N, Cortes RG, Lopez J, et al. International evidence-based guidelines on Point of Care Ultrasound (POCUS) for critically ill neonates and children issued by the POCUS Working Group of the European Society of Paediatric and Neonatal Intensive Care (ESPNIC). Crit Care. 2020;24(1):65-65. IF:6,407. (Q1).

- Abulí M, Grazioli G, Sanz de la Garza M, Montserrat S, Vidal B, Doltra A, et al. Aortic root remodelling in competitive athletes. Eur J Prev Cardiol.2020;27(14):1518-1526. IF: 5,864 (Q1).

Immune and respiratory dysfunction in the critical child

Francisco José Cambra Lasaosa, MD, PhD

25 PUBLICATIONS WITH IF

40% FIRST QUARTILE PUBLICATIONS

8% FIRST DECILE PUBLICATIONS

MEMBERS

STAFF RESEARCHER

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

PHD STUDENTS

Sara Bobillo Perez

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Carme Alejandre Galobardes, Sergio Benito Fernández, Patricia Corniero Alonso, Aida Felipe Villalobos, Elena Fresán Ruiz, Lluïsa Hernandez Platero, Nuria Millán García del Real, Susana Segura Matute, David Vila Pérez, Mònica Girona Alarcon, Sergi Huerta Calpe, Ricardo Suarez Ramírez, Mireia Mor Conejo, Roi Campos Rodriguez, Jorgelina López López, Mireia Soler Lecha, Vanessa Andriño Estrecha, Almudena Delgado Jimenez, Raquel Arroni Guilera

COLLABORATOR RESEARCHER

Montserrat Esquerda Areste

SELECTED PROJECTS

- Implicación de la microbiota bacteriana de la nasofaringe en el



- desarrollo de neumonía asociada a ventilación mecánica en la unidad de cuidados intensivos pediátricos. Estudio MiNoReP. (PI119/00106). Instituto de Salud Carlos III (ISCIII). 2020-2022. PI: Jordán García, I.
- Valoración del efecto neuroprotector de la dexmedetomidina en el modelo animal pediátrico de circulación extracorporea y parada circulatoria. Sociedad y Fundación Española de Cuidados Intensivos Pediátricos (SECIP). 2018-2021. PI: Benito Fernández, S.
 - Contratos predoctorales de formación en investigación en salud. Beneficiari: Sara Bobillo. (FI17/00253). Instituto de Salud Carlos III (ISCIII). 2018-2022. PI: Jordán García, I.
 - Análisis de un algoritmo diagnóstico de neumonía grave en pacientes críticos pediátricos, mediante ecografía pulmonar y procalcitonina, como plan de mejora de la calidad asistencial. (PI16/01040). Instituto de Salud Carlos III (ISCIII). 2017-2020. PI: Jordán García, I.

SELECTED CLINICAL TRIALS & OBSERVATIONAL STUDIES

- A Phase III, Multicenter, Randomized, Double-Blind, Active-Controlled Study to Assess the Efficacy and Safety of Baloxavir Marboxil in Combination with a Neuraminidase Inhibitor Versus a Neuraminidase Inhibitor Alone in Hospitalized Patients with Severe Influenza. Comercial. (CP40617). Roche Diagnostics International Ltd. 2019-. PI: Jordán García, I.
- Estudio aleatorizado, controlado con placebo, doble ciego y multicéntrico de la eficacia y la seguridad de LJPC-501 en pacientes pediátricos de > 2 a 17 años de edad con hipotensión resistente a la catecolamina asociada a choque distributivo. Comercial. LJ501-CRH04. La Jolla Pharmaceutical Company. 2018-. PI: Jordán García, I.
- A Phase 1, open-label, non-comparative, multicenter clinical trial to evaluate the safety, tolerability, and pharmacokinetics of ceftolozane/tazobactam (MK-7625A) in pediatric participants with nosocomial pneumonia. Comercial. MK-7625A-036. Merck, Sharp & Dohme de España. S.A. 2019-. PI: Jordán García, I.
- 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 infection. Comercial. 200925. Glaxosmithkline, S.A. 2020-. PI: Balaguer Gargallo, M.

SELECTED PUBLICATIONS

- Estepa L, Guitart C, Baucells BJ, Prada F, Garcia-Cazorla A, Cambra FJ, Segura S. Severe Pulmonary Hypertension as the Debut of Metabolic Disease. Arch Bronconeumol. 2020;56(12):820-821. IF:4,957(Q1).
- García A, de Carlos JC, Belda S, Balcells J Slöcker M, Leóz I, et al. Severe manifestations of SARS-CoV-2 in children and adolescents: from COVID-19 pneumonia to multisystem inflammatory syndrome: a multicentre study in pediatric intensive care units in Spain. Crit Care. 2020;24(1):666-666. IF:6,407(Q1).
- McIntosh J, Esquerda M, Brierley J, Giugni C, McGreevy KS, Cambra FJ, et al. Safeguarding children's right to health in hospital during COVID-19. Lancet Child Adolesc Health. 2020;4(11):800-802. IF:8,543(Q1).
- Rodríguez J, Guitart C, Bobillo S, Balaguer M, Jordán I. Procalcitonin and lung ultrasound algorithm to diagnose severe pneumonia in critical paediatric patients (PROLUSP study). A randomised clinical trial. Respir Res. 2020;21(1):255-255. IF:3,924(Q2).



7.3

PAEDIATRIC CANCER



Translational genomics
Sarcomas and histiocytosis
Therapy development in pediatric oncology
Paediatric leukaemia and haematopoiesis
Molecular pharmacology and experimental therapies



Paediatric cancer



12 TOTAL NEW PROJECTS

- 8 Competitive national projects
- 4 Non competitive national projects



72 PUBLICATIONS

JCR indexed articles & reviews

- 511 Impact Factor
- 76% Publications in first quartile
- 7,1 Mean impact factor
- 24% Articles with main contributing authors



58 TOTAL ACTIVE PROJECTS

- 2 Competitive autonomic projects
- 22 Competitive national projects
- 5 Competitive international projects
- 1 Non competitive autonomic projects
- 25 Non competitive national projects
- 3 Non competitive international projects



5 RESEARCH GROUPS

Translational genomics

Cecilia Emilia Lavarino, PhD



11
PUBLICATIONS WITH IF



73%
FIRST QUARTILE PUBLICATIONS



36%
FIRST DECILE PUBLICATIONS

MEMBERS

STAFF RESEARCHER

Héctor Salvador Hernández

POSTDOC ASSOCIATED RESEARCHERS

Marta García López, Soledad Gomez Gonzalez

PHD STUDENTS

Alícia Garrido Garcia

TECHNICIAN

Isadora Lemos

SELECTED PROJECTS

- Platform of Epigenetic Classifiers for Childhood CAncer (PECA). (201921-30). Fundació La Marató de TV3. 2020-2023. PI: Lavarino, C.
- Método para la clasificación en subgrupos moleculares de pacientes con Meduloblastoma. (PI17/00353). Instituto de Salud Carlos III (ISCIII). 2018-2021. PI: Lavarino, C.

SELECTED PUBLICATIONS

- Sánchez S, Figuerola E, Blanco ME, Sánchez M, Táboas P, Gomez S, et al. RING1B recruits EWSR1-FLI1 and cooperates in the remodeling of chromatin necessary for Ewing sarcoma tumorigenesis. *Sci Adv.* 2020;6(43):eaba3058. IF:13,116 (Q1).
- Liu A, Priesterbach LP, Orr BA, Li BK, Gudenas B, Reddingius RE, et al. WNT-activated embryonal tumors of the pineal region: ectopic medulloblastoma subgroup?. *Acta Neuropathol.* 2020;140(4):595-597. IF:14,251(Q1).
- Castillo H, Monterrubio C, Pascual G, Gomez S, Garcia DJ, Hontecillas L, et al. Treatment-driven

selection of chemoresistant Ewing sarcoma tumors with limited drug distribution. *J Control Release.* 2020;324:440-449. IF:7,727(Q1).

- Pinto EM, Figueiredo BC, Chen W, Galvao HCR, Formiga MN, Fragoso MCBV, et al. XAF1 as a modifier of p53 function and cancer susceptibility. *Sci Adv.* 2020;6(26):eaba3231. IF:13,116(Q1).

Sarcomas and histiocytosis

Jaume Mora Graupera, MD, PhD



22
PUBLICATIONS WITH IF



77%
FIRST QUARTILE PUBLICATIONS



27%
FIRST DECILE PUBLICATIONS

Just like everyone else, the Cancer group had to reorganise in 2020 to be able to continue with our role of advancing knowledge of the disease that is the leading cause of death among children in advanced countries, cancer, in the midst of the pandemic. Fortunately, children and young people have escaped the worst of the pandemic. From a scientific perspective, we should highlight a publication by one member of our group. Dr Angel Montero demonstrated for the first time that the ability to reproduce early-stage sarcomas in mice is a clear negative prognostic factor, independent of any other factor. With models such as these at disease onset as well as disease relapse, we were able to explore various treatment resistance mechanisms. Another publication, led by Dr Jaume Mora, presented an important finding relating to our understanding of the origin of Ewing's sarcoma based on the epigenetic characteristics of foetal stem cells in which translocation (fusion gene) is tolerated and the cell does not die. The importance of this discovery has been published in *Science Advances*.

MEMBERS

STAFF RESEARCHER

Alexandra Avgustinova, Alicia Castañeda Heredia, Veronica Celis Passini, Moira Garraus Oneca, Lucas Krauel Giménez-Salinas

POSTDOC ASSOCIATED RESEARCHERS

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PHD STUDENTS

Elisabet Figuerola Bou, Maria Sanchez Jimenez

ASSISTANT RESEARCHER

Irene Cuervas Oliveras, Alejandro Manzanares Quintela, Jara Martin Serrano, Sara Pérez Jaume, Estela Prada Varela, Carla Rios Astorch

TECHNICIAN

Soraya Morales Moreno, Óscar Muñoz Aznar

COLLABORATOR RESEARCHER

Maria Inmaculada Hernandez Muñoz

SELECTED PROJECTS

- Unveiling the Ewing sarcoma cell of origin: a multistep transformation process that involves prenatal genetic and postnatal epigenetic mechanisms. (201928-30). Fundació La Marató de TV3. 2020-2023. PI: Mora, J.

SELECTED CLINICAL TRIALS & OBSERVATIONAL STUDIES

- A Phase II Single Center Study Of Naxitamab, Granulocyte-Macrophage Colony Stimulating Factor (GM-CSF) and Ifosfamide/Carboplatin/ Etoposide (NICE) For Patients With Relapsed/Refractory, Soft tissue or Anti-GD2 Immunotherapy Refractory Neuroblastoma. No Comercial. (HSJD-HR-NB.2-2019 NICE). Cientes Diversos; Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 2020-. PI: Mora, J.

SELECTED PUBLICATIONS

- Mora J, Modack S. Nivolumab in pediatric cancer: children are not little Adults. *The Lancet Oncology.* 2020; 21(4): 474-476. IF: 33,752(Q1)
- Castillo-Ecija H, Monterrubio C, Pascual-Pastó G, Gómez-González S, García-Domínguez DJ, Hontecillas-Prieto L, et al. Treatment-driven selection of

chemoresistant Ewing sarcoma tumors with limited drug distribution. *J Control Release*. 2020;324:440-449. FI: 7,727(Q1)

- Sánchez-Molina S, Figuerola-Bou E, Blanco E, Sánchez-Jiménez M, Taboas P, Gómez S, et al. RING1B recruits EWSR1-FLI1 and cooperates in the remodelling of chromatin necessary for Ewing sarcoma tumorigenesis. *Science Advances*. 2020;6(43):eaba3058. FI: 13,116(Q1)
- Mora J, Castañeda A, Flores MA, Santa-María V, Garraus M, Gorostegui M, et al. The role of autologous stem-cell transplantation in high-risk neuroblastoma consolidated by anti-GD2 immunotherapy. Results of two consecutive studies. *Frontiers in Pharmacology*. 2020;11:575009. FI: 4,225(Q1)

Therapy development in pediatric oncology

Angel Montero Carcaboso, PhD

31 PUBLICATIONS WITH IF

84% FIRST QUARTILE PUBLICATIONS

52% FIRST DECILE PUBLICATIONS

Our work experimentally addresses the urgent clinical need of pediatric cancer patients with a worse prognosis. We develop preclinical projects that start from small biopsies of the tumors of these patients, with which we create laboratory models to experiment with new treatments. These new treatments are developed by our research group or by our collaborators. For example, our research on virotherapy for retinoblastoma (cancer of the retina) is producing promising results in patients. A six-year-old boy has retained his only remaining eye after being treated in the phase 1 clinical trial evaluating the safety and efficacy of oncolytic adenovirus VCN-01 in

patients with chemotherapy-resistant retinoblastoma.

In our most relevant scientific publication of 2020 we have grafted human tumors (Ewing sarcomas) into laboratory mice at different stages of their evolution, early (at the time of diagnosis) and late (when the disease relapses), in order to analyze how drug resistance occurs. The article has been published in the *Journal of Controlled Release*. We have participated in publications in highly reputable scientific sources, such as *Nature communications*, *Cell reports* and *Clinical cancer research*.

MEMBERS

STAFF RESEARCHER

Guillermo Chantada, Ofelia Cruz Martínez, Andrés Morales La Madrid

POSTDOC ASSOCIATED RESEARCHERS

Maria del Rosario Aschero

PHD STUDENTS

Helena Castillo Ecija, Maria Cuadrado Vilanova, Clàudia Resa Parés

ASSISTANT RESEARCHER

Leire Balaguer Lluna, Mercè Baulenas Farrés, Víctor Burgueño Sandoval, Francisco Javier Vicario la Torre

TECHNICIAN

Ana Jiménez Cabaco

SELECTED PROJECTS

- Inhibition of the PI3K/Akt pathway in pediatric high grade and diffuse intrinsic pontine gliomas (pHGG/DIPG). [201927-30]. Fundació La Marató de TV3. 2020-2023. PI: Montero Carcaboso, A.
- Gate2Brain-4-DIPG, a novel therapeutic strategy for the treatment of pediatric brain tumors using Gate2Brain technology. Fundación Marcelino Botín. 2020-2022. PI: Montero Carcaboso, A.
- Combinación de adenovirus oncolítico y quimioterapia en retinoblastoma. (PI18/01970). Instituto de Salud Carlos III (ISCIII). 2019-2021. PI: Montero Carcaboso, A.
- Ipatasertib testing in pediatric high grade and diffuse intrinsic pontine gliomas (pHGG/DIPG). Roche Diagnostics International Ltd. 2019-2021. PI: Montero Carcaboso, A.
- ITCC Pediatric Preclinical POC Platform (ITCC-P4). European Commission. 2017-2021. PI: Montero Carcaboso, A.

SELECTED CLINICAL TRIALS & OBSERVATIONAL STUDIES

- Phase I trial, unicentric, open and dose escalation clinical trial to evaluate the safety and the activity of the oncolytic adenovirus VCN-01 in patients with refractory retinoblastoma; EudraCT No 2016-001060-11; Since 2017; Sponsor: Hospital Sant Joan de Deu, Spain
- My role: Preclinical work. Trial conception and design. Analysis of patient samples. PI: Català, J.
- 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). No Comercial. (FSJD-DIPG-DC). Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD. 2016-. PI: Morales La Madrid, A.
- Estudio prospectivo internacional en niños mayores de 3 a 5 años con meduloblastoma de riesgo estándar clínico de perfil biológico de bajo riesgo. No Comercial. (SIOP - PNET 5 MB - LR). Sociedad Española de Hematología y Oncología Pediátricas. 2016-. PI: Cruz Martínez, O.

SELECTED PUBLICATIONS

- Balakrishnan I, Danis E, Pierce A, Madhavan K, Wang D, Dahl N, et al. Senescence Induced by BMI1 Inhibition Is a Therapeutic Vulnerability in H3K27M-Mutant DIPG. *Cell Rep*. 2020; 33(3):108286-108286. IF:8,109 (Q1).
- Bossacoma F, Cuadrado M, Vinent J, Correa MG, Gavrus D, Castillo H, et al. Optimizing the storage of chemotherapeutics for ophthalmic oncology: stability of topotecan solution for intravitreal injection. *Ophthalmic Genet*. 2020; 41(4):397-400. IF:1,308(Q4).
- Castillo-Ecija H, Monterrubio C, Pascual G, Gomez S, Garcia DJ, Hontecillas L, Resa C, et al. Treatment-driven selection of chemoresistant Ewing sarcoma tumors with limited drug distribution. *J Control Release*. 2020; 324:440-449. IF:7,727 (Q1).
- Martínez M, Torres R, Puig P, Moreno P, Martín MC, Moya FJ, et al. In vivo CRISPR/Cas9 targeting of fusion oncogenes for selective elimination of cancer cells. *Nat. Commun*. 2020;11(1):5060-5060. IF:12,121(Q1).

Paediatric leukaemia and haematopoiesis

Mireia Camós Guijosa, MD, PhD



21
PUBLICATIONS WITH IF



71%
FIRST QUARTILE PUBLICATIONS



24%
FIRST DECILE PUBLICATIONS

During 2020, despite the difficulties caused by the pandemic, we reorganised the group in order to be able to continue our investigation. Dr. Rubén Berruero is currently leading a trial on the use of emicizumab, a new subcutaneous treatment for haemophilia, in patients under one year of age. This is a pioneer study in Spain and represents a paradigm shift in the treatment of these children which will lead to a substantial improvement in their quality of life.

In 2020, we received funding from the Marató de TV3 for the project "New Approaches for the Identification and Functional Characterisation of Prognostic Genetic Biomarkers in Inherited Childhood Myelodysplastic/Acute Leukemia Syndromes" led by Dr Albert Català. The aim of the project is to identify and characterise the genetic makeup of patients affected by these pathologies at the national level, and also, to create the first national registry on these syndromes. The project will be undertaken between 2021 and 2024.

MEMBERS

STAFF RESEARCHER

Isabel Badell Serra, Ruben Berruero Moreno, Albert Català Temprano, Izaskun Elorza Alvarez, Julia Marsal Ricoma, Susana Rives Solà, Anna Ruiz Llobet, Montserrat Torredadell Burriel

POSTDOC ASSOCIATED RESEARCHERS

Nerea Vega García

PHD STUDENTS

Anna Alonso Saladrígues, Elena Esperanza Cebollada, Susanna Gassiot Riu, Montserrat Mesegue Meda, Sandra Pont Marti, Maria Trabazo del Castillo, Clara Vicente Garces

TECHNICIAN

Maria Camino Estella Aguado, Soraya Morales Moreno, Cèlia Portillo Bog, Mercé Richarte Franqués, Lidia Ruiz Bocanegra, Warda Suleman

SELECTED PROJECTS

- CLOSER: Childhood Leukemia: Overcoming distance between South America and Europe Regions. (825749). European Commission. 2019-2023. PI: Camós Guijosa, M.
- Hacia la personalización de la profilaxis de la trombosis venosa profunda en pacientes pediátricos afectos de leucemia linfoblástica aguda: uso de test de generación de trombina. (PI17/00356). Instituto de Salud Carlos III (ISCIII). 2018-2022. PI: Berruero, R.
- New Approaches For The Identification And Functional Characterization Of Prognostic Genetic Biomarkers In Inherited Childhood Myelodysplastic/Acute Leukemia Syndromes [228/C/2020]. La Marató de TV3. 2021-2024 IP: Albert Català

SELECTED CLINICAL TRIALS & OBSERVATIONAL STUDIES

- Research study for treatment of children and adolescents with acute myeloid leukaemia 0-18 years. No Comercial. (NOPHO-DBH AML 2012). Sociedad Española de Hematología y Oncología Pediátricas. 2017-. PI: Català A.
- A phase IIIb, multicenter, open-label, single-arm study to evaluate the efficacy, safety, pharmacokinetics, and pharmacodynamics of subcutaneous emicizumab in patients from birth to 12 months of age with hemophilia a without inhibitors. Comercial. M041787. Roche Farma, S.A. 2020-. PI: Berruero Moreno, R.
- A phase II trial of tisagenlecleucel in first-line high-risk (HR) pediatric and young adult patients with B-cell acute lymphoblastic leukemia (B-ALL) who are minimal residual disease (MRD) positive at the end of consolidation (EOC) therapy. Comercial. CCTL019G2201J. Novartis Farmacéutica, S.A. 2018-. PI: Rives Solà, S.
- Estudio abierto, no comparativo, de fase 1 para evaluar la seguridad y la capacidad de UCART19 de

inducir una remisión molecular en pacientes pediátricos con leucemia linfoblástica aguda de células B recurrente/refractaria. Comercial. CL1-68587-001. Laboratorios Servier, S.L. 2019-. PI: Rives Solà, S.

SELECTED PUBLICATIONS

- Vega-Garcia N, Benito R, Esperanza E, Llop M, Robledo C, Vicente C, et al. Helpful Criteria When Implementing NGS Panels in Childhood Lymphoblastic Leukemia. J Pers Med. 2020;10(4): 244. IF:4,433(Q1).
- Kozyra EJ, Pastor VB, Lefkopoulos S, Sahoo SS, Busch H, Voss RK, et al. Synonymous GATA2 mutations result in selective loss of mutated RNA and are common in patients with GATA2 deficiency. Leukemia. 2020;34(10):2673-2687. IF:8,665. (Q1).
- Ruiz A, Isola I, Gassiot S, Català A, Díaz M, Martínez T, et al. Platelet Dysfunction in Noonan and 22q11.2 Deletion Syndromes in Childhood. Thromb Haemost. 2020;120(3):457-465. IF:4,379(Q1).

Molecular pharmacology and experimental therapies

Marçal Pastor-Anglada, PhD



3
PUBLICATIONS WITH IF



67%
FIRST QUARTILE PUBLICATIONS



33%
FIRST DECILE PUBLICATIONS

Our research group has shown that combination anti-tumour therapy, when directed against targets such as growth factor receptors and metabolic pathways of nucleotide metabolism, may be involved in chemotherapy resistance mechanisms. The first evidence of this effect was explored in collaboration with the IRSJD "Paediatric



Leukaemia and Blood Diseases” group in the context of childhood acute leukaemia. The FMS-like tyrosine kinase 3 (FLT3) receptor is a therapeutic target in these patients. However, FLT3 also appears to regulate key proteins in the nucleoside salvage pathways, which in turn can be therapeutic targets, as occurs in acute leukaemia with the use of nucleoside analogues such as cytarabine (ara-C). We believe that this study indicates the need for studies, in other types of cancer, on the mechanisms linking tyrosine kinase receptors (frequent anti-tumour targets also used to treat solid tumours) and nucleotide metabolism, which is particularly altered as a result of tumour metabolic reprogramming. During 2020, our research group also embarked on an ambitious collaborative project within the framework of the “Retos-Colaboración” programme framed within the Spanish Programme for Research, Development and Innovation addressing Challenges facing Society, led by the biotechnology company Palo Biofarma SL and aimed at discovering and developing new cancer immunotherapies.

MEMBERS

STAFF RESEARCHER

Sandra Perez-Torras

POSTDOC ASSOCIATED RESEARCHERS

Laura García Vega, Nerea Urtasun Plans

PHD STUDENTS

Clara Bocés Pascual, Aida Mata Ventosa, Catalina Perelló Reus, Andrea Valentina Prieto Carruyo, Eloy Pena Rodríguez

SELECTED PROJECTS

- Grup de recerca “Farmacologia Molecular i Teràpies Experimentals (MPET)”. Agència de Gestió d’Ajuts Universitaris i de Recerca (AGAUR). 2018-2021. PI: Pastor Anglada, M.
- “Proteínas transportadoras de nucleósidos (NT), metabolismo de nucleótidos y cáncer”. Ministerio de Ciencia, Innovación y Universidades. 2019-2021. PI: Pastor Anglada, M.
- CIBER “Enfermedades Hepáticas y Digestivas”. Ministerio de Sanidad y Consumo. 2006-2021. PI: Pastor Anglada, M.
- “Descubrimiento y desarrollo de nuevos tratamientos Inmuno-Oncológicos”, (RTC2019-006865-1). Convocatoria Retos-Colaboración del Programa Estatal de Investigación, Desarrollo e Innovación orientada a los Retos de la Sociedad. 2020-2022. PI: Pastor Anglada, M & Pérez Torras, S.
- Proyecto “Alostop”, (RTC2019-007035-1). Convocatoria Retos-

Colaboración del Programa Estatal de Investigación, Desarrollo e Innovación orientada a los Retos de la Sociedad. 2020-2023. PI: Pérez Torras, S & Pastor Anglada, M.

- Doctorats industrials 2019. Empresa: Laboratorios Reig Jofre, S.A. Agència de Gestió d’Ajuts Universitaris i de Recerca (AGAUR). 2019-2022. PI: Pérez Torras, S.

SELECTED PUBLICATIONS

- Guillén E, Silva I, Serra N, Caballero F, Leal J, Breda A, et al. From Inflammation to the Onset of Fibrosis through A(2A) Receptors in Kidneys from Deceased Donors. *Int J Mol Sci.* 2020;21:22. FI: 4,556 (Q1).
- Jaramillo AC, Hubeek I, Broekhuizen R, Pastor M, Kaspers GJL, Jansen G, et al. Expression of the nucleoside transporters hENT1 (SLC29) and hCNT1 (SLC28) in pediatric acute myeloid leukemia. *Nucleosides Nucleotides Nucleic Acids.* 2020;39:10-12. FI: 1,556 (Q4).
- Perello C, Català A, Vega N, Camós M, Perez S, Pastor M. FMS-like tyrosine kinase 3 (FLT3) modulates key enzymes of nucleotide metabolism implicated in cytarabine responsiveness in pediatric acute leukemia. *Pharmacol Res.* 2020;151:104556. FI: 5,893 (Q1).



7.4

HEALTH TECHNOLOGIES AND INNOVATION

- Medical technologies: Bioinformatics and biomedical signals
- Medical technologies: Biomaterials and tissue engineering
- Medical technologies: Analysis for rehabilitation
- Medical technologies: Instrumentation and eHealth
- Medical technologies: Robotics and vision
- Medical technologies: Medical imaging
- Medical technologies: Biomechanical
- Patients engagement in research
- Innovation in health technologies
- Diagnostic and therapeutic image



Health technologies and innovation



25 TOTAL NEW PROJECTS

- 3 Competitive autonomic projects
- 7 Competitive national projects
- 7 Competitive international projects
- 8 Non competitive national projects



47 PUBLICATIONS

JCR indexed articles & reviews

- 193 Impact Factor
- 70% Publications in first quartile
- 4,1 Mean impact factor
- 66% Articles with main contributing authors



104 TOTAL ACTIVE PROJECTS

- 25 Competitive autonomic projects
- 25 Competitive national projects
- 28 Competitive international projects
- 1 Non competitive autonomic projects
- 23 Non competitive national projects
- 2 Non competitive international projects



10 RESEARCH GROUPS

Medical technologies: bioinformatics and biomedical signals

Alexandre Perera Lluna, PhD



2 PUBLICATIONS WITH IF



100% FIRST QUARTILE PUBLICATIONS



50% FIRST DECILE PUBLICATIONS

MEMBERS

STAFF RESEARCHER

Maria Barranco Altirriba, Pol Canal Noguer, Jesús Escrivá Muñoz, Jordi Fonollosa Magrinyà, Jon Garrido Aguirre, Giovana Elizabeth Gavidia Bovadilla, Pol Gil Figuerola, Pedro Gomis Román, Samir Kanaan Izquierdo, Oleksii Leonovych, Joshua Llano Viles, Ángela López del Río, Enrico Manzini, Imanol Morata Martínez, Joana Palés Huix, Flavio Palmieri, Pol Solà de los Santos, Alexander Vallmitjana Lees, Helena Vallverdú Cartié, Maria Montserrat Vallverdú Ferrer

PHD STUDENT

Xavier Marimon Serra, Sergi Picart Armada

TECHNICIAN

Maria Maqued

SELECTED PROJECTS

- Xarxa R+D+I en Tecnologies de la Salut (XarTEC SALUT). AGAUR. Agència de Gestió d'Ajuts Universitaris i de Recerca. 2020-2022. PI: Perera Lluna, A.
- Sistema de ventilación inteligente y detección del nivel de higienización de interiores (VIDA). ACC10. 2020-2023. PI: Fonollosa, J.
- Platform of Epigenetic Classifiers for Childhood CAncer (PECA). LA FUNDACIÓ LA MARATÓ DE TV3. 2020-2023. PI: Perera Lluna, A.

SELECTED PUBLICATIONS

- Lopez A, Martin M, Perera A, Saidi R. Effect of sequence padding on the performance of deep learning

models in archaeal protein functional prediction. Sci Rep. 2020; 10(1):14634-14634. IF:3,998 (Q1).

- Wang F, Hou W, Chitsike L, QXu Y, Bettler C, Perera A, et al. ABL1, Overexpressed in Hepatocellular Carcinomas, Regulates Expression of NOTCH1 and Promotes Development of Liver Tumors in Mice. Gastroenterology. 2020; 159(1): 289-305.e16. IF:17,373 (Q1).

Medical technologies: biomaterials and tissue engineering

Cristina Canal Barnils, PhD



15 PUBLICATIONS WITH IF



93% FIRST QUARTILE PUBLICATIONS



27% FIRST DECILE PUBLICATIONS

During 2020, and despite the pandemic, we have continued to work intensively here in the Biomaterials, Biomechanics and Tissue Engineering group on researching and developing biomaterials for bone regeneration, the development of new surfaces with improved tissue integration and antibacterial properties as well as opening up new opportunities in osteosarcoma therapy. This has generated a large number of articles in indexed journals and the filing of patents within the framework of various competitive projects. A doctoral thesis has been defended. We have also continued our intense activity in the transfer of technology to the industrial sector in the area of implants and biomaterials.

MEMBERS

STAFF RESEARCHER

Albert Barba Serrahima, Montserrat Español Pons, Albert Espona Noguera, José Manuel García Torres, Francesc Xavier Gil Mur, Andrea Malandrino,

José María Manero Planella, Carles Mas Moruno, Marta Pegueroles Neyra, Daniel Rodríguez Rius, Elisa Rupérez de Gracia

POSTDOC ASSOCIATED RESEARCHERS

Jordi Guillem Martí, Cédric Labay, Laura Catalina Córdoba Román, Irene Lodoso Torrecilla, Francesco Tampieri, Juan Tornin Cavielles

PHD STUDENTS

Victor Chausse Calvet, Miguel Mateu Sanz, Joaquim Minguela Díaz, Lluís Oliver Cervelló, David Piñera Avellaneda, Yago Raymond Llorens, Xavier Solé Martí, Diego Torres Garrido, Èlia Vidal Girona, Mar Bonany Mariñosa, Laura del Mazo Barbara, Claudia García Mintegui, Inès Hamouda, Mireia Hoyos Nogués, Joanna Magdalena Konka, Joanna Maria Sadowska

TECHNICIAN

Noelia Aparicio Bádenas, Judit Buxadera Palomero, Meritxell Molmeneu Trías, Meritxell Sánchez Hervás, Miguel Punset Fusté

SELECTED PROJECTS

- Atmospheric Pressure pAsma meets biomaterials for bone Cancer HEaling (APACHE). Starting grant. European Research Council. 2017-2021. PI: Canal Barnils, C.
- Duality: "Recubrimientos de biomateriales de doble acción para infecciones bacterianas e integración de tejidos". Agencia Estatal de Investigación, Ministerio de Ciencia, Innovación y Universidades. 2019-2021. PI: Manero, JM and Pegueroles, M.
- Bio-TUNE: Fine tune of cellular behavior: multifunctional materials for medical implants. European Research Council - Marie Curie. Actions. 2020-2024. PI: Mas-Moruno, C.
- ENABLE: New enabling technologies for the development of high performance osteoinductive and antimicrobial bone grafts. AEI. 2020-2023. PI: Ginebra, MA and Canal, C

SELECTED PUBLICATIONS

- Labay C, Roldán R, Tampieri F, Stancampiano S, Escot P, Ginebra MP, Canal C. Enhanced Generation of Reactive Species by Cold Plasma in Gelatin Solutions for Selective Cancer Cell Death. ACS Appl Mater

Interfaces. 2020;12(42): 47256–47269. IF: 8.758(Q1).

- Mateu-Sanz M, Tornín J, Brulin B, Khlyustova A, Ginebra MP, Layrolle P, et al. Cold Plasma-Treated Ringer's Saline: A Weapon to Target Osteosarcoma. Cancers. 2020; 12(1): 227. IF: 6.126(Q1).
- Sadowska J, Ginebra MP. Inflammation and biomaterials: role of the immune response in bone regeneration by inorganic scaffolds. J Mater Chem B. 2020;8(41):9404–9427. IF: 5.344 (Q1).

Medical technologies: analysis for rehabilitation

Miquel Angel Mañana Villanueva, PhD

 **6** PUBLICATIONS WITH IF

 **50%** FIRST QUARTILE PUBLICATIONS

MEMBERS

STAFF RESEARCHER

Joan Francesc Alonso López, Maria Victoria San Antonio Arce, Sergio Romero Lafuente, Alejandro Bachiller Matarranz, Leidy Yanet, Mislav Jordanic, Marjan Mansourian Gharakozlou

PHD STUDENTS

Mehdi Shirzadi, Ana Tost Abadias, Marta Borrás Argemí

TECHNICIAN

Isidre Solé Ramon

PROJECT MANAGER

Anna Nicolau Torra

SELECTED PROJECTS

- MyoSleeve: An assistive device for treatment of musculoskeletal injuries related to forearm. AGAUR. 2020-2022. PI: Àngel Mañanas, M.
- MV-Optimizer: Validation of a computational system for the management of ventilated intensive



care patients. AGAUR. 2019-2020. PI: Àngel Mañanas, M.

- Desarrollo de aplicaciones móviles para el aprendizaje del sistema respiratorio: conceptos básicos, diagnóstico de enfermedades, terapia y rehabilitación. Colciencias, Departamento Administrativo De Ciencia, Tecnología E Innovación de la República de Colombia. 2019-2020. PI: Àngel Mañanas, M.
- An online expert-based intelligent

hybrid system to predict and assess motor rehabilitation outcomes in neurological disorders: NEURASSESS. Generalitat de Catalunya / European Commission. 2019-2021. PI: Àngel Mañanas, M.

SELECTED PUBLICATIONS

- Rojas M, Serna LY, Jordanic M, Marateb HR, Merletti R, Mañanas MA. High-density surface electromyography signals during

isometric contractions of elbow muscles of healthy humans. *Sci Data*. 2020; 7(1):397-397. IF:5,541(Q1).

- Naghavi A, Teismann T, Asgari Z, Mohebbian MR, Mansourian M, Mañanas MA. Accurate Diagnosis of Suicide Ideation/Behavior Using Robust Ensemble Machine Learning: A University Student Population in the Middle East and North Africa (MENA) Region. *Diagnostics (Basel)*. 2020;10(11):956. IF:3,110(Q1).
- Migliorelli C, Bachiller A, Alonso JF, Romero S, Aparicio J, Jacobs J, et al. SGM: a novel time-frequency algorithm based on unsupervised learning improves high-frequency oscillation detection in epilepsy. *J Neural Eng*. 2020;17(2):26032-26032. IF:4,141(Q1).
- Sami R, Soltaninejad F, Amra B, Naderi Z, Haghjooy S, Iraj B, Haji S, et al. A one-year hospital-based prospective COVID-19 open-cohort in the Eastern Mediterranean region: The Khorshid COVID Cohort (KCC) study. *PLoS One*. 2020;15(11):e0241537. IF:2,740 (Q2).

Medical technologies: instrumentation and eHealth

Xavier Rosell Ferrer, PhD

4 PUBLICATIONS WITH IF

75% FIRST QUARTILE PUBLICATIONS

Despite the limitations, we have continued to offer scientific contributions this year as well as technological developments in the fields of sports medicine, non-invasive monitoring and new impedance-based methods to enhance cardiac ablation procedures. We should also mention that we secured a patent in Europe for the detection of infarcted tissue in cardiac catheterisation.

MEMBERS

STAFF RESEARCHER

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

SELECTED PROJECTS

- Electronic biopsy of in-vivo lung tissue based on electrical impedance spectroscopy. Agencia Estatal de Investigación. 2019-2021. PI: Bragos Bardia, R.
- Métodos no intrusivos para monitorizar el proceso de esfuerzo/recuperación basados en el análisis de la calidad del sueño y la estimación del balance de carga interna/externa. EURECA. PID2019-107473RB-C22. Agencia Estatal de Investigación. 2020-2024. PI: Garcia, M.; Ramos, J. With: Fernandez, M.; Pages, A.; Guede, F.; Mateu, M.; Gil, J.
- Grups de recerca consolidats. AGAUR. 2017-2020. PI: Rosell, X.
- A novel myocardial impedance mapping system for ablation of post-infarction ventricular arrhythmias in humans. Fundació La Marató de TV3. 2016-2020. PI: Rosell, X.

SELECTED PUBLICATIONS

- Guede F, Ferrer V, Mateu M, Ramos J, García MA, Fernández C . A photoplethysmography smartphone-based method for heart rate variability assessment: device model and breathing influences. *Biomedical Signal Processing and Control*. 2020; 57:101717-101717. IF:3,137(Q2).
- Mateu M, Guede F, García MA, Ramos J, Fernández C . Camera-Based Method for Respiratory Rhythm Extraction From a Lateral Perspective. *IEEE Access*. 2020;8:154924-154939. IF:3,745(Q1).
- Nescolarde L, Roca E, Bogónez P, Hernández J, Bayes A, Ara J . Relationship Between Bioimpedance Vector Displacement and Renal Function After a Marathon in Non-elite Runners. *Front Physiol*. 2020;11:352-352. IF:3,367(Q1).
- Nescolarde L, Terricabras J,

Mechó S, Rodas G, Yanguas J. Differentiation Between Tendinous, Myotendinous and Myofascial Injuries by L-BIA in Professional Football Players. *Front Physiol*. 2020;11: 574124-574124. IF:3,367(Q1).

Medical technologies: robotics and vision

Alicia Casals Gelpi, PhD

1 PUBLICATIONS WITH IF

100% FIRST QUARTILE PUBLICATIONS

100% FIRST DECILE PUBLICATIONS

Organisation of the congress: Conference on New Technologies for Computer and Robot Assisted Surgery, 20-30 September. Initially it was to be held in Barcelona but, obviously, had to be re-organised as an on-line event. <https://cras-eu.org/cras-2020/>

MEMBERS

STAFF RESEARCHER

Joan Aranda López, Josep Fernández Ruzafa, Manel Frigola Bourlon, Enric Xavier Martín Rull, Antonio Benito Martínez Velasco

POSTDOC ASSOCIATED RESEARCHER

Albert Hernansanz Prats

PHD STUDENT

Maria Farahi, Martina Finocchiaro, Marien Cristina Narváez Dorado, Narcís Sayols Baixeras

COLLABORATOR RESEARCHER

Antonio Benedico Blanes, Carlos Morata Nuñez, Laureano Tinoco Gómez, Alejandro Veiga López

SELECTED PROJECTS

- Smart Autonomous Robotic Assistant Surgeon (SARAS). H2020. 2018-2021. PI: Alícia Casals
- Autonomous Intraluminal Surgery

(ATLAS). H2020. 2019-2023. PI: Alícia Casals

- Caminadors elèctrics. TOPRO Industry. 2018-2021. PI: Antonio B. Martínez Velasco
- Determinación Curva S/N completa a fatiga de un conjunto de implantes. TITANIMPLANT. 2020-2020. PI: José M. Mane

SELECTED PUBLICATIONS

- Micheletti T, Eixarch E, Berdun S, Febas G, Parra J, Albert P, et al. OC02.01: Intra-amniotic sealing system for fetal membrane defects after fetoscopic surgery. Ultrasound in Obstetrics Gynecology. 2020; 56(s1): 4-4. IF: 5.571(Q1).

Medical technologies: medical imaging

Raúl Benítez Iglesias, PhD



2

PUBLICATIONS WITH IF



50%

FIRST QUARTILE PUBLICATIONS

MEMBERS

STAFF RESEARCHER

Dolors Ayala Vallespí, Jose Luis Eguía Gómez, Mercè Ginjaume Egido, Robert Joan Arinyó, Christina Mata Miquel, Núria Pla García, Josep Sempau Roma, Lluís Solano Albages, Daniela Tost Pardell, Marc Vigo Anglada,

PHD STUDENT

Núria Bonet Codina, Ariel von Barnekow

SELECTED PROJECTS

- Transversal Programme in Medical Image PostProcess, Training Professionals: 3D Printing. European Institute of Innovation and Technology (EIT). 2019-2020. PI: Benítez, R.
- BEST: Bienestar y Salud mental en el puesto de trabajo. IRSJD. 2019-2020. PI: Tost, D.

- ANALISIS AUTOMATICO DE DATOS EXPERIMENTALES EN FISILOGIA CARDIACA. MINECO. 2018-2021. PI: Benítez, R.
- Implications of Medical Low Dose Radiation Exposure. (MEDIRAD). H2020. 2017-2021. PI: Ginjaume, M.
- Anàlisi i Control del Ritme Cardíac (ANCORA). AGAUR. 2017-2021. PI: Benítez, R
- Desarrollo de técnicas de análisis de sistemas complejos para el estudio de problemas en fisiología cardíaca. Ministerio de Ciencia e Innovación (MICINN). 2010-2021. PI: Benítez, R

SELECTED PUBLICATIONS

- Cantarero L, Juárez E, Civera A, Rodriguez M, Roldan M, Benítez R, et al. Mitochondria-lysosome membrane contacts are defective in GDAP1-related Charcot-Marie-Tooth disease. Hum Mol Genet. 2020;29(22):3589-3605. IF:5,100(Q1).
- de Castro M, Sebastian M, Rodríguez J, Opiiso E, Ochoa M, Ortner R, et al. Effects of Gamification in BCI Functional Rehabilitation. Front Neurosci. 2020;14:882-882. IF:3,707(Q2).

Medical technologies: biomechanical

Josep Maria Font Llagunes, PhD



3

PUBLICATIONS WITH IF



67%

FIRST QUARTILE PUBLICATIONS



33%

FIRST DECILE PUBLICATIONS

During 2020, the Biomechanical Engineering group (BIOMECH) has continued its work on the analysis and simulation of human movement and the development of technologies for motor rehabilitation. As a result of this research, we have published several articles in indexed journals, participated

in three international conferences and defended a doctoral thesis. The group has also been granted funding from La Marató de TV3 2019 for its collaboration with Hospital Sant Joan de Déu to develop an arm movement monitoring system for children with Duchenne muscular dystrophy. 2020 has also been the year in which we initiated the clinical validation studies for the ABLE exoskeleton in collaboration with the spin-off of the ABLE Human Motion group, thanks to a grant from EIT Health. Also, the spin-off won the Best Robotics Startup Award from euRobotics.

MEMBERS

STAFF RESEARCHER

Anna Barjau Condomines, Rosa Pàmies Vilà

POSTDOC ASSOCIATED RESEARCHER

Miriam Febrer Nafria, Albert Peiret Giménez

PHD STUDENT

Jesús de Miguel Fernández, Michael Ray Epke, Antonio Rodríguez Fernández

ASSISTANT RESEARCHER

Oriol Alís González

TECHNICIAN

Daniel Clos Costa

SELECTED PROJECTS

- Desarrollo de MOVit Game: una plataforma interactiva de juego para promover la actividad física de personas con Duchenne usando la silla de ruedas MOVit. Duchenne Parent Project España. 2020-2021. PI: Lobo, J and Font, JM.
- Personalized robotic exoskeleton for gait rehabilitation. Beca Leonardo. Fundació BBVA. 2018-2020. PI: Font, JM.
- Red Nacional de Investigación en Biomecánica. MINECO. 2018-2020. PI: Font, JM.
- ABLE: exoesquelet robòtic que permet tornar a caminar de forma natural i intuïtiva després de patir una lesió medul·lar. AGAUR. 2019-2020. PI: Font, JM.
- ABLE Exoskeleton. EIT Health Innovation Programme (H2020, EU Commission). 2020-2022. PI: Font, JM.
- Design of personalized robotic and neuroprosthetic wearable systems for walking assistance using a predictive simulation framework (TAILOR). Spanish

Ministry of Science, Innovation and Universities (MICINN). 2019-2021. PI: Font, JM.

SELECTED PUBLICATIONS

- Lobo-Prat, J., Enkaoua, A., Rodríguez-Fernández, A., Sharifrazi, N., Medina-Cantillo, J., Font-Llagunes, J.M., Torras, C., Reinkensmeyer, D.J. (2020). Evaluation of an exercise-enabling control interface for powered wheelchair users: a feasibility study with Duchenne muscular dystrophy. *Journal of NeuroEngineering and Rehabilitation*, 17, 142.
- Febrer-Nafria, M., Pallarès-López, R., Fregly, B.J., Font-Llagunes, J.M. (2020). Comparison of different optimal control formulations for generating dynamically consistent crutch walking simulations using a torque-driven model. *Mechanism and Machine Theory*, 154, 104031.
- Font-Llagunes, J.M., Lúgrís, U., Clos, D., Alonso, F.J., Cuadrado, J. (2020). Design, control, and pilot study of a lightweight and modular robotic exoskeleton for walking assistance after spinal cord injury. *Journal of Mechanisms and Robotics*, 12(3), 031008.

Patients engagement in research

Joana Claverol Torres, MSc & Begonya Nafria Escalera, MSc

In 2020, the Patients Engagement in Research group has continued working to ensure the active involvement of patients in research projects. In the context of the COVID-19 pandemic, we generated experience in this field with different projects that were included in the umbrella project KIDS Corona. We have performed also the first simulation in the context of a clinical trial to analyse how we can anticipate and improve two areas: patient experience in the screening process and receiving the medication at home,

and in the operations and logistic aspects.

MEMBERS

TECHNICIAN

Elisa Mora de Checa

SELECTED PROJECTS

- YEAH: Youngsters EngAge ment in Health science (20624) EIT Health e.V. 2020-. 2020. PI: Nafria Escalera, B.
- c4c_conect4children (Collaborative Network for European Clinical Trials For Children).(777389). European Commission. 2018-2024. PI: Claverol, J.
- Share4Rare: Social media platform dedicated to rare diseases, using collective intelligence for the generation of awareness and advanced knowledge on this large group of diseases.(780262). European Commission. 2018-2021. PI: Nafria Escalera, B
- PFE00027_PedCRIN (GA nº 731046): Paediatric Clinical Research Infrastructure Network. European Commission. 2017-. 2021. PI: Claverol, J.

Innovation in health technologies

Jaume Pérez Payarols, MD, PhD



7 PUBLICATIONS WITH IF



43% FIRST QUARTILE PUBLICATIONS

MEMBERS

STAFF RESEARCHER

Marta Ayats Soler, Carmen De la Gala Otero, Lucas Krauel Giménez-Salinas, José M. Quintillá Martínez, Josep Rubio Palau, Arian Tarbal Roquer, Arnau Valls Esteve

ASSISTANT RESEARCHER

Nuria Adell Gómez, Sofia Ferreira Quartino

MANAGEMENT

Ariadna Ballesteros Herrouzo, Paula Cañal Vega, Xavier Puñet Ortiz

SELECTED PROJECTS

- Hub d'Innovació Pediàtrica. (2018 XARDI 00011). Agaur - Agència de Gestió d'Ajuts Universitaris i de Recerca. 2020-2022. PI: Pérez Payarols, J.
- Dispositivo de CPAP (Ventilación mecánica NO INVASIVA) basado en interfaz de máscara de snorkel. Cambra Oficial de Comerç Indústria i Navegació de Barcelona. 2020-2021. PI: Valls Esteve, A.
- CAR3D: COVID ADVANCE RESPONSE USING 3D PRINTING TECH.(20875).EIT Health e.V. 2020-2020. PI: Valls Esteve, A.
- ENERGHY_Energising Global Health Innovation and Entrepreneurship. EIT Health e.V. 2020-2020. PI: Valls Esteve, A.
- Starship_Fellowship Network. (20427).EIT Health e.V. 2020-2020. PI: Valls Esteve, A.
- Families4Health (F4H), un proyecto para la formación en hábitos saludables para familias desfavorecidas. Fundación Ramon Prado i Pintó. 2020-2022. PI: Tarbal Roquer, A.

SELECTED PUBLICATIONS

- Tejo A, Lustig P, Fenollosa F, Valls A, Krauel L, Buj I. 3D printed soft surgical planning prototype for a biliary tract rhabdomyosarcoma. *J Mech Behav Biomed Mater*. 2020; 109:103844-103844. IF:3,372 (Q2).
- Pons M, Valls A, Grifols J, Farré R, Cambra FJ, Rubin BK. COVID-19 and respiratory support devices. *Paediatr Respir Rev*. 2020; 35:61-63. IF:2,716(Q1).
- Casal C, Quintillá JM, Espinosa S. Clinical simulations and safety in emergencies: Emergency Crisis Resource Management. *Emergencias*. 2020;32(2):135-137. IF:3,173 (Q1).
- Fernández J, Morales A, Gel B, Castañeda A, Salvador H, Martínez M, et al. Use of patient derived orthotopic xenograft models for real-time therapy guidance in a pediatric sporadic malignant peripheral nerve sheath tumor. *Ther Adv Med Oncol*. 2020;12. IF:6,852(Q1).

Diagnostic and therapeutic image

Josep Lluís Munuera del Cerro, MD, PhD



10
PUBLICATIONS WITH IF



40%
FIRST QUARTILE PUBLICATIONS



20%
FIRST DECILE PUBLICATIONS

MEMBERS

STAFF RESEARCHER

Marta Gómez Chiari, Emilio Inarejos Clemente, Mónica Rebollo Polo

SELECTED PROJECTS

- EXPERT3D_Transversal programme in medical image post-process,

training professionals: 3D printing to research. (19787). EIT Health e.V. 2019-2020. PI: Munuera del Cerro, JL.

- Resonancia magnética funcional e imagen de tensor de difusión en la valoración prequirúrgica del paciente pediátrico con hipoacusia prelingual neurosensorial profunda bilateral de detección en el cribado neonatal como potenciales biomarcadores de desarrollo de lenguaje oral tras la colocación de un implante coclear. Sociedad Española de Neurorradiología (SENIR). 2017-2021. PI: Rebollo, M.
- Node d'imatge computacional pediàtrica (PEDIATRIC_ICON). Departament de Salut. 2020-2022. PI: Munuera del Cerro, JL.

SELECTED PUBLICATIONS

- Pérez A, Monté G, Sanabria A, Rodríguez O, Valero S, Abdelnour C, et al. Subtle executive deficits

are associated with higher brain amyloid burden and lower cortical volume in subjective cognitive decline: the FACEHBI cohort. Sci Rep. 2020;10(1):17721-17721. IF:3,998(Q1).

- Inarejos E, Navallas M, Barber I, Suñol M, Munuera J, Torner F, et al. MRI of Rhabdomyosarcoma and Other Soft-Tissue Sarcomas in Children. Radiographics. 2020;40(3):791-814. IF:4,967(Q1).
- Marquí M, Valero S, Castilla M, Martínez J, Rodríguez O, Sanabria Á, et al. Association between retinal thickness and β -amyloid brain accumulation in individuals with subjective cognitive decline: Fundació ACE Healthy Brain Initiative. Alzheimers Res Ther. 2020;12(1):37-37. IF:6,116(Q1).
- Cañizo D, Izquierdo M, Inarejos E, Bejarano M, Suñol M, Morillo A. Intrauterine Intestinal Volvulus. J Pediatr. 2020;219:278-279. IF:3,700 (Q1).





7.5 APPLIED CLINICAL RESEARCH

Influence of the environment on child and adolescent welfare
Hospital dentistry and periodontal medicine
Paediatric ophthalmology
Research in nursing



Applied clinical research



3

TOTAL NEW PROJECTS

- 1** Competitive national projects
- 2** Competitive international projects



28

PUBLICATIONS

JCR indexed articles & reviews

- 94** Impact Factor
- 21%** Publications in first quartile
- 3,4** Mean impact factor
- 71%** Articles with main contributing authors



8

TOTAL ACTIVE PROJECTS

- 4** Competitive autonomic projects
- 2** Competitive national projects
- 2** Competitive international projects



4

RESEARCH GROUPS

Influence of the environment on child and adolescent welfare

Carles Luaces Cubells, MD, PhD



14
PUBLICATIONS WITH IF



14%
FIRST QUARTILE PUBLICATIONS

We have set up a toxicology consultation service in Emergencies, closely linked to research in this field. We have also implemented a brief intervention programme for persons with alcohol and/or substance intoxication. Furthermore, we have been involved in drawing up and publishing two sets of "10 Ways to Help Prevent Child Abuse" aimed at parents and health professionals and endorsed by the Spanish Society of Paediatric Emergencies (SEUP).

MEMBERS

STAFF RESEARCHER

Gemma Claret Teruel, Ana Isabel Curcoy Barcenilla, Lidia Martínez Sánchez, Victoria Trenchs Sainz de la Maza

POSTDOC ASSOCIATED RESEARCHERS

Andrea Aldemira Liz, Eva Gargallo Burriel, Cristina Parra Cotanda

PHD STUDENTS

Vanessa Arias Constantí, David Muñoz Santanach, Sergi Navarro Vilarrubi, Marta Simó Nebot

SELECTED PROJECTS

- STEPS_Step by step standing up a Barnahus in Catalonia: A simulation-based program to avoid secondary victimization in the assessment and treatment of child sexual abuse. European Commission. 2020-2022. PI: Simó Nebot, M.
- Estudio prospectivo observacional sobre la hidratación y nutrición en pacientes pediátricos con enfermedad avanzada. Sociedad Española de cuidados paliativos pediátricos (PEDPAL). 2019-2021. PI: Navarro Vilarrubi, S.

SELECTED PUBLICATIONS

- Goldman RD, Marneni SR, Seiler M, Brown JC, Klein EJ, Parra C, et al. Caregivers' Willingness to Accept Expedited Vaccine Research During the COVID-19 Pandemic: A Cross-sectional Survey. *Clin Ther.* 2020;42(11):2124-2133. FI:3,119 (Q2).
- Hernández S, Trenchs V, Cano I, Girona M, Luaces C. Neonates With Urinary Tract Infection: Is a Lumbar Puncture Always Indicated?. *Pediatr Infect Dis J.* 2020;39(9):849-853. FI:2,126 (Q2).
- Almeida L, Andreu V, Navarro E, Aras R, Serra M, Martínez L, et al. Murine Models for the Study of Fetal Alcohol Spectrum Disorders: An Overview. *Front Pediatr.* 2020; 8:359-359. FI:2,634 (Q1).
- Tomàs A, Almario AF, Gargallo E. Pulmonary Hydatidosis in a Moroccan Child. *Arch Bronconeumol.* 2020;56(11):742-742. FI: 4,957 (Q1).

Hospital dentistry and periodontal medicine

Alejandro Rivera Baró, MD, PhD



2
PUBLICATIONS WITH IF

In 2020, we collaborated with the Health Technology Innovation group for the application of 3D technology in the following areas: i) creating 3D resin replicas for tooth autotransplantation during dental surgical procedures; ii) 3D printing of pre-surgical neonatal orthopaedic plates in infants with cleft lip/palate; iii) devising customised orthodontic appliances for maxillary expansion with skeletal anchorage. Project Financing: "KA107 Erasmus + Staff Credit Mobility". A competitive European academic project was approved in 2020 for a teacher exchange programme between the University of Barcelona and Kilimanjaro Christian Medical

University College (KCMUCo) in Moshi, Tanzania, which will continue up to 2023.

MEMBERS

STAFF RESEARCHER

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

SELECTED PROJECTS

- SGR 2017 Hospital Dentistry & Periodontal Medicine Research Group.(2017 SGR 00453). AGAUR - Agència de Gestió d'Ajuts Universitaris i de Recerca. 2017-2021.

SELECTED PUBLICATIONS

- Munné-Miralvés C, Brunet-Llobet LL, Cahuana A, Torné S, Miranda-Rius J, Rivera-Baró A. Oral disorders in children with Prader-Willi syndrome: a case control study. *Orphanet J Rare Dis.* 2020;15(1):43. IF:3,523 (Q2).
- Miranda-Rius J, Brunet-Llobet LL, Lahor-Soler E, Mrina O, Mashala EI, Mahande MJ. Periodontal and dental conditions of a school population in a volcanic region of Tanzania with highly fluoridated community drinking water. *Afr Health Sci.* 2020; 20(1):476-487. IF: 0,690(Q4)

Paediatric ophthalmology

Joan Prat Bartomeu, MD, PhD



12
PUBLICATIONS WITH IF



33%
FIRST QUARTILE PUBLICATIONS



33%
FIRST DECILE PUBLICATIONS

The Hospital's ophthalmology service collaborates in clinical trials

with various specialties, such as oncology, neurology, rheumatology, among others, in addition to its own research on retinoblastoma, type 1 neurofibromatosis, amblyopia and uveitis.

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 Jimenez Gañan, Ana Llorca Cardeñosa, Marta Morales Ballús, Núria Planas Domènech, M^a Josep Planas Tapias, Enric Puigventós, Gemma Romeu Cerrillo, Alicia Serra Castanera, Downon Simone Suh, Begonya Yeste Mayoral

SELECTED CLINICAL TRIALS & OBSERVATIONAL STUDIES

- 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. No Comercial. [FSJD-RTB-2015]. Fundació Privada per a la Recerca i la Docència Sant Joan de Déu - FSJD; VCN Biosciences S.L. 2017-. PI: Catala, J.
- A randomized, 2-arm, open-label, phase 3 study to evaluate the efficacy, safety, and tolerability of intravitreal aflibercept versus laser photocoagulation in patients with retinopathy of prematurity (ROP). Comercial. BAY 86-5321/20090. Bayer AG. 2019-. PI: Serra Castanera, A.
- Estudio postautorización, multicéntrico, multinacional, longitudinal y observacional para el registro de la seguridad en pacientes tratados con voretigén neparvovec. Comercial. CLTW888A12401/NOV-LUX-2019-01. Novartis Farmacéutica, S.A. 2020-. PI: Català Mora, J.

SELECTED PUBLICATIONS

- Tomar AS, Finger PT, Gallie B, Mallipatna A, Kivelä TT, Zhang C et al. A Multicenter, International Collaborative Study for AJCC-Staging of Retinoblastoma: Metastasis-Associated Mortality.

Ophthalmology. 2020;127(12):1719-1732. IF:8,470. (Q1).

- Tomar AS, Finger PT, Gallie B, Mallipatna A, Kivelä TT, Zhang C et al. A Multicenter, International Collaborative Study for AJCC-Staging of Retinoblastoma: Treatment Success and Globe Salvage. Ophthalmology. 2020; 127(12):1733-1746. IF:8,470. (Q1).
- Global Retinoblastoma Study G, Fabian ID, Abdallah E, Abdullahi SU, Abdulqader RA, Adamou S et al. Global Retinoblastoma Presentation and Analysis by National Income Level. JAMA Oncol. 2020;6(5):685-695. IF:24,799. (Q1).
- Toulis V, Cortés V, Castro M, Sallum JF, Catala J, Villanueva C, et al. Increasing the Genetic Diagnosis Yield in Inherited Retinal Dystrophies: Assigning Pathogenicity to Novel Non-canonical Splice Site Variants. Genes (Basel). 2020;11(4): 378. IF:3,759. (Q2).

Research in nursing

Laura Lahuerta Valls, RN, PhD



1 PUBLICATIONS WITH IF

2020 has been the year of the pandemic. Much of our research has been dedicated to finding out how this situation has affected us and to providing answers so that we can move forward. With the synergies of the different research groups, we carried out a study, the CoWorkers Corona, to elucidate the perception of professionals of the measures implemented by their institutions during the pandemic. Research has still continued into all other phenomena that affect the lives of our patients and their families.

MEMBERS

STAFF RESEARCHER

Concepción Agustín Mata, Ikram Alloui, Silvia Ciprés Roig, Maribel

Ferrer Osona, Montserrat Gutiérrez Juárez, Jordi Mitjà

POSTDOC ASSOCIATED RESEARCHERS

M^a Dolors Navarro Rubio

PHD STUDENTS

Marta Fajardo Samper, Gemma Pérez Acevedo, Ares Sentenach Carbo

COLLABORATOR RESEARCHER

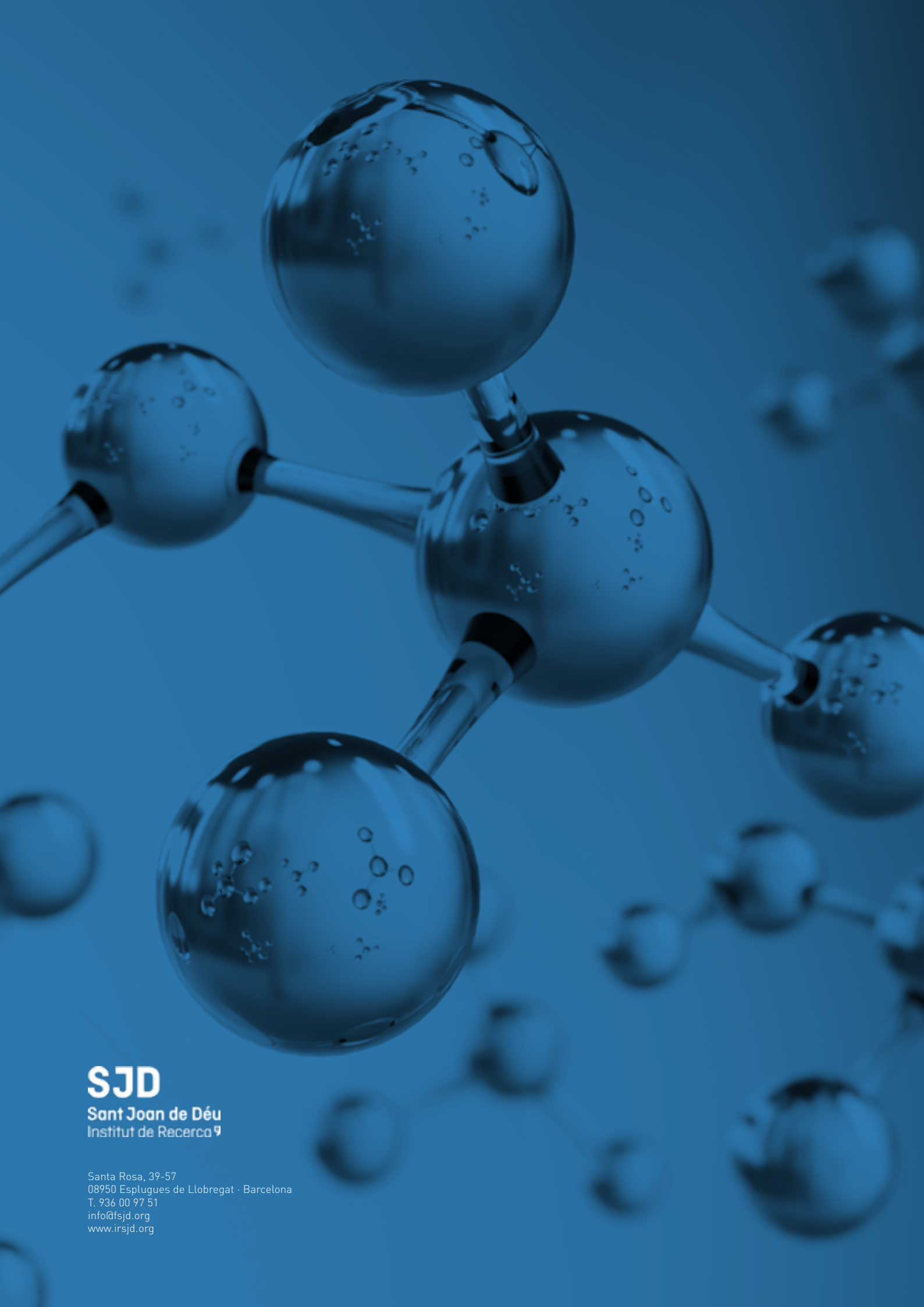
Carmen Jerez Molina

SELECTED PROJECTS

- PREDIGIT_Prescribing Digital Therapeutics. (20561). EIT Health e.V. 2020-2020. PI: Navarro Rubio, MD.
- Anàlisi de l'esperitualitat, religiositat o filosofia de vida dels pares i mares d'infants amb necessitats pal·liatives a Catalunya. (2018RELIG00008). Agaur - Agència de Gestió d'Ajuts Universitaris i de Recerca. 2019-2021. PI: Navarro Rubio, MD.
- Eficacia y seguridad de los ácidos grasos hiperoxigenados en la microcirculación de la púrpura fulminante en pacientes pediátricos con sepsis. (PR-242/17). Fundació Infermeria i Societat. 2018-2021. PI: Pérez Acevedo, G

SELECTED PUBLICATIONS

- González-De Paz L, Gálvez-Henández P, Navarro-Rubio MD. Development and psychometric study of a simple instrument to assess patient communication and comprehension skills: the AsCKs. Fam Pract. 2020;37(4):568-573. FI: 2,0389(Q2).



SJD

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