



SANT PAU
Campus Salut
Barcelona



Institut
de Recerca
Sant Pau

Sant Pau Research Institute

SCIENTIFIC REPORT



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Foreword

01



Jordi Surrallés

Scientific Director IR Sant Pau

Every research institute aspires to achieve scientific excellence, but few can claim to have reshaped global understanding of a disease. In 2024, IR Sant Pau achieved exactly that.

One of our most notable milestones was the identification of a **new genetic form of Alzheimer's disease**, led by our Neurobiology of Dementias research group. The discovery, published in *Nature Medicine*, received significant international media coverage and placed IR Sant Pau at the forefront of the conversation on the genetic foundations of neurodegeneration. It is rare for science to capture worldwide attention — and even rarer when it stems from such a fundamental insight into human health.

Science That Speaks for Itself

This breakthrough reflects the broader momentum of our research output. In 2024, IR Sant Pau researchers published **1,058 articles and reviews**. Of these, **30% appeared in the top 10%** of journals by impact factor (D1), and **67% were in the first quartile (Q1)**. International collaboration was featured in **48% of our publications**, while **60% were published in open-access journals**, reflecting our commitment to transparency and global scientific reach. Notably, **44% of publications were led by women**, underscoring our progress toward gender equity in science.

We managed 374 active research projects and secured **€15.75 million in competitive funding** — €12.17 million from national calls and €3.58 million from international sources. This includes 10 active NIH grants and a new Horizon Europe project on mental disorders and neurodegenerative diseases, coordinated by IR Sant Pau researcher Dr. Olivia Belbin. Additionally, we rank third among hospital research institutes in Spain in terms of both the number and volume of FIS-ISCI funded projects. These results mark a historical record for IR Sant Pau, reflecting an unprecedented level of competitive funding. They demonstrate the continued trust placed in our teams and the strength of our research strategy, both nationally and internationally.

Translating Knowledge into Care

IR Sant Pau is more than a research institute — it is a bridge between science and patient care. In 2024, we supported **705 active clinical trials**, including **58 independent studies**, and launched **154 new trials**. Our innovation efforts remained strong, with **more than 130 patents across 25 active patent families, 16 transferred products** or intellectual property assets, and over **€2.1 million in accumulated revenue** from licensing and technology transfer. These achievements highlight our ability to translate discoveries from the bench to the bedside.

Nurturing Talent

Training the next generation of scientists remains a core priority. In 2024, **71 doctoral theses** were successfully defended at IR Sant Pau, reflecting the vitality of our academic environment and our strong ties with universities. At the senior level, seven new researchers — five of whom are women — were appointed as group leaders.

Connected to Society

Our science also reaches the public. In 2024, we carried out **101 outreach activities**, engaging diverse audiences through schools, cultural centers, and open-door events. IR Sant Pau was featured in **93 news mentions**, and reached over **5 million people** through media and digital platforms, reinforcing our role as a trusted voice in biomedical research.

Looking Ahead

We successfully completed the 2020–2024 Sustainability Plan with two consecutive years of balanced finances, and concluded the 2019–2024 Strategic Plan. Construction of the new Advanced Therapy Facility also began in 2024. We close the year proud of our achievements and ambitious about the road ahead, as outlined in our new 2025–2030 Strategic Plan.

Thank you to all who make this possible — researchers, clinicians, staff, collaborators, and supporters — for helping build a research institute with purpose.



Presentation

02

Presentation



2.1 ABOUT US

The Sant Pau Research Institute (hereinafter IR Sant Pau) is a Research Centre of Catalonia (CERCA centre). It has been accredited as a Biomedical Research Institute by the Carlos III Health Institute (ISCIII) since 2011.

Located at the Sant Pau Health Campus, the IR Sant Pau's mission is to improve both populations' health and life quality through the production and dissemination of scientific knowledge, healthcare innovation, and the application of these advances to clinical practice and healthcare policy. It is one of the most active research centres in Catalonia, particularly for translational research and the application of discoveries to clinical practice.

The creation of the IR Sant Pau marked a qualitative leap in reinforcing biomedical and translational research, helping to bridge the gap between basic research and clinical Practice. Our research areas are aligned with advanced therapies, precision medicine, genomic medicine, and rare diseases. We also address infectious diseases, diagnostic techniques, biomarkers, and healthcare improvements. Highlight the institution's commitment to promoting research with a gender perspective through the creation of a specific cross-cutting program on women's health and gender.

2.2 WHO WE ARE



Institut
de Recerca
Sant Pau



BANC DE SANG
I TEIXITS



Fundació
Privada Hospital
de la Santa Creu i
Sant Pau

eap | **sardenya**
Centre Universitari



Hospital de
la Santa Creu i
Sant Pau



Cochrane
Iberoamèrica

UAB
Universitat Autònoma
de Barcelona

C S B Consorci Sanitari
de Barcelona

+B Agència
de Salut Pública



Fundació Puigvert

BOARD OF TRUSTEES – INSTITUT DE RECERCA SANT PAU

President

Xavier Prats Monné

Appointed by the Fundació de Gestió Sanitària Hospital de la Santa Creu i Sant Pau

Adrià Comella Carnicé

José M^a Gerra Ramos

Appointed by the Fundació Privada Hospital de la Santa Creu i Sant Pau

Jordi Sierra Gil

Josep M^a Forcada i Casanovas

Appointed by the Generalitat de Catalunya

Carmen Pérez Torrecillas (Departament de Salut,
Generalitat de Catalunya)

Joan Gómez Pallarès (Departament de Recerca i
Universitats, Generalitat de Catalunya)

Appointed by the Universitat Autònoma de Barcelona (UAB)

Josep Antón Montien Dacosta

Manuel Armengol i Carrasco

Appointed by the Institut de Recerca Sant Pau, upon proposal from the Fundació Privada Hospital de la Santa Creu i Sant Pau.

Antoni Esteve i Cruella

Jaume Kulisevsky Bojarski

Secretary (Not trustee)

Joaquim Jornet i Porta

IR SANT PAU INTERNAL SCIENTIFIC COMMITTEE

President

Jordi Surrallés (IR Sant Pau Scientific Director)

Vice Presidents

Robert Belvís (CEim President)

Innovation, Quality, and Training

Miriam Ors (Deputy Scientific Director. Innovation,
Training, and Quality)

Members by Direct Designation of the IR Sant Pau's Director

Elisa Llurba (Women & Perinatal Health Research)

Noemí Rotllan (Ramon y Cajal Researcher)

Gemma Mas (Nursing Care Research)

Silvia Mateu (Puigvert Foundation)

Members from Each IR Sant Pau's Research Areas

Lina Badimon (Cardiovascular Diseases Area) (until
October 2024)

Gemma Vilahur (Cardiovascular Diseases Area)
(From November 2024)

José M Guerra (Cardiovascular Diseases Area)

José Manuel Soria (Cardiovascular Diseases Area)

Javier Briones (Oncohematological Diseases Area)

Ramón Mangues (Oncohematologic Diseases Area)

Agustí Barnadas (Oncohematological Diseases Area)

Juan Fortea (Neurological Diseases, Neuroscience
& Mental Health Area)

Maria J. Portella (Neurological Diseases,
Neuroscience & Mental Health Area)

Israel Fernández (Neurological Diseases,
Neuroscience & Mental Health Area)

Pablo Alonso Coello (Epidemiology, Public Health
& Primary Care Area)

Maica Rodríguez (Epidemiology, Public Health
& Primary Care Area)

Carles Brotons (Epidemiology, Public Health
& Primary Care Area)

Didac Mauricio (Translational Medicine Area)

Sílvia Vidal (Translational Medicine Area)

Roser Torra (Translational Medicine Area)

Secretary of the Internal Scientific Committee

Miriam Ors Giera

IR SANT PAU EXTERNAL SCIENTIFIC COMMITTEE

Chair

Ángel Maria Carracedo Álvarez

Instituto de Medicina Legal
Facultade de Medicina e Odontoloxía,
Santiago de Compostela

Secretary

Jordi Surrallés

IR Sant Pau Scientific Director

Members

José Palacios

Jefe de Servicio de Anatomía Patológica
Hospital Ramón y Cajal, Madrid

Mercedes Robledo

Hereditary Endocrine Cancer Group, Group Leader
Human Cancer Genetics Program, CNIO, Madrid

Judith García

Barcelona Institute for Global Health – Campus
MAR ISGlobal, Barcelona

Magdalena Sanz

Associate Professor, Department of Obstetrics
and Gynecology
Fetal Surgery and Intervention, Baylor College of
Medicine, Houston-Texas

Manuel Arellano

Plataforma de Organizaciones de Pacientes

Gloria Gonzalez

Directora del Programa de Terapia Génica y
Regulación de la Expresión Génica CIMA-Navarra

IR SANT PAU STEERING COMMITTEE

President

Adrià Comella

Fundació Gestió Sanitària Hospital
de la Santa Creu i Sant Pau

Secretary

Miriam Ors

IR Sant Pau Deputy Scientific Director

Members

Jordi Bachs

Fundació Privada Hospital
de la Santa Creu i Sant Pau

Assumpta Malgosa

Universitat Autònoma de Barcelona

Lluís Gausa

Puigvert Foundation

Joaquim Delgado

Banc de Sang i Teixits

Xavier Bonfill

Iberoamerican Cochrane Centre

Jaume Sellarés

Barcelona-Sardenya Primary Health Centre

Carme Borrell

Public Health Agency of Barcelona

Jordi Surrallés

IR Sant Pau Director Fundació Institut de Recerca
Hospital Santa Creu i Sant Pau

MANAGEMENT TEAM

Scientific Director

Jordi Surrallés

Managing Director

Jaume Bacardit

Deputy Scientific Director

Miriam Ors

Director of Legal Advisory

Sílvia Ribas Martínez

Communications Director

Laura Díaz-Roig

Assistant to the Management Team

Eva Sanfeliu

We are



Accredited by



Certified by



We are members of



2.3 ETHICS COMMITTEES

2.3.1 ETHICS COMMITTEE FOR INVESTIGATION WITH MEDICINAL PRODUCTS (CEIm)

President

Robert Belvís Nieto

Physician. Specialist in Medical Neurology

Vice-President

Estela Moreno Martínez

Specialist in Hospital Pharmacy

Secretary

Milagros Alonso Martínez (until June 2024)

Specialist in Clinical Pharmacology

Claudia Erika Delgado Espinoza (From June 2024)

Physician. Specialist in Clinical Pharmacology

Members

Juan Ángel Aibar Durán

Physician. Specialist in Neurosurgery

Núria Alberich Margalef

Lawyer and DPD

Cristina Arqueros Nuñez

Physician. Specialist in Oncology

Maria Rosa Ballester Verneda

Pharmacist

Ana Carolina Caballero González (from June 2024)**Claudia Erika Delgado Espinoza** (until June 2024)

Physician. Specialist in Clinical Pharmacology

Beatriz Fernández-Montells Rama

Biomedical Engineer

Cristina Galisteo Sáez (From June 2024)**Ignasi Gich Saladich**

Physician

Iria González Álvarez (From June 2024)**Marta Lestón Vázquez**

Primary care pharmacist

Laura Lozano Polo (From June 2024)**Laia Matas Pericas**

Physician. Specialist in Internal Medicine.

Indalecio Morán Chorro

Physician. Specialist in Intensive Care Medicine

Silvana Novelli Canales (until June 2024)

Physician. Specialist in Haematology

Caridad Pontes García (from June 2024)**María Jesús Portella Moll**

Psychologist

Marta Pujol Benaiges

Patient's representative. Non sanitary

Maria Teresa Ricart Basagaña

Nurse

Miguel Alberto Rizzi (until June 2024)

Bordigoni Physician. Specialist in Internal Medicine

Santiago Sánchez Cabús

Physician. Specialist in Digestive Surgery

Jordi Torralbas Ortega

Nurse

Cristina Trilla Solà (from June 2024)**Lucía Vallez Valero**

Pharmacist

Miguel Àngel Viciano Rodríguez (until June 2024)

User Attention Unit

**MISSION, FUNCTIONS,
AND AREAS OF ACTION**

The Ethics Committee for Research with Medicinal Products (CEIm) is an independent body, as mandated by the relevant legal provisions, that ensures the protection of the rights, safety, and well-being of clinical trial subjects. The CEIm provides public assurance of that protection by reviewing and approving clinical trial protocols and the methods used to collect and document the informed consent of subjects, as well as ensuring the suitability of investigators, facilities, and materials.

**2.3.2 ETHICS COMMITTEE
FOR ANIMAL RESEARCH (CEEA)****President****Laura Casaní****Secretary****Sergi Florit****Vocals****Lorena Alba****Sandra Camino****Jose M. Guerra****Esther Peña****Cristina Rodríguez****Elisabet Sánchez**

The Ethics Committee for Animal Research (CEEA) of the Sant Pau Research Institute is an independent body that, according to the current legislation on laboratory research animals, serves as an expert and advisory committee in the area of animal experimentation, with members drawn from various disciplines – basic research, veterinary medicine, animal welfare and human medicine. The CEEA must approve any animal research conducted in the Animal Facilities of the Institute. The working guiding principles of this Committee are good science and good animal welfare, based on the 3R's Principles: replacement, refinement, and reduction.

The functions of the Animal Experimentation Ethics Committee are:

- Issue a favourable report on the initiation of experimentation projects after verifying the suitability of the procedures for the study objectives, the possibility of obtaining valid results with the minimum number of animals, the consideration of alternative methods to the use of animals, and the appropriateness of the selected species.
- Ensure that animals do not suffer unnecessarily and that they receive, when necessary, analgesia, anesthesia, or other methods to eliminate pain, suffering, or distress.
- Supervise the use of humane euthanasia methods.
- Ensure that the personnel involved in the procedure are qualified to perform the assigned tasks.
- Review previously approved procedures or suspend ongoing procedures that do not comply with the requirements established by the protocol.

2.4 OTHER COMMITTEES

2.4.1 IR SANT PAU BIOSAFETY COMMITTEE

President

Inés Pérez Renart,

Coordinator of Occupational Risk Prevention and Biosafety Management

Secretary

Duties assumed by the presidency

Vocals

Laura Casaní Arazo

Coordinator of the Animal Experimental Service

Javier Crespo Asensio

Director of the Infrastructure and Services Coordination Unit at the Research Institute

Elisenda Miró Cardona,

Consultant, Microbiology Service

Rafael Padrós i Selma

Coordinator of the Joint Prevention Service

Eva Pujol Carventus

Technical Coordinator, Joint Prevention Service

Estefania Segalés Aguilar

Coordinator of the Cellular Culture Service

Marta Soler i Castany

Coordinator of the Flow Cytometry Platform and workers representative

Alba Torija Recasens

Coordinator of the Biobank Service

2.4.2 RESEARCH INTEGRITY COMMITTEE

President

Josep Santaló Pedro

Ombudsperson

Secretary

Maria Rosa Ballester Verneda

Ombuds Officer

Members

Àlex Bayés Puig

Sílvia Mateu Escudero

Gerard Urrútia Cuchí

Gemma Vilahur García



Highlights

03

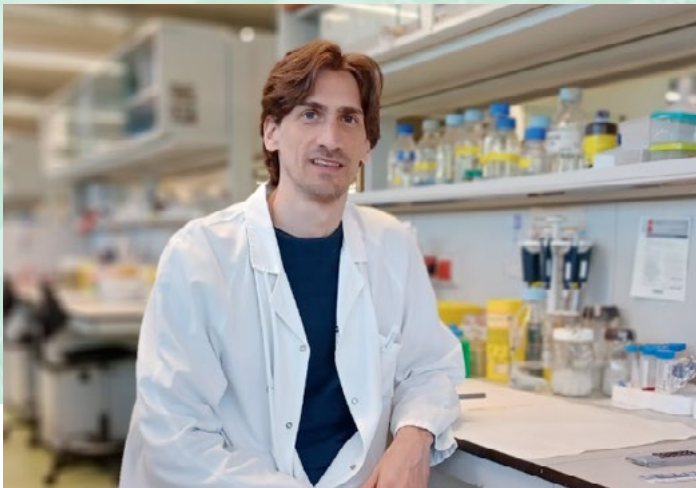
Highlighted News of 2024



Sant Pau Initiates the Second Clinical Trial on the Long-Term Effects of Deep Brain Stimulation (DBS) in Patients with Ultra-Resistant Schizophrenia to Treatment

10/01/2024

- Scientific Paper (1)
- Scientific Paper (2)
- News Article



Blood Test Diagnoses Alzheimer's with Over 90% Accuracy

23/01/2024

- Scientific Paper
- News Article



Deciphering Brain Connections between Amyotrophic Lateral Sclerosis (ALS) and Frontotemporal Dementia

30/01/2024

- Scientific Paper
- News Article



Deferred Prescription of Antibiotics: An Efficient and Useful Strategy to Reduce the Problem of Bacterial Resistance

01/02/2024

- Scientific Paper (1)
- Scientific Paper (2)
- News Article



Differences Found in Gut Microbiota between Men and Women with Ischemic Stroke

14/02/2024

- Scientific Paper
- News Article



Magnetic Resonance Surveillance Reduces Mortality in Women at High Risk of BRCA1 Breast Cancer as an Alternative to Preventive Mastectomy

01/03/2024

- Scientific Paper
- News Article



Psychosis in Parkinson's Disease Is Not Only Associated with the Use of Dopaminergic Medications, but it is also Part of the Disease Process Itself

04/04/2024

- Scientific Paper
- News Article



A Pioneering Study by Sant Pau and the Barça Innovation Hub Describes, for the First Time, How High-Intensity Sport Affects Genetic Expression

11/04/2024

- Scientific Paper
- News Article



Suicidal Behaviors Increased by over 50% in Catalonia after the COVID-19 Pandemic

18/04/2024

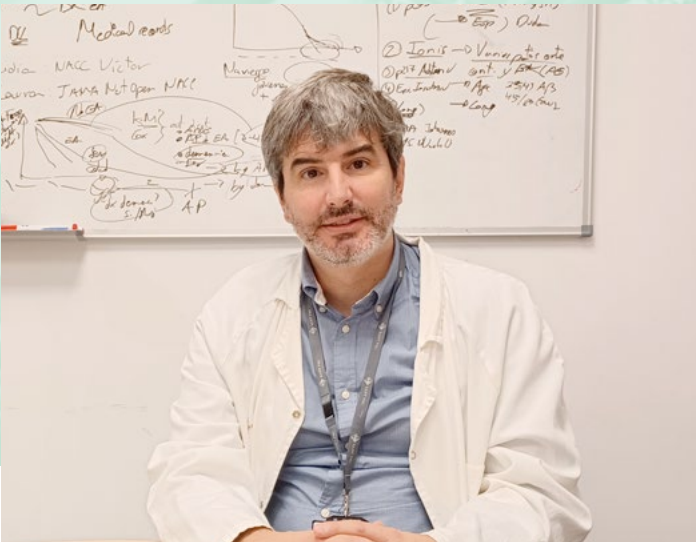
- Scientific Paper
- News Article



A New Genetic Cause of Immunodeficiency Has Been Discovered

26/04/2024

- Scientific Paper
- News Article



Researchers at Sant Pau Identify a New Genetic Form of Alzheimer's Disease

06/05/2024

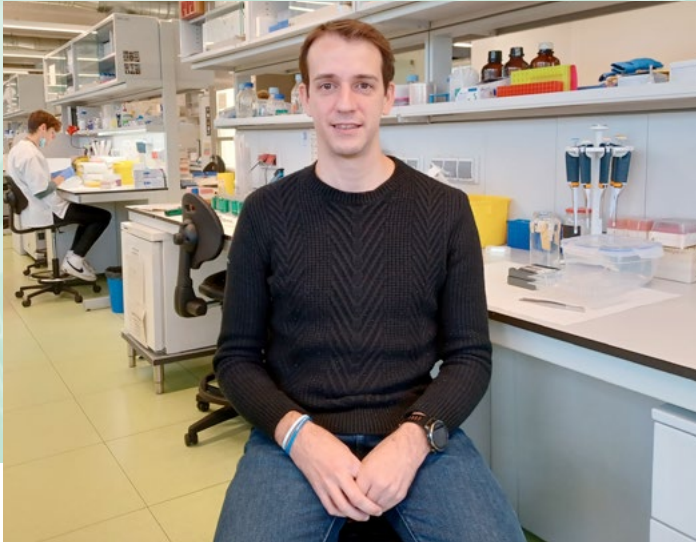
- Scientific Paper
- News Article



Sant Pau Lays the Cornerstone of the New Advanced Therapies Unit, Reaffirming its Global Leadership in this Field."

17/06/2024

- News Article



Identified the First Biomarker that Allows a Differential Diagnosis of Frontotemporal Dementia

02/07/2024

Scientific Paper

News Article



Sant Pau Researchers Discover a New Gene that Causes ALS

04/07/2024

Scientific Paper

News Article



Sant Pau and the Tibidabo Amusement Park Join Forces to Promote Scientific Vocations and Scientific Dissemination with a Gender Perspective

11/07/2024

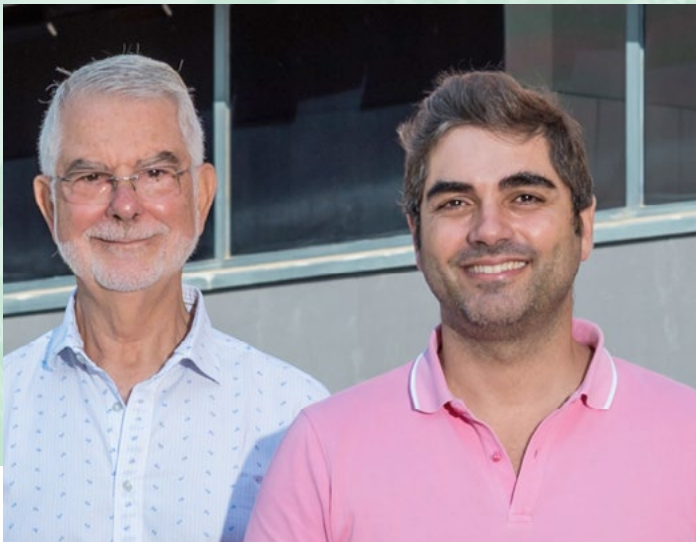
News Article



Sant Pau Creates a New Research Line in Ewing's Sarcoma Thanks to Donations Collected by Marc Riera i Castellà's Family

25/07/2024

News Article



A Study by Sant Pau Reveals That Emotional State and Stress During the COVID-19 Lockdown Affected Women's Menstrual Cycle Patterns

02/09/2024

Scientific Paper

News Article



New Chromosomal Regions Associated with Cerebrovascular Event Risk Identified

25/10/2024

Scientific Paper

News Article



IR Sant Pau and Fundació Joan Petit Launch Project to Enhance Quality of Life for Children with Cancer Through Pre-Transplant Exercise

28/11/2024

[News Article](#)



Sant Pau Research Institute Participates in Groundbreaking Gene Therapy Study for Fanconi Anaemia

04/12/2024

[Scientific Paper](#)

[News Article](#)

Top Scientific Articles

According to Impact Factor over 15

- **Haematopoietic gene therapy of non-conditioned patients with Fanconi anaemia-A: results from open-label phase 1/2 (FANCOLEN-1) and long-term clinical trials.** Río P, Zubicaray J, Navarro S, Gálvez E, Sánchez R, Nicoletti E, Sebastian E, Rothe M, Pujol R, Bogliolo M, John P, Bastone AL, Schambach A, Wang W, Schmidt M, Larcher L, Segovia JC, Yáñez RM, Alberquilla O, Diez B, Fernández M, García L, Ramírez M, Galy A, Lefrere F, Cavazzana M, Leblanc T, de Andoin NG, López R, Catala A, Barquinero J, Rodríguez S, Rao G, Surrallés J, Soulier J, Díaz C, Schwartz JD, Sevilla J, Bueren JA, **FANCOLEN I. LANCET.** 2024; 404(10471)DOI:10.1016/S0140-6736(24)01880-4. PMID:39642902. IF:98,400 (Q1/1D).
- **Efficacy and safety of delgocitinib cream in adults with moderate to severe chronic hand eczema (DELTA 1 and DELTA 2): results from multicentre, randomised, controlled, trials.** Bissonnette R, Warren RB, Pinter A, Agner T, Gooderham M, Schuttelaar M, Crépey MN, Stingeni L, Serra E, Baranowski K, Korn S, Kurvits M, Plohberger U, Vest NS, Schliemann S, Trial I. **LANCET.** 2024; 404(10451) DOI:10.1016/S0140-6736(24)01027-4. PMID:39033766. IF:98,400 (Q1/1D).
- **Vimseltinib versus placebo for tenosynovial giant cell tumour (MOTION): a multicentre, randomised, doubleblind, placebo-controlled, phase 3 trial.** Gelderblom H, Bhadri V, Stacchiotti S, Bauer S, Wagner AJ, van de Sande M, Bernthal NM, Pousa AL, Razak AA, Italiano A, Ahmed M, Le A, Tinoco G, Boye K, Martín J, Palmerini E, Tafuto S, Pratap S, Powers BC, Reichardt P, Herráez AC, Rutkowski P, Tait C, Zarins F, Harrow B, Sharma MG, Ruiz R, Sherman ML, Blay JY, Tap WD, **MOTION I. LANCET.** 2024; 403(10445)DOI:10.1016/S0140-6736(24)00885-7. PMID:38843860. IF:98,400 (Q1/1D).
- **Clinical value of guideline recommended molecular targets and genome targeted cancer therapies: cross sectional study.** Tibau A, Hwang TJ, Avorn J, Kesselheim AS. **BMJ-British Medical Journal.** 2024; 386:e079126. DOI:10.1136/bmj-2023-079126. PMID:39164034. IF:93,600 (Q1/1D).
- **ROBVALU: a tool for assessing risk of bias in studies about people's values, utilities, or importance of health outcomes.** Karam SG, Zhang Y, Pardo H, Siebert U, Koopman L, Noyes J, Tarride JE, Stevens AL, Welch V, Saz Z, Ens B, Devji T, Xie F, Hazlewood G, Mbuagbaw L, Alonso P, Brozek JL, Schünemann HJ. **BMJ-British Medical Journal.** 2024; 385:e079890. DOI:10.1136/bmj-2024-079890. PMID:38866410. IF:93,600 (Q1/1D).
- **Guillain-Barre syndrome.** Leonhard SE, Papri N, Querol L, Rinaldi S, Shahrizaila N, Jacobs BC. **Nature Reviews Disease Primers.** 2024; 10(1):97. DOI:10.1038/s41572-024-00580-4. PMID:39702645. IF:76,900 (Q1/1D).
- **Extracorporeal Blood Purification and Acute Kidney Injury in Cardiac Surgery.** Pérez X, Ulsamer A, Cámara M, Sbraga F, Boza E, Moret E, Plata E, Santiago D, Boronat P, Gumucio V, Peñafiel J, Camacho M, Betbesé A, Forni L, Campos A, Sabater J, **SIRAKI02 GR. JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.** 2024; 332(17)DOI:10.1001/jama.2024.20630. PMID:39382234. IF:63,100 (Q1/1D).
- **Plasma extracellular vesicle tau and TDP-43 as diagnostic biomarkers in FTD and ALS.** Chatterjee M, Özdemiş S, Fritz C, Möbius W, Kleineidam L, Mandelkow E, Biernat J, Dogdu C, Peters O, Cosma NC, Wang X, Schneider

- LS, Priller J, Spruth E, Kühn AA, Krause P, Klockgether T, Vogt IR, Kimmich O, Spottke A, Hoffmann DC, Fließbach K, Miklitz C, McCormick C, Weydt P, Falkenburger B, Brandt M, Guenther R, Dinter E, Wiltfang J, Hansen N, Bähr M, Zerr I, Flöel A, Nestor PJ, Düzel E, Glanz W, Incesoy E, Bürger K, Janowitz D, Perneckzy R, Rauchmann BS, Hopfner F, Wagemann O, Levin J, Teipel S, Kilimann I, Goerss D, Prudlo J, Gasser T, Brockmann K, Mengel D, Zimmermann M, Synofzik M, Wilke C, Selma J, Turon J, Santos MA, Alcolea D, Rubio S, Fortea J, Carbayo A, Lleó A, Rojas R, Illán I, Wagner M, Frommann I, Roeske S, Bertram L, Heneka MT, Brosseron F, Ramirez A, Schmid M, Beschorner R, Halle A, Herms J, Neumann M, Barthélemy NR, Bateman RJ, Rizzu P, Heutink P, Dols O, Höglinger G, Hermann A, Schneider A. *NATURE MEDICINE*. 2024; 30(6)DOI:10.1038/s41591-024-02937-4. PMID:38890531. IF:58,700 (Q1/1D).
- **APOE4 homozygosity represents a distinct genetic form of Alzheimer's disease.** Fortea J, Pegueroles J, Alcolea D, Belbin O, Dols O, Vaqué L, Videla L, Gispert JD, Suárez M, Johnson SC, Sperling R, Bejanin A, Lleó A, Montal V. *NATURE MEDICINE*. 2024; DOI:10.1038/s41591-024-02931-w. PMID:38710950. IF:58,700 (Q1/1D).
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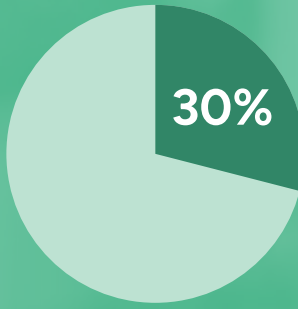
Facts and Figures

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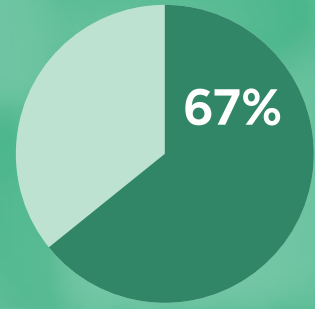
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4.1 PUBLICATIONS

Articles & Reviews with JCR
1,058

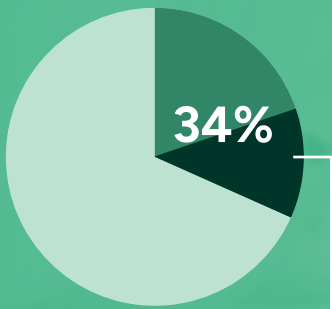


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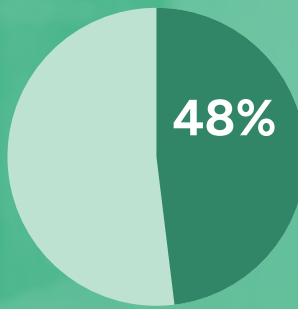


Q1

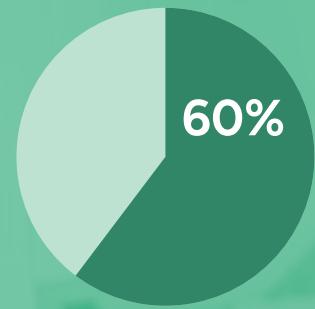
Articles & Reviews
1,196



Led by IR Sant Pau



International
Collaboration



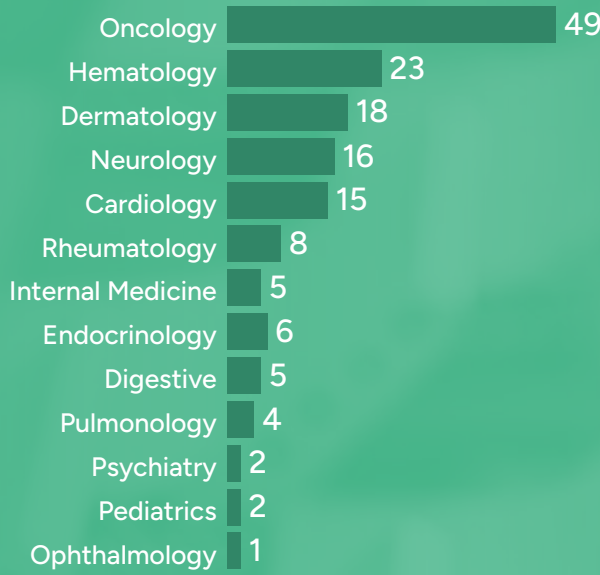
Open Access

44%

Led by Women

4.2 CLINICAL TRIALS

BY FIELD



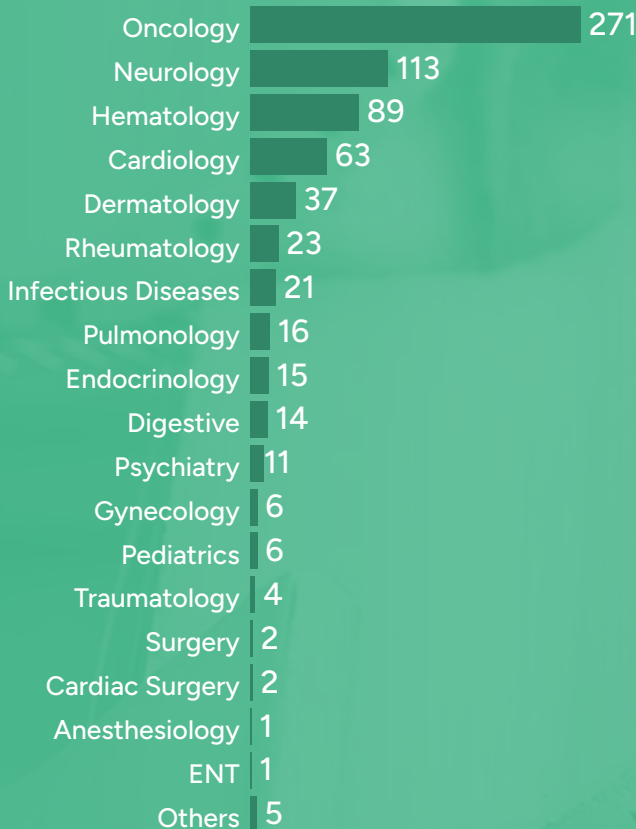
Clinical Trials Initiated in 2024

154

6
Independent
Clinical Trials

148
Industry led
Clinical Trials

BY FIELD



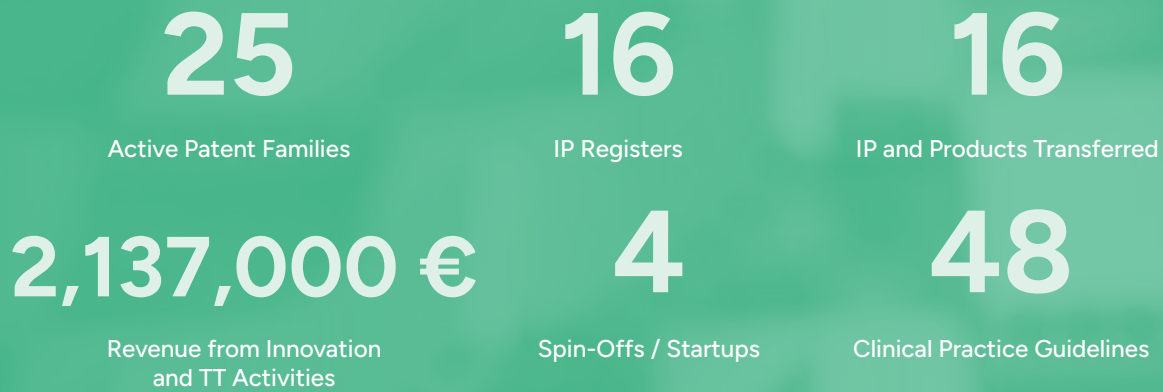
Active Clinical Trials in 2024

705

58
Independent
Clinical Trials

647
Industry Led
Clinical Trials

4.3 INNOVATION AND TECHNOLOGY TRANSFER

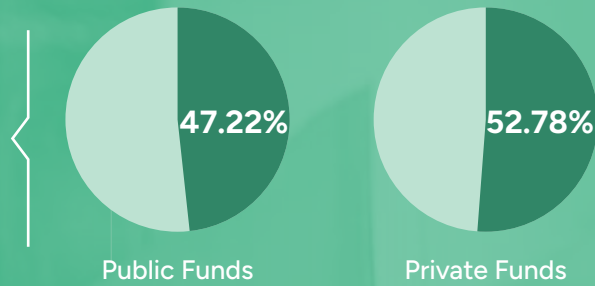


4.4 EDUCATION

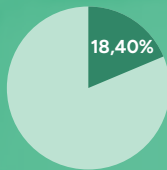


4.5 FUNDING

Income
30.35 m

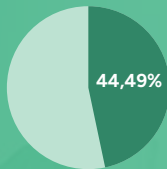


CORE FUNDING



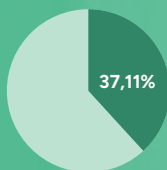
Generalitat de Catalunya	15.56%	4,722,519
Fundació Privada Hospital Santa Creu i Sant Pau	2.84%	861,513

NON COMPETITIVE FUNDING



Clinical Trials	25.89%	7,858,633
Teaching	4.58%	1,390,416
Others	14.02%	4,255,049

COMPETITIVE FUNDING



National and International	37.11%	11,265,882
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TOTAL 30,354,013

4.6 COMPETITIVE PROJECTS

New Projects

110

Active Projects

374

15.75 m

Total Amount
Granted

12.17 m

National Grants

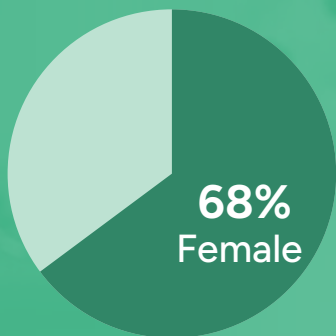
3.58 m

International Grants

4.7 PEOPLE

Total People

1,632



Research Staff

1,498



67%
Female

Group Leaders

72

Female 44%

Researchers (R2, R3)

945

Female 65%

First Stage Researchers

217

Female 67%

First Stage Researchers

264

Female 82%

Administration and
Scientific Support Staff

134



81%
Female

Management staff

110

Female 80%

Core Facilities staff

24

Female 83%

4.8 SCIENCE AND SOCIETY

93

News

38

Press Release

3,152

Print and Online Media Appearances

5,104 m

Impacted Audience

PUBLIC ENGAGEMENT AND OUTREACH ACTIVITIES DAILY ACTIVITY

101

Activities

36

Schools

23

Secondary Schools

23

Community Centres

42

Others

4,743

Participants

1,057

School Audience

3,686

General Audience

EVENTS AND COLLABORATIONS

+25,000

Impacted Audience

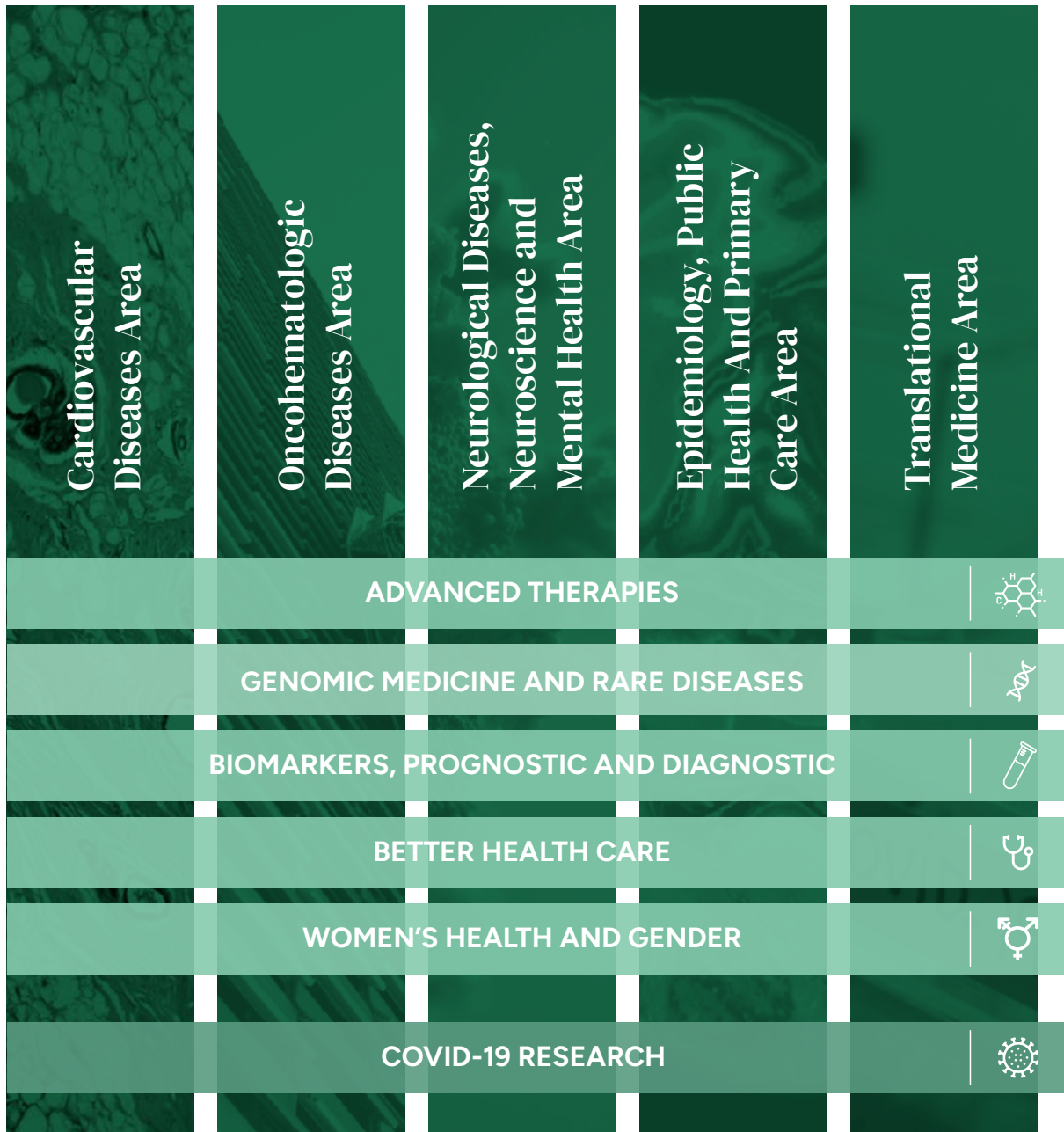
- Tibidabo
- 48 hores open house
- La marató Visits
- Festival Cruïlla
- Sónar + D
- Festa de la ciència
- Dia de la dona i la nena a la ciència
- Entre Dones



Our Research

05

5.1 Strategic Scientific Research Areas



TRANSVERSAL PROGRAMMES

TEMPORARY TRANSVERSAL PROGRAMME

ASSOCIATED GROUPS



5.1.1 Cardiovascular Diseases Area

Lina Badimón (until November 2024)

Gemma Vilahur (from November 2024)

Area Director

The incorporation of new technologies that facilitate molecular profiling and gene regulation has led to innovative research into heart and other cardiovascular diseases, including arrhythmias, aortic aneurysms, vascular diseases, and thrombosis. The great diversity of groups in this area provides varied perspectives for ongoing research, whether in developing or testing the effectiveness of new biomarkers (as in the investigation of the metabolic and genetic bases of cardiovascular diseases) or therapeutic applications in the short term. Before being translated to humans, many advances in this area can be validated in animal models, including small and large mammals, such as pigs.

RESEARCH GROUPS

Clinical and Translational Cardiology

Guerra Ramos, José María

Thrombosis and Haemostasis

Souto Andrés, Joan Carles

Cardiovascular Biochemistry

Sánchez Quesada, José Luis

Molecular Pathology and Therapeutic of Ischaemic and Atherothrombotic Diseases

Badimon Maestro, Lina (until November 2024)

Vilahur Garcia, Gemma (from November 2024)

Biomarkers for Cardiovascular Disease

Padró Capmany, Teresa

Regulation of Cardiac Rhythm and Contraction

Hove-Madsen, Leif

Lipids and Cardiovascular Pathology

Llorente Cortés, Concepción Vicenta

Genomics of Complex Diseases

Soria Fernández, José Manuel

Regulatory Mechanisms of Cardiovascular Remodelling

Rodríguez Sinovas, Cristina

Pathophysiology of lipid-related disease

Escola Gil, Joan Carles

Cell Therapy and Angiogenesis in Ischemic Diseases (new group from November 2024)

Arderiu Marquès, Gemma

Clinical and Translational Cardiology

Group leader

Guerra Ramos, José María (FGS)

Researchers

Acebes Pinilla, César (FGS)
Alonso Martín, Concepción (FGS)
Altadill Balsells, Francesc (FGS)
Amorós Figueras, Gerard (CIBER)
Arzamendi Aizpurua, Dabit (FGS)
Asmarats Serra, Lluís (FGS)
Barros Membrilla, Antonio José (FGS)
Bertolí Inglés, Ester (FGS)
Bonet Basiero, Ana (FGS)
Bos Real, Lúdia (FGS)
Bragagnini, Walter (FGS)
Calandrelli, Matías Enrique (FGS)
Campos García, Bieito (FGS)
Campreciós Crespo, Marta (FGS)
Crehuet Llonch, Andrea (FGS)
De Antonio Ferrer, Marta (FGS)
Descalzo Buey, Martín Luis (FGS)
Doñate Rodríguez, María Teresa (FGS)
Duran Cambra, Alberto (FGS)
Fernández Martínez, Juan (FGS)
Fernández Peregrina, Estefania (FGS)
García-Moll Marimon, Francesc Xavier (FGS)
Gual Santandreu, Miquel (FGS)
Jiménez Kockar, Marcelo Fabián (FGS)
Jiménez Sabado, Verónica (CIBER)
Leta Petracca, Rubén (FGS)
Li Li, Chi Hion (FGS)
López López, Laura (FGS)
Maestro Benedicto, Alba (FGS)
Méndez Zurita, Francisco Javier (FGS)
Menduiña Gallego, Irene (FGS)
Millán Álvarez, Xavier (FGS)
Mirabet Pérez, Sonia (FGS)
Moreno Weidmann, Zoraida (FGS)
Moustafa, Abdel Hakim (FGS)
Padilla López, Mireia (FGS)
Peña Ortega, Pedro (FGS)
Pomares Varo, Antonia (FGS)
Pujadas Olano, Sandra (FGS)
Rodríguez Font, Enrique (FGS)
Rodríguez Pérez, Álvaro (IR)
Rodríguez Sotelo, Laura (FGS)
Ruiz López, Adrián (FGS)
Salido Iniesta, Mario (FGS)
Sionis, Alessandro (FGS)
Vila Perales, Montserrat (FGS)
Vilades Medel, David (FGS)
Viñolas Prat, Xavier (FGS)
Zegri Reiriz, Isabel (FGS)

Research technicians

Angli Ferrándiz, Laia (IR)
Cabanillas Rubió, Ana Belén (FGS)
Herraez Nieto, Silvia (IR)
Jiménez Xarrié, Elena (IR)
Peña Del Río, Mari Cruz (FGS)



DESCRIPTION

The Clinical and Translational Cardiology research group is a multidisciplinary research group focused on cardiovascular research. Our areas of work include basic and clinical electrophysiology, heart failure and heart transplantation, ischemic heart disease, valvular heart disease, diseases of the aorta, cardiac imaging, cardiac modelling, 3D printing, bioengineering and innovation in healthcare management. The research group has access to all patient and clinical facilities at Hospital de la Santa Creu i Sant Pau, as well as the research facilities of the research institute. The group maintains multiple research collaborations at both the national and international levels.

MAIN LINES OF RESEARCH

- Basic and clinical electrophysiology. (Guerra Ramos, José María).
- Biomarkers of cardiovascular disease. (Mirabet Pérez, Sonia; Sionis, Alessandro).
- Heart failure and heart transplantation. (Mirabet Pérez, Sonia).
- Ischemic heart disease. (Arzamendi Aizpurua, Dabit; Sionis, Alessandro).
- Valvular heart disease. (Li Li, Chi Hion).
- Diseases of the Aorta. (Barros Membrilla, Antonio José).
- Cardiac Imaging. (Vilades Medel, David).
- Cardiovascular genetics. (Guerra Ramos, José María).

- Cardiac modelling and 3D Printing. (Moustafa, Abdel Hakim).
- Bioengineering applied to cardiovascular disease. (Amorós Figueras, Gerard).
- Innovation in health care management. (Viñolas Prat, Xavier).

SCIENTIFIC CHALLENGES

Electrophysiology:

Mechanisms of tachycardia-induced cardiomyopathy.

Mechanisms of lesion formation in Pulsed Field Ablation. New applications.

Use of bioimpedance for tissue characterisation in arrhythmia procedures.

Heart failure:

Mechanisms of vascular disease in heart transplant patients.

New treatments for the management of heart failure patients.

Biomarkers of disease prognosis in heart failure patients.

Markers for early detection of cardiac graft rejection in transplanted patients.

Palliative care programs for patients with advanced heart failure.

Ischemic heart disease:

Multidisciplinary treatment of cardiac sudden death.

Tako-Tsubo syndrome.

Cardiogenic shock.

Valvular heart disease:

Implement new percutaneous techniques for the treatment of mitral and tricuspid valve regurgitation and degenerative aortic stenosis.

Implement novel devices for treating prosthetic valve leaks.

Cardiac imaging:

Implement new imaging software analysis to detect structural abnormalities of the myocardium (fibrosis, necrosis).

ACTIVE & AWARDED GRANTS

- Guerra Ramos, José María. Estudio traslacional para caracterizar las alteraciones estructurales y moleculares subyacentes a la reversibilidad de la miocardiopatía inducida por taquicardia. PI20/01702. Instituto de Salud Carlos III (ISCIII). Duration: 2021-2025. 187.550,00 €
- Guerra Ramos, José María. Optimización del tratamiento con amiodarona de la fibrilación auricular persistente mediante una estrategia terapéutica personalizada. Ensayo clínico aleatorizado. PI23/ 01768. Instituto de Salud Carlos III. Duration: 2024-2026. 152.500,00 €
- Guerra Ramos, José María. Electroporation in cardiac tissue: from safe and efficient cardiac arrhythmias ablation to new therapeutic indications. MARATO 202320-30 Fundació La Marató de TV3. Duration: 2024-2027. 199.995,00 €
- Guerra Ramos, José María. Centro de Investigación Biomédica en Red de Enfermedades Cardiovasculares (CIBERCV). CB16/11/00276. Ministerio de Ciencia e Innovación. ISCIII.
- Guerra Ramos, José María. Cardiologia Sant Pau. Grup de Recerca Reconegut 2021 SGR 00834. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2022-2025.
- Guerra Ramos, José María. Efectos de la contaminación atmosférica sobre el desarrollo de arritmias, e impacto de estrategias poblacionales destinadas a disminuir la exposición a contaminantes. PR(AG)15/2022. Ajuntament de Barcelona. Duration: 2023-2024. 15.340,00 €
- Mirabet Pérez, Sonia. Genómica de la insuficiencia cardíaca de diferente etiología en 3600 casos y 36.000 controles. Proyecto REDAMCOR. PI24/01108. Instituto de Salud Carlos III. Duration: 2025-2027. 27.500,00 €
- Viñolas Prat, Xavier. TIQUE - 965356 - InnovaTive care services, enhanced with technology, to deliver quick responses for individuals with advanced heart failure and complex care needs through integrated care. Horizon 2020. European Commission. Duration: 2020 - 2026. 4.548.678,70 € (FGS)

DOCTORAL THESES DEFENDED

- Armario Bel, Xavier. New Devices and Global Trends in Transcatheter Aortic Valve Implantation. 29/11/2024. Universitat Autònoma de Barcelona. Supervisors: Arzamendi Aizpurua, Dabit; Mylotte, Darren. <https://hdl.handle.net/10803/693046>
- Fernández Peregrina, Estefanía. Estudio para la caracterización de pacientes con beneficio óptimo en el tratamiento de la insuficiencia mitral mediante el dispositivo MitraClip. 28/02/2024. Universitat Autònoma de Barcelona. Supervisors: Arzamendi Aizpurua, Dabit; Cinca Cusculloa, Joan. <https://hdl.handle.net/10803/691598>
- Li Li, Chi Hion. Estudio de Predictores en REparación MItral (PREMIT): Impacto de la valoración ecocardiográfica en la predicción de resultados agudos y a medio plazo en la reparación mitral transcatóter con técnica borde-borde. 07/05/2024. Universitat Autònoma de Barcelona. Supervisors: Arzamendi Aizpurua, Dabit; Carreras Costa, Francesc; Cinca Cusculloa, Juan Maria. <https://hdl.handle.net/10803/691859>
- Aceituno C, Revuelta D, Jiménez V, Ginel A, Molina CE, Hove L. Impact of Overnight Storage of Human Atrial Myocytes on Intracellular Calcium Homeostasis and Electrophysiological Utility. *Biomolecules*. 2024; 14(11):1415. DOI:10.3390/biom14111415. PMID:39595591. IF:4,800 (Q1/3D). Document type: Article.
- Aguado J, Brigham R, Baron AK, Gómez PD, Houzeaux G, Guerra JM, Carreras F, Filgueiras D, Vázquez M, Iazzo PA, Iles TL, Butakoff C. HPC Framework for Performing in Silico Trials Using a 3D Virtual Human Cardiac Population as Means to Assess Drug-Induced Arrhythmic Risk. *Methods In Molecular Biology*. 2024; 2716. DOI:10.1007/978-1-0716-3449-3_14. PMID:37702946. Document type: Article.
- Almendro M, López L, Uribarri A, Vedia O, Blanco E, López MD, Rivas AP, Fernández C, Sionis A, Martín AC, Vazirani R, Corbí M, Salamanca J, Pérez A, Martínez M, Becerra VM, Aritza D, López J, Guillén M, Lluch C, García JC, Núñez IJ, RETAKO I. Recovery of Left Ventricular Function and Long-Term Outcomes in Patients With Takotsubo. *JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY*. 2024; 84(13). DOI:10.1016/j.jacc.2024.05.075. PMID:39293882. IF:21,700 (Q1/1D). Document type: Article.

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- M, Estévez R, Poon K, Götberg M, Jeger RV, Ince H, Packer E, Angelillis M, Nombela L, Guo YQ, Savontaus M, Al AM, Parasca CA, Kliger C, Roy D, Molnár L, Silva M, White J, Yamamoto M, Carrilho P, Toggweiler S, Voudris V, Ohno Y, Rodrigues I, Parma R, Ojeda S, Toutouzas K, Regueiro A, Grygier M, AlMerri K, Cruz I, Fridrich V, Hernández JMD, Noble S, Kala P, Asmarats L, Kurt IH, Bosmans J, Erglis M, Casserly I, Iskandarani D, Bhindi R, Kefer J, Yin WH, Rosseel L, Kim HS, O'Connor S, Hellig F, Szejfman M, Mendiz O, Pineda AM, Seth A, Pllaha E, Brito FS, Bajoras V, Balghith MA, Lee M, Eid G, Vandeloo B, Vaz VD, Alasnag M, Ussia GP, Tay E, Mayol J, Gunasekaran S, Sardella G, Buddhari W, Kao HL, Dager A, Tzikas A, Gudmundsdottir IJ, Edris A, Jaikel L, Arias EA, Al M, Ertuerk M, Conde C, Boljevic D, Guadagnoli AF, Hermlin T, ElGuindy AM, Lima MD, Santos LD, Pérez L, Maluenda G, Akyüz AR, Alhaddad IA, Amin H, CY, Al Nooryani AA, Vaca C, Albistur J, Nguyen QN, Arzamendi D, Grube E, Modine T, Tchétché D, Hayashida K, Latib A, Makkar RR, Piazza N, Sondergaard L, McEvoy JW, Mylotte D. Impact of the COVID-19 Pandemic on Global TAVR Activity The COVID-TAVI Study. *JACC-Cardiovascular Interventions*. 2024; 17(3). DOI:10.1016/j.jcin.2023.10.041. PMID:38180419. IF:11,700 (Q1/1D). Document type: Article.
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 - Bastante T, Arzamendi D, Martín J, Álvarez A, Representacion de la A. Spanish cardiac catheterization and coronary intervention Registry. 33rd official report of the Interventional Cardiology Association of the Spanish Society of Cardiology (1990-2023). *REVISTA ESPANOLA DE CARDIOLOGIA*. 2024; 77(11). DOI:10.1016/j.rec.2024.07.015. PMID:39332624. Document type: Article.
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Thrombosis and Haemostasis

Group leader

Souto Andrés, Joan Carles (FGS)

Researchers

Carrasco Expósito, Marina (FGS)

Mateo Arranz, José (FGS)

Millón Caño, Juan Antonio (FGS)

Moret Puig, Carla (FGS)

Vilalta Setó, Noèlia (FGS)

Research technicians

Acosta Isaac, Francisco René (FGS)

Bercianos Repes, Elaia (IR)

Llobet Lorente, Maria Dolors (FGS)

Mojal García, Sergio (IR)

Romero Román, Lúdia (FGS)

Tirado García, Isabel (FGS)



DESCRIPTION

Our group is dedicated to the clinical and basic research of haemostasis diseases, including both thromboembolic and hemorrhagic conditions, as well as to the clinical development of antithrombotic and antihemorrhagic therapies. We apply modern epidemiological AI methods to study complex diseases, such as venous thrombosis. The research group team consists of six physicians, four technicians, and one statistician. Five of them hold a doctorate in medicine (3), biology (1), and pharmacy (1). As a clinical team, our primary dedication, both in clinics and the laboratory, is to the diagnosis and treatment of patients.

MAIN LINES OF RESEARCH

- Development of predictive mathematical models of the individual thrombosis risk, by means of IA. (Souto Andrés, J. Carles)
- Translational research on new anticoagulants, anti IIa, Xa and XI, and a self-management model of VKA drugs. (Souto Andrés, J. Carles)
- Translational research on new anti-hemophilic drugs. (Mateo Arranz, José)

SCIENTIFIC CHALLENGES

- Use of Machine Learning models (Artificial Intelligence techniques) applied in the study of the venous thrombosis risk, at the individual level, by the combined analysis of plasma, cellular, genomic and epigenomic biomarkers.
- Improvement of clinical outcomes in anticoagulated patients with different

anticoagulants (VKA or DOACs) by minimising in real life the incidence of severe complications.

- Use of high-throughput genomic techniques in the diagnosis of hemostasis diseases (NGS, exome sequencing, genome sequencing).

ACTIVE & AWARDED GRANTS

- Souto Andrés, J. Carles. Perfil individual de Riesgo de Enfermedad Tromboembólica Venosa (RETROVE 4). PI21/01772. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 205.700,00 €
- Souto Andrés, J. Carles. Modelo de Aplicación Clínica de los AntiCoagulantes Orales de acción Directa MACACOD Register. Daiichi-Sankyo España, SA. Duration: 2019-2024. Non-competitive. 818.000,00 €-

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Cardiovascular Biochemistry

Group leader

Sánchez Quesada, José Luis (IR)

Researchers

Benítez González, Sònia (IR)

Freixa Martín, Júlia (FGS)

García Osuna, Álvaro (FGS)

Grau Agramunt, Margarita (FGS)

Puig Grifol, Núria (IR)

Research technicians

Farré Riera, Javier (IR)

Porcel Jabalera, Inmaculada (FGS)



DESCRIPTION

The group is made up of personnel from the Research Institute of the Hospital de Sant Pau (IR-HSP) and the Biochemistry Department of the Hospital de la Santa Creu i Sant Pau (HSCSP). The group's primary lines of research focus on the study of molecular mechanisms underlying the development of cardiovascular diseases, specifically those resulting from alterations in lipoprotein metabolism or inflammatory processes. Our objective is to transfer the knowledge obtained from the lines of translational research to clinical application in a Clinical Biochemistry Laboratory of a University Hospital.

MAIN LINES OF RESEARCH

- Mechanisms leading to lipoprotein aggregation and cholesterol accumulation in the arterial wall. (Benítez González, Sonia).
- Mimetic peptides derived from apoJ as therapeutic tools. (Sánchez Quesada, José Luis).
- Inflammatory, apoptotic and lipid accumulation-related pathways induced by modified LDL in monocytes, endothelial cells and cardiomyocytes, in the context of diabetes, obesity, heart failure and ischemic stroke. (Benítez González, Sonia; Sánchez Quesada, José Luis).
- Analysis of the secretome of epicardial adipose tissue from cardiac surgery patients with diabetes or obesity. (Benítez González, Sonia; Sánchez Quesada, José Luis).

- Analysis of apolipoprotein J (apoJ) as a marker of CVR. (Sánchez Quesada, José Luis).
- Assessment of new biomarkers of acute and chronic cardiovascular disease. (García Osuna, Álvaro).
- Biomarkers of epicardial fat accumulation. (Benítez González, Sonia; Sánchez Quesada, José Luis).
- Development of algorithms for ruling-out acute coronary disease. (García Osuna, Álvaro).
- Development of methods for point-of-care biomarker measurement. 8 García Osuna, Álvaro).
- Vulnerability markers to assess carotid plaque inflammation in ischemic stroke. (Benítez González, Sonia).
- Benítez González, Sonia. Lipoproteínas modificadas y marcadores inflamatoRíos asociados con vulnerabilidad de placa carotídea e ictus isquémico. PI19/00421. Instituto de Salud Carlos III (ISCIII). Duration: 2020-2024. 130.680,00 €
- Puig Grifol, Nuria. Contractes Predoctorals PFIS 2020. FI20/00252. Instituto de Salud Carlos III (ISCIII). Duration: 2021-2024. 82.400,00 €
- Sánchez Quesada, José Luis. Tejido adiposo epicárdico en obesidad y diabetes. Mecanismos moleculares de riesgo cardiovascular y búsqueda de nuevos biomarcadores. PI20/00334. Instituto de Salud Carlos III (ISCIII). Duration: 2021-2025. 147.620,00 €
- Sánchez Quesada, José Luis. Papel de las glicofomas de clusterina/apolipoproteína J en la dislipemia diabética. PI23/00888. Instituto de Salud Carlos III (ISCIII). Duration: 2024-2026. 127.500,00€
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SCIENTIFIC CHALLENGES

- Determine the intracellular mechanisms involved in the inflammatory response induced by LDL(-) and the components of the particle that entail atherogenicity.
- Analyse the therapeutic potential of mimetic peptides derived from apoJ to delay the development of atherosclerosis in animal models.
- Find new markers of cardiovascular risk in diseases such as diabetes, obesity, HIV or cardiac failure.
- Strengthen international collaborations to set up future applications for International funding and participation in multidisciplinary international research projects.

ACTIVE & AWARDED GRANTS

- Almendra Pegueros, Rafael Antonio. Contractes predoctorals PFIS 2021. FI21/00125. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024.
- Benítez González, Sonia. LRP1 como mediador de los efectos proinflamatoRíos de la LDL modificada electronegativa en la arteriosclerosis. Sociedad Española de Arteriosclerosis (SEA). Duration: 2021-2024. 15.000,00 €

SCIENTIFIC PRODUCTION

- Benítez S, Puig N, Camps P, Sánchez JL. Atherogenic circulating lipoproteins in ischemic stroke. *Frontiers in Cardiovascular Medicine*. 2024; 11:1470364. DOI:10.3389/fcvm.2024.1470364. PMID:39713216. IF:2,800 (Q2/4D). Document type: Review.
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- Sardà H, Colom C, Benítez S, Carreras G, Amigó J, Miñambres I, Viladés D, Blanco F, Sánchez JL, Pérez A. PCSK9 plasma concentration is associated with epicardial adipose tissue volume and metabolic control in patients with type 1 diabetes. *Scientific Reports*. 2024; 14(1):7195. DOI:10.1038/s41598-024-57708-5. PMID:38532033. IF:3,800 (Q1/2D). Document type: Article.

Molecular Pathology and Therapeutic of Ischaemic and Atherothrombotic Diseases

Group leader

Vilahur García, Gemma (IR)
Badimón Maestro, Lina (IR) (until 08/11/2024)

Researchers

Alcover Rullán, Sebastián (IR)
Arderiu Marqués, Gemma (IR)
Borrell Pagès, Maria (IR)
Civit Urgell, Anna (IR)
Girón Martínez, Gabriela Obdulia (IR)
López Yerena, Anallely (IR)
Luquero Gómez, Aureli (IR)
Muñoz García, Natàlia (IR)
Otero Rodríguez, Sergi (IR)
Ramos Regalado, Lisaidy (IR)
Serrano López, Alejandro (IR)
Simón Ramón, Clara (IR)
Suades Soler, Rosa (CIBER)

Research technicians

Cabré Fernández, Paula (IR)
Canovas Noe, María Ángeles (IR)
Catalina García, Pablo (IR)
Escate Chávez, Oscar Rafael (IR)
García García, Olaya (IR)
Gerbolés Freixas, Esther (IR)
Grau Ruiz, Gerard (IR)
Huertas Segarra, Sonia (IR)
López Bernal, Sergio (IR)
Morató Simó, Sílvia (IR)
Pescador Romero, Mónica (IR)
Pimentel Mayordomo, Noelia (IR)



DESCRIPTION

Our research group is dedicated to investigating the mechanisms underlying myocardial damage in the setting of infarction. We aim to identify novel targets and develop innovative cardioprotective strategies to prevent adverse cardiac remodelling and heart failure. Additionally, we explore the regulation of angiogenesis, the role of lipid metabolism and inflammation in ischemic artery disease, and the pathophysiological functions of LRP family proteins within the heart-brain axis. Ultimately, we identify biomarkers with diagnostic and prognostic value for use in personalised medicine.

MAIN LINES OF RESEARCH

- Detection of new targets and study of novel therapeutic approaches to prevent ischemic damage and lessen post-infarction left ventricular remodelling and heart failure. (Vilahur García, Gemma).
- The role of lipid metabolism and inflammation in atherosclerotic coronary artery disease. (Vilahur García, Gemma).
- Identification of biomarkers with diagnostic and prognostic potential for personalized medicine. (Vilahur García, Gemma; Suades Soler, Rosa).
- Vascular impact of ischemia and regulation of angiogenesis within the framework of cardiovascular diseases. (Arderiu Marqués, Gemma).
- Pathophysiological role of LRP family proteins in the heart-brain axis. (Borrell Pagès, Maria).

ACTIVE & AWARDED GRANTS

- Arderiu Marqués, Gemma. Nueva estrategia terapéutica mediante vesículas extracelulares derivadas de células madre derivadas de tejido adiposo como medicina regenerativa en enfermedades vasculares periféricas. PI23/O1136. Instituto de Salud Carlos III. Duration: 2024-2026. 152.500,00 €
- Arderiu Marqués, Gemma. Repairing early endothelial cell damage to promote cardiovascular health: interplay between endothelial cells and monocytes as a primary strategy in ischemic diseases. MARATO 202303-30. Fundacio La Marato de TV3. Duration: 2024-2027. 149.785,00 €
- Arderiu Marqués, Gemma. Repairing early endothelial cell damage to promote cardiovascular health: interplay between endothelial cells and monocytes as a primary strategy in ischemic diseases. MARATO 202303-30. Fundacio La Marato de TV3. Duration: 2024-2027. 149.785,00 €
- Badimon Maestro, Lina. Prevención del deterioro cognitivo de origen vascular (VCI) mediante la activación del tráfico de colesterol y la reducción de la oxidación celular. AC20/00054. Instituto de Salud Carlos III (ISCIII). Duration: 2021-2023. 174.978,10 €
- Badimon Maestro, Lina. CARDIATEAM: Cardiomyopathy in type 2 diabetes mellitus. CARDIATEAM AMD-821508-11. H2020-JTI-IMI2-2017-13-two-stage. Unión Europea. Duration: 2019-2026. 50.000,00 €
- Badimon Maestro, Lina. Medicina de Precisión en Hipercolesterolemia Familiar y enfermedad cardiovascular prematura mediante la integración de tecnologías ómicas y de imagen (MedPreHF). PMP22/00108. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2025. 1.469.930,00 €
- Badimon Maestro, Lina. Nuevas terapias avanzadas para mejorar la disfunción microvascular y regenerar tejido isquémico. PID2019-107160RB-I00. Ministerio de Ciencia e Innovación (MICINN). Duration: 2020-2024. 484.000,00 €
- Badimon Maestro, Lina. Patologia Molecular i Terapeutica de les Malalties Aterotrombòtiques. INV-1 00048. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). Duration: 2022-2024. 66.217,84 €
- Badimon Maestro, Lina. Patologia Molecular i Terapèutica de les Malalties Isquèmiques i Aterotrombòtiques. 2021 SGR 01006. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). Duration: 2022-2024. 60.000 €.
- Badimon Maestro, Lina. RICORS TERAV. RD21/0017/0013. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 90.000,90 €
- Badimon Maestro, Lina. TRANSBIOLINE: Translational Safety Biomarker Pipeline (TransBioLine): Enabling development and implementation of novel safety biomarkers in clinical trials and diagnosis of disease. TRANSBIOLINE 821283. H2020-JTI-IMI2-2017-13-two-stage. Unión Europea. Duration: 2019-2024. 182.600,00 €
- Borrell Pagès, Maria. Cerebral lipid homeostasis in ischemic stroke: role of lipoprotein receptors and pharmacological interventions. MARATO 202304-10. Fundacio La Marato de TV3. Duration: 2024-2027. 197.937,50 €
- Borrell Pagès, Maria. LDLR family and PCSK9's role in cerebral lipid homeostasis in ischemic stroke. PI23/00589. Instituto de Salud Carlos III. Duration: 2024-2026. 140.000,00 €
- Ramos Regalado, Lisaidy. Mejora de la función cardíaca mediante el conocimiento del eje metabólico triglicéridos/HDL: impacto en las células de la médula ósea y el corazón. 2024 FI-1 00172. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). Duration: 2024-2027. 72.552,41 €
- Vilahur García, Gemma. Avances en el diagnóstico y pronóstico de Aterosclerosis en pacientes diabéticos. PLEC2021-007664. Ministerio de Ciencia e Innovación (MICINN). Duration: 2021-2024. 271.697,00 €
- Vilahur García, Gemma. Mejora de la función cardíaca mediante el conocimiento del eje metabólico triglicéridos/HDL: Impacto en las células de la médula ósea y el corazón.

- PID2021-128891OB-I00. Ministerio de Ciencia e Innovación (MICINN). Duration: 2022-2025. 302.500,00 €
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 - Vilahur García, Gemma. Nueva aproximación terapéutica para prevenir el desarrollo de cardiomiopatía diabética a través de la inhibición funcional de la HMGCoA-reductasa y la activación de la vía de señalización de la AMPK. SEC 2020. SEC/FEC-INV-TRL 20/01.Sociedad Española de Cardiología (SEC). Duration: 2020-2024. 15.000,00 €
 - Vilahur García, Gemma. Targeted nanomedicine to reverse fibrosis in ischemic cardiomyopathies. PCI2023-143431. Ministerio de Ciencia e Innovación (MICINN). Duration: 2023-2026. 157.300,00 €
 - Vilahur García, Gemma. Nanotechnology-based therapeutics to protect the infarcted heart: deciphering the role of innovative HDL bioengineered nanoconstructs. MARATO 202337-30. Fundacio La Marato de TV3. Duration: 2024-2027. 187.248,75 €

DOCTORAL THESES DEFENDED

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- Muñoz García, Natalia. Lipoproteínas, inflamación y antioxidantes dietéticos en la enfermedad cardiovascular. 02/12/2024. Universitat de Barcelona. Supervisors: Badimon Maestro, Lina; Padró Capmany, M.Teresa; Sabaté Tenas, Manuel. <http://hdl.handle.net/10803/693876>.

SCIENTIFIC PRODUCTION

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 - López A, Muñoz N, Villaplana VD, Padró T, Badimon L. Effect of Moderate Beer Intake on the Lipid Composition of Human Red Blood Cell Membranes. *Nutrients*. 2024; 16(20):3541. DOI:10.3390/nu16203541. PMID:39458535. IF:4,800 (Q1/2D). Document type: Article.
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Biomarkers for Cardiovascular Disease

Group leader

Padró Capmany, Teresa (IR)

Researchers

Cabré Fernández, Paula (IR)

De Santisteban Villaplana, Victoria Marta (IR)

Research technicians

Escate Chávez, Oscar Rafael (IR)

García Arguinzonis, Maísa Inés (IR)

Gómez-Pardo Arellano, Montserrat (IR)



DESCRIPTION

The group's research focuses on identifying and characterising molecular and cellular biomarkers of atherosclerosis and ischaemic heart disease, with applications in prevention, diagnosis, risk stratification, and treatment. Research covers various cardiovascular diseases at both subclinical and clinical stages, including studies on tissue remodelling, inflammation, lipoproteins, cardiovascular risk factors, and disease prevention. Biomarkers and therapeutic targets are investigated using animal models, clinical samples (from both patients and healthy subjects), and mechanistic cell culture studies.

MAIN LINES OF RESEARCH

- Biomarkers and molecular targets of vascular remodelling in atherosclerosis progression, thrombosis, and subsequent ischemic events (Proteomic-based studies). (Padró Capmany, Teresa; García Arguinzonis, Maisa Inés).
- Functional epigenomics (plasma and total blood non-coding RNAs): Novel biomarkers in cardiovascular diseases and special groups at high CVD risk (Familial Hypercholesterolemia, morbid obesity). (Padró Capmany, Teresa; Escate Chávez, Oscar Rafael).
- Lipidome and metabolome regulation in cardiovascular disease prevention. (Padró Capmany, Teresa).
- Functional epigenomics of myocardial infarction and post-infarction outcomes (heart failure, cardiogenic shock). (Padró Capmany, Teresa; Escate Chávez, Oscar Rafael).

- Extracellular matrix and cardiac remodelling post- myocardial infarction. (Padró Capmany, Teresa).
- Circulating extracellular vesicles (microvesicles /exosomes) in subclinical and clinical cardiovascular diseases. (Padró Capmany, Teresa).

SCIENTIFIC CHALLENGES

- Apply omics and in silico approaches to identify and characterise circulating biomarkers of cardiovascular disease in biological fluids (serum, plasma, urine) and those carried by lipoproteins or microvesicles. This includes proteomics using liquid chromatography, 2D electrophoresis, and mass spectrometry; lipidomics via UPLC-mass spectrometry and NMR; and transcriptomics (mRNA, non-coding RNA) through arrays, next-generation sequencing, and real-time PCR.
- Generate new knowledge on circulating non-coding RNAs and extracellular vesicles (microvesicles/exosomes), which transport non-coding RNAs (e.g., miRNAs, lncRNAs) and proteins derived from parental cells. Their capacity to reflect defined pathophysiological states makes them promising biomarker candidates for disease monitoring and evolution.
- The use of omic data for more accurate stratification of patients regarding disease progression and outcome.
- To identify and characterise novel extracellular matrix components involved in tissue remodelling of atherosclerotic vessels and cardiac tissue following myocardial infarction, to advance the pathophysiological understanding of the disease and uncover biomarkers predictive of disease progression.
- Characterisation at the cellular level of molecular and functional mechanisms (gene and protein expression regulation, epigenetic regulation, subcellular distribution of proteins, paracrine effects, cell functions) for selected biomarkers/molecular targets in cardiovascular pathology and myocardial remodelling.

ACTIVE & AWARDED GRANTS

- Padró Capmany, Teresa. Identificación en la matriz extracelular post-infarto de moléculas estimulantes de regeneración cardiaca (MATRI-REG). PI22/01930. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2025. 171.820,00 €
- Padró Capmany, Teresa. TRANSBIOLINE: Translational Safety Biomarker Pipeline (TransBioLine): Enabling development and implementation of novel safety biomarkers in clinical trials and diagnosis of disease. TRANSBIOLINE 821283. Unión Europea. Duration: 2019-2025. 182.600,00 €
- Padró Capmany, Teresa. Impact of lipoprotein molecular and functional composition and inflammation on ACVD clinical event presentation in familial hypercholesterolemia (LipoComp). 202329-10. Fundació La Marató de TV3. Duration: 2024-2027. 199.997,50 €
- Padró Capmany, Teresa. Insuficiencia cardiaca con función de eyección preservada en la obesidad: Estudio transcripcional y epigenético para determinar biomarcadores no invasivos de disfunción ventricular en obesidad” (Estudio TRANSEPIGEN). SEC 2024-3. Sociedad Española de Cardiología (SEC). Duration: 2024-2028. 15.000,00 €
- Padró Capmany, Teresa. Medicina de Precisión en Hipercolesterolemia Familiar y enfermedad cardiovascular prematura mediante la integración de tecnologías ómicas y de imagen (MedPreHF). PMP22/00108. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2025. 1.469.930,00 €

DOCTORAL THESES DEFENDED

- Muñoz García, Natalia. Lipoproteínas, inflamación y antioxidantes dietéticos en la enfermedad cardiovascular. 02/12/2024. Universitat de Barcelona. Supervisors: Badimon Maestro, Lina; Padró Capmany, M.Teresa; Sabaté Tenas, Manuel. <http://hdl.handle.net/10803/693876>.

SCIENTIFIC PRODUCTION

- Arnold N, Blaum C, Gossling A, Brunner FJ, Bay B, Ferrario MM, Brambilla P, Cesana G, Leoni V, Palmieri L, Donfrancesco C, Padró T, Andersson J, Jousilahti P, Ojeda F, Zeller T, Linneberg A, Söderberg S, Iacoviello L, Gianfagna F, Sans S, Veronesi G, Thorand B, Peters A, Tunstall H, Kee F, Salomaa V, Schnabel RB, Kuulasmaa K, Blankenberg S, Koenig W, Waldeyer C, BiomarCaRE I. C-reactive protein modifies lipoprotein(a)-related risk for coronary heart disease: the BiomarCaRE project. *EUROPEAN HEART JOURNAL*. 2024; 45(12). DOI:10.1093/eurheartj/ehad867. PMID:38240386. IF:37,600 (Q1/1D). Document type: Article.
- Borrell-Pagès M, Luquero A, Vilahur G, Padró T, Badimon L. Canonical Wnt pathway and the LDL receptor superfamily in neuronal cholesterol homeostasis and function. *Cardiovasc Res*. 2024; 120(2):140-151. DOI:10.1093/cvr/cvad159. PMID:37882606. IF:10,400 (Q1/1D). Document type: Article.
- de Isla LP, Vallejo AJ, Watts GF, Muñiz O, Alonso R, Díaz JL, Arroyo R, Aguado R, Argueso R, Mauri M, Romero MJ, Álvarez P, Mañas D, Cepeda JM, González P, Casañas M, Michan A, Muñoz JFS, Faedo C, Barba MA, Dieguez M, de Andrés R, Hernández AM, González A, Padró T, Fuentes F, Badimon L, Mata P, SAFEHEART I. Long-term sex differences in atherosclerotic cardiovascular disease in individuals with heterozygous familial hypercholesterolaemia in Spain: a study using data from SAFEHEART, a nationwide, multicentre, prospective cohort study. *Lancet Diabetes & Endocrinology*. 2024; 12(9). DOI:10.1016/S2213-8587(24)00192-X. PMID:39098315. IF:44,000 (Q1/1D). Document type: Article.
- Devaux Y, Zhang L, Lumley AI, Karaduzovic K, Mooser V, Rousseau S, Shoaib M, Satagopam V, Adilovic M, Srivastava PK, Emanuelli C, Martelli F, Greco S, Badimon L, Padró T, Lustrek M, Scholz M, Rosolowski M, Jordan M, Brandenburger T, Benczik B, Agg B, Ferdinandy P, Vehreschild JJ, Lorenz B, Dorr M, Witzke O, Sánchez G, Kul S, Baker AH, Fagherazzi G, Ollert M, Wereski R, Mills NL, Firat H. Development of a long noncoding RNA-based machine learning model to predict COVID-19 in-hospital mortality. *Nature Communications*. 2024; 15(1):4259. DOI:10.1038/s41467-024-47557-1. PMID:38769334. IF:14,700 (Q1/1D). Document type: Article.
- Escate R, Padró T, de Isla LP, Fuentes F, Alonso R, Mata P, Badimon L. Circulating miR-6821-5p levels and coronary calcification in asymptomatic familial hypercholesterolemia patients. *ATHEROSCLEROSIS*. 2024; 392:117502. DOI:10.1016/j.atherosclerosis.2024.117502. PMID:38513437. IF:4,900 (Q1/2D). Document type: Article.
- Escate R, Padró T, Suades R, Sans J, Devaux Y, Lakkisto P, Harjola VP, Sionis A, Badimon L. miR-619-5p and cardiogenic shock in patients with ST-segment elevation myocardial infarction. *EUROPEAN JOURNAL OF CLINICAL INVESTIGATION*. 2024; 54(8). DOI:10.1111/eci.14186. PMID:38376079. IF:4,400 (Q1/2D). Document type: Article.
- López A, Muñoz N, Villaplana VD, Padró T, Badimon L. Effect of Moderate Beer Intake on the Lipid Composition of Human Red Blood Cell Membranes. *Nutrients*. 2024; 16(20):3541. DOI:10.3390/nu16203541. PMID:39458535. IF:4,800 (Q1/2D). Document type: Article.
- Ministrini S, Padró T. MicroRNA in cardiometabolic health and disease: The perspectives of sex, gender and personalised medicine. *EUROPEAN JOURNAL OF CLINICAL INVESTIGATION*. 2024; 54(7). DOI:10.1111/eci.14223. PMID:38623918. IF:4,400 (Q1/2D). Document type: Review.
- Muñoz N, Cordero A, Padró T, Mendieta G, Vilahur G, Flores E, Badimon L. First time ACS in patients with on-target lipid levels: Inflammation at admission and re-event rate at follow-up. *EUROPEAN JOURNAL OF CLINICAL INVESTIGATION*. 2024; 54(12). DOI:10.1111/eci.14305. PMID:39159006. IF:4,400 (Q1/2D). Document type: Article.
- Padró T, Santisteban V, Huedo P, Puentes M, Aguiló M, Espadaler J, Badimon L. Lactiplantibacillus plantarum strains KABP011, KABP012, and KABP013 modulate bile acids and cholesterol metabolism in humans.

- CARDIOVASCULAR RESEARCH. 2024; 120(7). DOI:10.1093/cvr/cvae061. PMID:38525555. IF:10,200 (Q1/1D). Document type: Article.
- Santisteban V, Muñoz N, López A, Puntos M, Badimon L, Padró T. Efficacy of Food Industry By-Product β -Glucan/Chitin-Chitosan on Lipid Profile of Overweight and Obese Individuals: Sustainability and Nutraceuticals. *Nutrients*. 2024; 16(19):3420. DOI:10.3390/nu16193420. PMID:39408385. IF:4,800 (Q1/2D). Document type: Article.
 - Suades R, Greco MF, Padró T, de Santisteban V, Domingo P, Benincasa G, Napoli C, Greco S, Madè A, Ranucci M, Devaux Y, Martelli F, Badimon L. Blood CD45⁺/CD3⁺ lymphocyte-released extracellular vesicles and mortality in hospitalized patients with coronavirus disease 2019. *EUROPEAN JOURNAL OF CLINICAL INVESTIGATION*. 2024; DOI:10.1111/eci.14354. PMID:39548690. IF:4,400 (Q1/2D). Document type: Article.
 - Suades R, Greco MF, Prieto P, Padró T, Devaux Y, Domingo P, Badimon L. CD66b⁺/CD68⁺ circulating extracellular vesicles, lactate dehydrogenase and neutrophil-to-lymphocyte ratio can differentiate coronavirus disease 2019 severity during and after infection. *Journal of Extracellular Vesicles*. 2024; 13(7):e12456. DOI:10.1002/jev2.12456. PMID:39007437. IF:15,500 (Q1/1D). Document type: Article..
 - Suades R, Greco MF, Prieto P, Padró T, Devaux Y, Domingo P, Badimon L. CD66b⁺/CD68⁺ circulating extracellular vesicles, lactate dehydrogenase and neutrophil-to-lymphocyte ratio can differentiate coronavirus disease 2019 severity during and after infection. *Journal of Extracellular Vesicles*. 2024; 13(7):e12456. DOI:10.1002/jev2.12456. PMID:39007437. IF:15,500 (Q1/1D). Document type: Article.
 - Sutelman P, Radike M, Vilahur G. Seeing is believing: pathway strategies for a personalised non-invasive diagnosis of coronary artery disease. *Internal and Emergency Medicine*. 2024; 19(2). DOI:10.1007/s11739-023-03526-y. PMID:38315383. IF:3,200 (Q1/2D). Document type: Article.
 - Tesoro L, Hernández I, Saura M, Badimón L, Zaragoza C. Novel cutting edge nano-strategies to address old long-standing complications in cardiovascular diseases. A comprehensive review. *EUROPEAN JOURNAL OF CLINICAL INVESTIGATION*. 2024; 54(7). DOI:10.1111/eci.14208. PMID:38622800. IF:4,400 (Q1/2D). Document type: Review.
 - Triska J, Maitra N, Deshotels MR, Haddadin F, Angiolillo DJ, Vilahur G, Jneid H, Atar D, Birnbaum Y. A Comprehensive Review of the Pleiotropic Effects of Ticagrelor. *Cardiovasc Drugs Ther*. 2024; 38(4):775-797. DOI:10.1007/s10557-022-07373-5. PMID:36001200. IF:3,100 (Q2/4D). Document type: Review.
 - Vilahur G, Radike M, Sutelman P, Ben S, Gutiérrez M, Casaní L, Hovdal D, Ongstad EL, Gabrielsen A, Hidalgo A, Fjellström O, Carlsson L, Badimon L. Recombinant human soluble domain of CD39L3 and ticagrelor: cardioprotective effects in experimental myocardial infarction. *EUROPEAN HEART JOURNAL*. 2024; 45(17). DOI:10.1093/eurheartj/ehae107. PMID:38486376. IF:37,600 (Q1/1D). Document type: Article.

Regulation of Cardiac Rhythm and Contraction

Group leader

Hove-Madsen, Leif (CSIC)

Research technicians

Aceituno Fernández, Cristina (CSIC)



DESCRIPTION

The Cardiac Rhythm and Contraction Group has, since its creation, focused on identifying molecular and cellular electrophysiological mechanisms that contribute to the development of cardiac arrhythmias, in order to improve risk prediction and identify novel disease-specific therapeutic targets. We are one of a few groups that use human atrial myocytes to study pathological alterations in cardiomyocyte function. Our primary goal is to identify key mechanisms underlying the alterations in calcium homeostasis and abnormal electrical activity that occur in atrial myocytes from patients with atrial fibrillation.

MAIN LINES OF RESEARCH

- Biomarkers and molecular targets of vascular remodelling in atherosclerosis progression, thrombosis, and subsequent ischemic events (Proteomic-based studies). (Padró Capmany, Teresa; García Arguinzonis, Maisa Inés).
- Functional epigenomics (plasma and total blood non-coding RNAs): Novel biomarkers in cardiovascular diseases and special groups at high CVD risk (Familial Hypercholesterolemia, morbid obesity). (Padró Capmany, Teresa; Escate Chávez, Oscar Rafael).
- Lipidome and metabolome regulation in cardiovascular disease prevention. (Padró Capmany, Teresa).
- Functional epigenomics of myocardial infarction and post-infarction outcomes (heart

failure, cardiogenic shock). (Padró Capmany, Teresa; Escate Chávez, Oscar Rafael).

- Extracellular matrix and cardiac remodelling post- myocardial infarction. (Padró Capmany, Teresa).
- Circulating extracellular vesicles (microvesicles /exosomes) in subclinical and clinical cardiovascular diseases. (Padró Capmany, Teresa).

SCIENTIFIC CHALLENGES

The association of more than 140 single-nucleotide polymorphisms (SNPs) with increased risk of atrial fibrillation over the past decade affords one of the most significant recent opportunities to make a substantial advance in risk stratification and personalised treatment of atrial fibrillation. The challenge lies in the vast number of SNPs, each associated with a modest increase in risk and an unknown impact on function. Our opportunity is to identify SNP combinations that cause synergistic derangements in human atrial myocyte function and a corresponding increase in the risk of atrial fibrillation.

ACTIVE & AWARDED GRANTS

- Hove-Madsen, Leif. Impact of Genetic and Clinical Risk on Molecular Signaling and Electrophysiological Dysfunction in Atrial Fibrillation (GenRiskAF) (2 sub-project). PID2020-116927RB-C21. Duration: 2021-2024. 181.500,00 € (CSIC-IIBB).
- Hove-Madsen, Leif. Genetic Modulations of Cyclic AMP signaling and calcium homeostasis as biomarkers for personalized treatment in atrial fibrillation (MioCitos). PID2023-152160OB-C21. Duration: 2024-2025. 275.000,00 € (CSIC-IIBB).

SCIENTIFIC PRODUCTION

- Aceituno C, Revuelta D, Jiménez V, Ginel A, Molina CE, Hove-Madsen L. Impact of Overnight Storage of Human Atrial Myocytes on Intracellular Calcium Homeostasis and Electrophysiological Utility. *Biomolecules*. 2024; 14(11):1415. DOI:10.3390/biom14111415. PMID:39595591. IF:4,800 (Q1/3D). Document type: Article.
- Babini H, Jiménez V, Stogova E, Arslanova A, Butt M, Dababneh S, Asghari P, Moore EDW, Claydon TW, Chiamvimonvat N, Hove-Madsen L., Tibbits GF. hiPSC-derived cardiomyocytes as a model to study the role of small-conductance Ca²⁺-activated K⁺ (SK) ion channel variants associated with atrial fibrillation. *Frontiers in Cell and Developmental Biology*. 2024; 12:1298007. DOI:10.3389/fcell.2024.1298007. PMID:38304423. IF:4,600 (Q1/2D). Document type: Review.
- Linz D, Andrade JG, Arbelo E, Boriani G, Breithardt G, Camm AJ, Caso V, Nielsen JC, De Melis M, De Potter T, Dichtl W, Diederichsen SZ, Dobrev D, Doll N, Duncker D, Dworatzek E, Eckardt L, Eisert C, Fabritz L, Farkowski M, Filgueiras D, Goette A, Guasch E, Hack G, Hatem S, Haeusler KG, Healey JS, Heidbuechel H, Hijazi Z, Hofmeister LH, Hove-Madsen L., Huebner T, Kääb S, Kotecha D, Malaczynska K, Merino JL, Metzner A, Mont L, Ng GA, Oeff M, Parwani AS, Puererfellner H, Ravens U, Rienstra M, Sanders P, Scherr D, Schnabel R, Schotten U, Sohns C, Steinbeck G, Steven D, Toennis T, Tzeis S, van IC, van RH, Vernooij K, Wadhwa M, Wakili R, Willems S, Witt H, Zeemering S, Kirchhof P. Longer and better lives for patients with atrial fibrillation: the 9th AFNET/ EHRA consensus conference. *EUROPACE*. 2024; 26(4):euae070. DOI:10.1093/europace/euae070. PMID:38591838. IF:7,900 (Q1/1D). Document type: Article.

Lipids and Cardiovascular Pathology

Group leader

Llorente Cortés, Concepción Vicenta (CSIC)

Researchers

García Rodríguez, Jesús Eduardo (IR)

La Chica Lhoëst, María Teresa (CSIC)

Polischuk, Anna (CSIC)

Sargsyan, Mane (UPF)

Research technicians

Martínez Jiménez, Andrea (IR)



DESCRIPTION

Our group focuses its activities on the cardiovascular area, and novel molecular mechanisms involved in vascular and myocardial cholesterol accumulation and new circulating biomarkers of cardiovascular risk. We have designed new compounds that inhibit deregulated cholesterol uptake by vascular cells and cardiomyocytes. We have available humanised models of atherosclerosis and heart failure, helpful in conducting proof-of-concept studies on the efficacy of new monoclonal antibodies and peptides, as well as an innovative artificial vessel system, which will enable the assessment of the pro-atherogenic potential of sera and LDLs from patients.

MAIN LINES OF RESEARCH

- Identification of new connecting axes of cardiac and hepatic functionality and their consequences in the regulation of metabolism and body weight. (Llorente Cortes, Concepción Vicenta).
- Applicability of LRP1-based assets for the treatment of pancreatic càncer. (Llorente Cortes, Concepción Vicenta).
- Development of innovative LRP1-based peptides against Tau fibrillation. (Llorente Cortes, Concepción Vicenta).
- Development of humanized anti-LRP1 monoclonal antibodies to comprehensively block atherosclerosis and heart failure. (Llorente Cortes, Concepción Vicenta).

- Integration of clinical, experimental data (in vitro and in vivo models) and modeling to improve the prediction of atherosclerotic plaque progression towards clinical events. (Llorente Cortes, Concepción Vicenta).
- Llorente Cortés, Concepción Vicenta. Development of anti-Tau aggregation peptides as a new therapy for neurodegenerative diseases. 2024 LLAV 00002. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). Duration: 2024-2025. 25.000,00 € (IIBB-CSIC)

SCIENTIFIC CHALLENGES

- To develop new therapeutic tools targeting intracellular cholesteryl ester accumulation in vascular, cardiac, and tumor cells to improve the treatment of patients with cardiovascular and metabolic alterations.
- To identify new circulating biomarkers of cardiovascular and metabolic risk to improve the diagnosis and prognosis of cardiovascular and metabolic diseases.

ACTIVE & AWARDED GRANTS

- Llorente Cortes, Concepción Vicenta. Translational Molecular Imaging for Detection of Cholesterol Entrapment in the Vasculature with ⁶⁸Ga-labeled LRP1-derived Peptides (PlaqueCHOL). BBVA 2019. Fundación BBVA. Duration: 2020-2024. 125.000,70 €
- Llorente Cortés, Concepción Vicenta. Differential LRP1 interactome in Foam Vascular Smooth Muscle cells as a source of coronary risk biomarkers in liquid biopsy. PI21/O1523. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 214.170,00 € (IIBB-CSIC)
- Llorente Cortes, Concepción Vicenta i Belbin, Olivia. LRP1-based peptides as an anti-Tau therapeutic strategy for neurodegenerative diseases (PepTau). INN00061. Fundació Privada HSCP (INNOPAU). Duration: 2024-2026. 50.000,00 €
- Llorente Cortés, Concepción Vicenta. Mitochondrial dysfunction caused by lipoproteins as a new therapeutic target in heart failure. PI24/00618. Instituto de Salud Carlos III (ISCIII). Duration: 2024-2029. 202.500,00 € (IIBB-CSIC)

SCIENTIFIC PRODUCTION

- La Lhoëst MTL, Martínez A, Claudi L, García E, Benítez A, Polishchuk A, Piñero J, Vilades D, Guerra JM, Sanz F, Rotllan N, Escolà JC, Llorente V. Mechanisms modulating foam cell formation in the arterial intima: exploring new therapeutic opportunities in atherosclerosis. *Frontiers in Cardiovascular Medicine*. 2024; 11:1381520. DOI:10.3389/fcvm.2024.1381520. PMID:38952543. IF:2,800 (Q2/4D). Document type: Review.
- Borràs C, Canyelles M, Girona J, Ibarretxe D, Santos D, Revilla G, Llorente-Cortes V, Rotllan N, Kovanen PT, Jauhainen M, Lee-Rueckert M, Masana L, Arrieta F, Martínez-Botas J, Gómez-Coronado D, Ribalta J, Tondo M, Blanco-Vaca F, Escolà-Gil JC. PCSK9 Antibodies Treatment Specifically Enhances the Macrophage-specific Reverse Cholesterol Transport Pathway in Heterozygous Familial Hypercholesterolemia. *JACC Basic Transl Sci*. 2024 Aug 28;9(10):1195-1210. doi: 10.1016/j.jacbts.2024.06.008. PMID: 39534644; IF:8,400 (Q1/1D). Document type: Article.

Genomics of Complex Diseases

Group leader

Soria Fernández, José Manuel (IR)

Researchers

Aloy Ortiz, Carme (Hospital Dos de Maig)
Camacho Pérez De Madrid, Maria Mercedes (IR)
Dilmé Muñoz, Jaume Félix (FGS)
Escudero Rodríguez, José Roman (FGS)
Ezquerria Condeminas, Pol (IR)
Fite Matamoros, Joan (FGS)
Herrera Escartín, Daniel (UB)
Lloret Cano, Maria Dolores (Hospital Dos de Maig)
Lobato Delgado, Bárbara (IR)
Romero Carro, Josep Maria (FGS)
Sabater Lleal, Maria (IR)
Sánchez García, Laia (FGS)
Soto Carricas, Begoña Dolores (FGS)
Temprano Sagrera, Gerard (IR)

Research technicians

De La Rosa Estadella, Mireia (IR)
García García, Irina (IR)
Martínez Pérez, Ángel (IR)
Uribezubia Azpitarte, Ager (IR)
Vega Méndez, Antón (IR)



DESCRIPTION

Our group focuses on the acquisition, management and analysis of multi-omics data as well as its integration with clinical and biological data for the identification of new biomarkers and the generation of risk prediction models to facilitate clinical decision-making in patients with vascular diseases (venous and arterial thrombosis and aneurysms). Additionally, the study of biological processes in healthy individuals exposed to physiological stress conditions (such as those encountered in extreme sports). Our multidisciplinary team (Basic/Clinic) has a molecular biology laboratory, which includes functional analysis and cell cultures, that allows the control of the entire workflow of the process: from the generation of samples and data to the analysis and interpretation of the results.

MAIN LINES OF RESEARCH

- Venous Thrombosis. (Soria Fernández, José Manuel).
- Angiology and Vascular Biology. (Camacho Pérez De Madrid, Maria Mercedes).
- Genomics of Arterial Vascular Disease. (Sabater Lleal, Maria).
- Genomics in Sport Medicine. (Soria Fernández, José Manuel).
- Interdisciplinary Areas of Bioinformatics and multi-omics Data. (Soria Fernández, José Manuel).

SCIENTIFIC CHALLENGES

- Analysis of Omics data (Genomics, transcriptomics, epigenomics) in the field of complex diseases with a translational approach in cooperation with a clinical group.
- Identify new biomarkers (genetic, epigenetic and/or plasmatic) that determine susceptibility to complex diseases.
- Identify new mechanisms involved in the development and progression of complex traits (susceptibility to complex diseases and to healthy status).
- Development of predictive algorithms that integrate the genetic, biological, and clinical information of the patients (Personalised Medicine).
- Development of computational tools based on mathematical models of artificial intelligence for modelling of diseases and physiological processes and patient virtualisation from real data.

ACTIVE & AWARDED GRANTS

- Camacho Pérez, Maria Mercedes. Descifrando los mecanismos moleculares subyacentes a la formación del aneurisma de aorta: el estrés del retículo endoplásmico y el estrés oxidativo mitocondrial como nuevas dianas terapéuticas. PI20/01004. Instituto de Salud Carlos III (ISCIII). Duration: 2021-2024. 145.200,00 €
- Lobato Delgado, Barbara. Contratos predoctorals PFIS 2021. FI21/00197. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2025. 89.900,00 €
- Sabater Lleal, Maria. Contratos Miguel Servet II 2022. CPII22/00007. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2025. 101.250,00 €
- Sabater Lleal, Maria. Nuevo enfoque ómico para predecir el crecimiento y la rotura del aneurisma aórtico abdominal. PID2019-109844RB-I00. Ministerio de Ciencia e Innovación (MICINN). Duration: 2020-2024. 133.100,00 €
- Sabater Lleal, Maria. Investigación de nuevos biomarcadores para predecir el crecimiento del aneurisma de aorta abdominal. PID2023-149864OB-I00. Ministerio de Ciencia e Innovación (MICINN). Duration: 2024-2028. 218.750,00 €
- Sabater Lleal, Maria. Structural and Nucleotide Variation as Genomic Risks for Venous Thrombosis: TOPMED and INVENT Collaboration. R01HL154385. NIH. Duration: 2022-2024. 21.570,85 €
- Sabater Lleal, Maria. IDEA: Improving Diagnostic Efficiency in AAA Patients. MARATO 202334-30. Fundació La Marató de TV3. Duration: 2024-2027. 198.237,50 €
- Soria Fernández, José Manuel. UNITAT DE GENOMICA DE MALALTIES COMPLEXES. 2022 INV-1 00048. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). Duration: 2022-2024. 66.217,84 €
- Soria Fernández, José Manuel. Desarrollo y validación de una nueva tecnología de análisis de datos transcriptómicos basada en IA para optimizar el seguimiento y tratamiento personalizado de pacientes con sobrepeso y obesidad. CPP2021-008423. Ministerio de Ciencia e Innovación (MICINN). Duration: 2022-2025. 265.248,90 €
- Soria Fernández, José Manuel. Genomics of Complex Diseases. 2021 SGR 00830. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). Duration: 2022-2024. 60.000 €.
- Soria Fernández, José Manuel. Identificación de biomarcadores epigenómicos y generación de modelos predictivos asociados al riesgo de trombosis. PI24/00682. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 202.500,00 €
- Temprano Sagrera, Gerard. Nuevo enfoque ómico para predecir el crecimiento y la rotura del aneurisma aórtico abdominal. SLT017/20/000100. Departament de Salut Generalitat de Catalunya. Duration: 2021-2024. 90.579,14 €

DOCTORAL THESES DEFENDED

- Viñuela Benítez, María del Carmen. Aplicabilidad del procesamiento del lenguaje natural y del aprendizaje automático en el desarrollo y validación de modelos predictivos de riesgo de sangrado y recurrencia de enfermedad tromboembólica venosa en pacientes con cáncer activo que reciben terapia anticoagulante. 19/06/2024. Universidad Complutense de Madrid. Supervisors: Martín Jiménez, Miguel José; Muñoz Martín, Andrés Jesús; Soria Fernández, José Manuel. <https://hdl.handle.net/20.500.14352/112032>.

SCIENTIFIC PRODUCTION

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Regulatory Mechanisms of Cardiovascular Remodelling

Group leader

Rodríguez Sinovas, Cristina (IR)

Researchers

Almendra Pegueros, Rafael Antonio (IR)

Alonso Nieto, Judith (CIBER)

Ballester Servera, Carme (CSIC)

Martínez González, José (CSIC)

Vázquez Sufuentes, Paula (CSIC)

Research technicians

Aguilo Núñez, Sílvia (IR)

Blanco Casoliva, Laia (CSIC)

Puertas Umbert, Lúdia (CSIC)



DESCRIPTION

Our group addresses different aspects of vascular biology, thrombosis and myocardial pathophysiology aimed at studying the mechanisms underlying the onset, progression and complications of cardiovascular diseases (CVDs) with high morbidity and mortality, such as atherosclerosis, aortic aneurysms, cardiac hypertrophy and myocardial infarction. Our ultimate goal is to develop tools for early diagnosis and new therapeutic strategies for these diseases.

MAIN LINES OF RESEARCH

- L1. Extracellular matrix (ECM) integrating and modifies proteins in CVDs (Rodríguez Sinovas, Cristina).
- L2. The nuclear receptor NOR-1 in coronary artery disease, abdominal aortic aneurysm (AAA) and cardiac function and remodeling after myocardial infarction (Martínez González, José).

SCIENTIFIC CHALLENGES

- Analysis of the molecular basis of abdominal aortic aneurysm: Identification of new therapeutic targets.
- Physiopathological mechanisms underlying the development of thoracic aortic aneurysm in syndromic patients.
- Identification of new biomarkers and therapeutic targets in hypertensive cardiac hypertrophy and myocardial infarction.

- Analysis of the molecular mechanisms underlying cardiovascular calcification.
- Identification and validation of novel pharmacological tools in cardiovascular diseases.
- Development and characterisation of new animal models in cardiovascular diseases

ACTIVE & AWARDED GRANTS

- Martínez González, José. El enzima lisil oxidasa (LOX) en la aterosclerosis y la calcificación: estudio en un modelo de aterosclerosis experimental y en válvulas aórticas humanas calcificadas. Fundación Española de ArteRíosclerosis (FEA)- Sociedad Española de ArteRíosclerosis (SEA). Duration: 2022-2025. 15.000,00 €
- Martínez González, José. RESolution of inflammation after myocardial injury through Targeting novel regulatory moleculEs. Fundació La Marató de TV3. Duration: 2024-2027. 150.000,00 € (CSIC-IIBB)
- Martínez González, José. Deciphering the role of NOR-1 in abdominal aortic aneurysm progression, cardiac arrhythmogenesis, and cardiac function and remodeling after myocardial infarction (NORemoIcar) (PID2021-122509OB-I00). MICIN. Duration: 2022-2025. 242.000,00 € (CSIC-IIBB)
- Martínez González, José. Inflammation and Cardiovascular Damage in Lung Cancer: Studying the Role of Immunomodulatory Therapies in Reducing Cardiotoxicity and Vascular Injury. InCaRe Intramural project CIBERONC/CIBERCV called 2023. Duration: 2024-2025. 65.000,00 € (CIBER)
- Martínez González, José. CIBER de Enfermedades Cardiovasculares (CIBERCV). CB16/11/00257. 61.000,00 €/year (CIBER)
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- Rodríguez Sinovas, Cristina. Impacto del ácido bempedoico sobre la inflamación y el remodelado vascular en el aneurisma aórtico abdominal. Un estudio de reposicionamiento terapéutico. F. EUGENIO Rodríguez PASCUAL 2022. Fundación Eugenio Rodríguez Pascual. Duration: 2023-2024. 24.990,00 €
- Rodríguez Sinovas, Cristina. Impacto de la inhibición de la ATP citrato liasa (ACLY) sobre la respuesta inflamatoria y la huella epigenética en la hipercolesterolemia y el aneurisma de aorta abdominal. Fundación Española de Arterioesclerosis. FEA 2024. Duration: 2024-2026. 15.000,00 €
- Rodríguez Sinovas, Cristina. La ATP citrato liasa como diana farmacológica en enfermedades cardiovasculares: aproximaciones preclínicas, clínicas y ómicas. PI24/00613. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 227.500,00 €
- Rodríguez Sinovas, Cristina. La ATP citrato liasa (ACLY) como nueva diana terapéutica en la hipertrofia cardiaca y el aneurisma de aorta abdominal. Sociedad Española de Cardiología (SEC). SEC 2024-1. Duration: 2024-2028. 15.000,00 €

DOCTORAL THESES DEFENDED

- Puertas Umbert, Lúdia. Investigating abdominal aortic aneurysm mechanisms: searching for new therapeutic targets to restrain inflammation and vascular remodeling. 21/06/2024. Universitat de Barcelona. Supervisors: Rodríguez Sinovas, Cristina; Martínez González, José.

SCIENTIFIC PRODUCTION

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Pathophysiology of Lipid-related Diseases

Group leader

Escolà Gil, Joan Carles (IR)

Researchers

Antoni Joan Parés, Assumpta (FGS)

Blanco Vaca, Francisco (FGS)

Borràs Querol, Carla (IR)

Cabello Femenías, Isaac (FGS)

Canyelles Vich, Marina (FGS)

Costa Pallaruelo, Maria (FGS)

Ferrer Pérez, Rosa Maria (IR)

Guiñón Muñoz, Leonor (FGS)

Illana Cámara, Francisco José (FGS)

Mansilla Usero, Andrea (FGS)

Martínez Figueroa, Susana (FGS)

Rotllan Vila, Noemí (IR)

Solé Galvez, Arnau (CIBER)

Sospedra Arnau, Maria (FGS)

Tondo Colomer, Mireia (FGS)

Urgell Rull, Eulàlia (FGS)

Velasco Reniu, Lorena (IR)

Zapico Muñoz, Edgar (FGS)

Research technicians

Company Armengol, Eva María (FGS)

Cubero Hernández, Esther (FGS)

Font Firvida, Montserrat (FGS)

Griñán González, Raquel (IR)

Liras García, Esther (FGS)

Orantes Gallego, Vanesa (FGS)

Pérez Bolancel, Cristina (FGS)

Roig Martínez, Rosa (FGS)

Santos Palacios, David (CIBER)

Terzan Molina, Sílvia (FGS)



DESCRIPTION

Lipid and lipoprotein alterations are established as causes of atherosclerotic cardiovascular disease and overall cardiovascular risk. They are also closely linked to type 2 diabetes, metabolic syndrome, obesity, Alzheimer's disease, and some cancers—major diseases in terms of morbidity and mortality. Our research aims to identify targeted therapies and biomarkers related to lipid disorders in these conditions, enhancing knowledge and clinical applications within a Clinical Biochemistry lab at a tertiary university hospital.

MAIN LINES OF RESEARCH

- Lipoprotein Metabolism: focusing on HDL and remnant lipoproteins as prognostic biomarkers and therapeutic targets for cardiovascular risk, type 2 diabetes, and endocrine cancers. (Escola Gil, Joan Carles; Canyelles Vich, Marina).
- MicroRNAs & Atherosclerosis: studying microRNAs as metabolic regulators and potential in vivo therapies. (Rotllan Vila, Noemí).
- Metabolic Disorders Diagnosis: specializing in inherited dyslipidemias and endocrinological disorders, making the lab a national reference center. (Blanco Vaca, Francisco; Canyelles Vich, Marina).
- Neurodegenerative Biomarkers: collaborating with Sant Pau Hospital to develop blood biomarkers for Alzheimer's, Parkinson's, and other dementias. (Tondo Colomer, Mireia).

SCIENTIFIC CHALLENGES

- Explore the role of HDL-associated miRNAs in coronary heart disease and assess the vascular effects of miRNA-enriched synthetic HDL nanoparticles.
- Examine cerebrospinal fluid (CSF) lipoprotein cholesterol transport between astrocytes and neurons in Alzheimer's disease patients.
- Evaluate vascular smooth muscle cells 'cholesterol efflux pathways' contribution to atherosclerosis progression.
- Investigate whether higher remnant lipoprotein cholesterol levels are associated with the risk of all-cause and cardiovascular mortality and the risk of new-onset T2DM.
- To unravel the complex interplay among lipid metabolism and the progression of Alzheimer's disease in Down syndrome.

ACTIVE & AWARDED GRANTS

- Blanco Vaca, Francisco; Tondo Colomer, Mireia. Tráfico de colesterol celular y tecnologías ómicas dirigidas a HDL: mecanismos fisiopatológicos y evaluación de biomarcadores en pacientes con enfermedad cardiovascular y enfermedad de Alzheimer. PI21/00140. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 159.720,00 €
- Blanco Vaca, Francisco & Escola Gil, Juan Carlos. Centro de Investigación Biomédica en Red de Diabetes y Enfermedades Metabólicas asociadas (CIBERDEM). CB07/08/0016. Instituto de Salud Carlos III (ISCIII). 60.000 €/any aprox
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- Borràs Querol, Carla. Ayudas complementarias de movilidad destinadas a beneficiarios del programa de formación del profesorado universitario (FPU) 2024. EST24/00454. Ministerio de Ciencia, Innovación y Universidades. Duration: 2024-2024. 4.290,00 €
- Canyelles Vich, Marina. Juan Rodés. JR22/00003. Instituto de Salud Carlos III (ISCIII) Duration: 2023-2026. 180.000,00 €
- Canyelles Vich, Marina; Escolà Gil, Joan Carles. Impacto de las lipoproteínas remanentes y HDL en el riesgo cardiovascular: evaluación de biomarcadores predictivos en el estudio prospectivo Di@bet.es y un estudio longitudinal en sujetos con diabetes tipo 2. Competitiu. Expedient: PI23/00232. Instituto de Salud Carlos III. Duration: 2024-2026. 165.000,00 €
- Escola Gil, Juan Carlos. Adiposidad, inflamación y la desregulación del colesterol en el carcinoma de tiroides. Evaluación de estrategias terapéuticas basadas en la reducción del colesterol y la activación de LXR. PI19/00136. Instituto de Salud Carlos III (ISCIII). Duration: 2020-2024. 111.320,00 €
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- García Rodríguez, Jesús Eduardo. Formación de Personal Universitario. FPU21/01173. Ministerio de Universidades. Duration: 2022-2026. 74.857,00 €
- Julve Gil, Josep. Therapeutic potential of nicotinamide supplementation on adiposity, impaired insulin signaling and non-alcoholic liver fatty disease severity. PI2100770. Instituto de Salud Carlos III (ISCIII). 2022-2024. 122.210,00 €
- Rotllan Vila, Noemí. Subprograma Contratos Ramón y Cajal 2017. RYC-2017-22879. Ministerio de Ciencia, Innovación y Universidades (MICIU). Duration: 2019-2024. 168.600,00 €
- Rotllan Vila, Noemí. Role of HDL miRNA in coronary heart disease incidence; Customised miR-sHDL as strategy for atherosclerosis treatment. MARATO 202312-31 Expedient: 82/225. Fundació La Marató de TV3. Duration: 2024-2027. 75.375,00 €
- Rotllan Vila, Noemí. Células vasculares lisas, transporte reverso de colesterol y miRNAs: Mecanismos patofisiológicos y nuevas dianas para prevenir la enfermedad cardiovascular. PID2022-137186OB-I00. Ministerio de Ciencia,

- Innovación y Universidades. Duration: 2024-2026. 187.500,00 €
- Rotllan Vila, Noemí. HDL recombinante: Un nuevo enfoque terapéutico para el tratamiento con LNA-antimiRs en aterogénesis. CNS2023-144119. Ministerio de Ciencia, Innovación y Universidades. Duration: 2024-2026. 199.771,00 €
 - Tondo Colomer, Mireia. Implicaciones del transporte de colesterol mediado por lipoproteínas de alta densidad en la demencia por enfermedad de Alzheimer en adultos con síndrome de Down (cohorte DABNI). Proyecto DOWNLIP. PI24/00513. Instituto de Salud Carlos III (ISCIII). 2025-2027. 158.750,00 €
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 - Illana FJ, García A, Sospedra M, Ferrer R, Martínez C, Guiñón L. Quality assurance of add-on testing in plasma samples: stability

DOCTORAL THESES DEFENDED

- Cisa Wieczorek, Sabina. Estudio metabólico de c-KIT en líneas celulares mieloides y LMA en casos con sobreexpresión de WT1. 03/12/2024. Universitat Autònoma de Barcelona. Supervisors: Nomdedeu Guinot, Josep Francesc; Blanco Vaca, Francisco. <https://hdl.handle.net/10803/693201>
- Díaz Troyano, Noelia. Estudio de la forma soluble de la enzima convertidora de angiotensina tipo 2 (sACE2) y otros biomarcadores plasmáticos en pacientes con Coronavirus Disease 2019 (COVID-19). 31/10/2024. Universitat Autònoma de Barcelona. Supervisors: Rodríguez Frías, Francisco; Ferrer Costa, Roser; Blanco Vaca, Francisco. <https://hdl.handle.net/10803/692834>.

SCIENTIFIC PRODUCTION

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 - López de Las Hazas MC, Del Saz-Lara A, Cedó L, Crespo MC, Tomé-Carneiro J, Chapado LA, Macià A, Visioli F, Escola-Gil JC, Dávalos A. Hydroxytyrosol Induces Dyslipidemia in an ApoB100 Humanized Mouse Model. *Mol Nutr Food Res*. 2024; 68(1):e2300508. DOI:10.1002/mnfr.202300508. PMID:37933702. IF:4,500 (Q1/3D). Document type: Article.
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 - Redondo S, Costa M, Moreno ME, Arguello M, Riba M, Aso O, Iranzo E, Esquirol A, Sierra J, Briones J, Martíno R, Zapico E, García I. Development and Clinical Validation of Liquid Chromatography-Tandem Mass Spectrometry for Measuring Ruxolitinib in Steroid-Refractory Graft-Versus-Host Disease: A First Step Towards Optimized Treatment. *EUROPEAN JOURNAL OF HAEMATOLOGY*. 2024; DOI:10.1111/ejh.14349. PMID:39545520. IF:2,300 (Q2/5D). Document type: Article.
 - Rotllan N, Escolà JC. Apolipoproteins and Lipoproteins in Health and Disease 2.0. *INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES*. 2024; 25(11):6183. DOI:10.3390/ijms25116183. PMID:38892369. IF:4,900 (Q1/3D). Document type: Article.
 - Rotllan N, Julve J, Escolà JC. Type 2 Diabetes and HDL dysfunction: a key contributor to Glycemic Control. *CURRENT MEDICINAL CHEMISTRY*. 2024; 31(3). DOI:10.2174/0929867330666230201124125. PMID:36722477. IF:3,500 (Q2/3D). Document type: Review.
 - Sardà H, Colom C, Benítez S, Carreras G, Amigó J, Miñambres I, Viladés D, Blanco F, Sánchez JL, Pérez A. PCSK9 plasma concentration is associated with epicardial adipose tissue volume and metabolic control in patients with type 1 diabetes. *Scientific Reports*. 2024; 14(1):7195. DOI:10.1038/s41598-024-57708-5. PMID:38532033. IF:3,800 (Q1/2D). Document type: Article.

Cell Therapy and Angiogenesis in Ischemic Diseases

Group leader

Arderiu Marqués, Gemma (IR)

Researchers

Civit Urgell, Anna (IR)

Serrano López, Alejandro (IR)

Research technicians

Beteta Jiménez, Marina (IR)

García García, Olaya (IR)



DESCRIPTION

The research group “Cell Therapy and Angiogenesis in Ischemic Diseases”, an emerging team within Area: Cardiovascular Diseases, is dedicated to investigating the vascular effects of ischemia and angiogenesis. Their work focuses on exploring the therapeutic potential of adipose-derived stem cells (ASCs) to promote blood vessel formation and repair damaged tissues in ischemic conditions. By combining cutting-edge techniques in cell therapy and molecular biology, the group aims to develop novel treatments that improve outcomes for patients with cardiovascular diseases. Their research not only seeks to understand the underlying mechanisms of angiogenesis but also to translate these findings into clinical applications, offering hope for more effective and personalised therapies. Ultimately, their goal is to advance the diagnosis, treatment, and prevention of ischemic diseases through innovative approaches.

MAIN LINES OF RESEARCH

- Cell therapy and angiogenesis: Application of adipose-derived stem cells (ASCs) to promote blood vessel formation (angiogenesis) in ischemic conditions. (Arderiu Marqués, Gemma).
- Endothelial dysfunction and cardiovascular disease: Impaired blood vessel function as a key factor in the development of atherosclerosis, hypertension, and other

cardiovascular disorders. (Arderiu Marqués, Gemma).

- Tissue factor and angiogenesis: The role of thrombogenic tissue factor (TF) in vascular remodeling and pathological angiogenesis. (Arderiu Marqués, Gemma).

SCIENTIFIC CHALLENGES

- Characterize ASCs (adipose stem cells) obtained from different tissues of individuals with various pathologies and determine their angiogenic capacity for use in cell therapy.
- Enhance the angiogenic capacity of ASCs through differentiation, genetic manipulation, and/or the use of their derivatives, such as microvesicles.

ACTIVE & AWARDED GRANTS

- Arderiu Marqués, Gemma. Reprogramación directa de las ASCs a células endoteliales mediante factores de transcripción para inducir la regeneración vascular en la enfermedad arterial periférica. PI20/01517. Instituto de Salud Carlos III (ISCIII). Duration: 2021-2024. 147.620,00 €
- Arderiu Marqués, Gemma. Nueva estrategia terapéutica mediante vesículas extracelulares derivadas de células madre derivadas de tejido adiposo como medicina regenerativa en enfermedades vasculares periféricas. PI23/01136. Instituto de Salud Carlos III. Duration: 2024-2026. 152.500,00 €
- Arderiu Marqués, Gemma. Repairing early endothelial cell damage to promote cardiovascular health: interplay between endothelial cells and monocytes as a primary strategy in ischemic diseases. MARATO 202303-30. Fundacio La Marato de TV3. Duration: 2024-2027. 149.785,00 €
- Arderiu Marqués, Gemma. Obesidad e insuficiencia cardíaca con fracción de eyección preservada: papel de las ASCs derivadas del tejido adiposo. SEC 2024-2. Sociedad Española de Cardiología (SEC) Duration: 2024-2028. 15.000,00 €

SCIENTIFIC PRODUCTION

- Arderiu G, Bejar MT, Civit A, Peña E, Badimon L. Crosstalk of human coronary perivascular adipose-derived stem cells with vascular cells: role of tissue factor. BASIC RESEARCH IN CARDIOLOGY. 2024; 119(2). DOI:10.1007/s00395-024-01037-1. PMID:38430261. IF:7,500 (Q1/1D). Document type: Article.
- Arderiu G, Civit A, Díez A, Moscatiello F, Ballesta C, Badimon L. Differentiation of Adipose Tissue Mesenchymal Stem Cells into Endothelial Cells Depends on Fat Depot Conditions: Regulation by miRNA. Cells. 2024; 13(6):513. DOI:10.3390/cells13060513. PMID:38534357. IF:5,100 (Q2/4D). Document type: Article.



5.1.2 Oncohematologic Diseases Area

Javier Briones
Area Director

A broad range of translational cancer research is conducted in this area, particularly in sarcomas, head-and-neck, breast, ovarian, endometrial, colorectal, and hematological cancers, among others. Research covers a wide range of fields, with disciplines that include from genetic research on cancer susceptibility syndromes to advanced therapies such as those based on targeted drug delivery with nanoparticles, preclinical development of new anticancer agents with disease-specific mouse models, immunotherapy with CAR-T cells, gene therapy, drug repurposing, and predictive molecular markers. Next-generation sequencing approaches are developed and applied to identify novel prognostic or response factors. A large number of clinical trials are conducted within this area by our clinical researchers, including Phase I, II, and III trials with new anticancer drugs

RESEARCH GROUPS

Clinical Oncology

Barnadas Molins, Agustí

Oncogenesis and Antitumour Drugs

Mangues Bafalluy, Ramon

Haematological Diagnosis

Nomdedéu Guinot, Josep Francesc

Molecular Pathology of Gynaecologic Cancer

Lerma Puertas, Enrique

Otorhinolaryngology and Head and Neck Cancer

Quer Agustí, Miquel

Oncology/Haematology and Transplantation

Sierra Gil, Jordi (until February 2024)

Briones Meijide, Javier (from February 2024)

Cancer Predisposition and DNA Repair Syndromes

Surrallés Calonge, Jordi

Gynecologic and Peritoneal Oncology

Céspedes Navarro, María Virtudes

Clinical Research in Transfusion Medicine

Medina Marrero, Laura

Clinical Oncology

Group leader

Barnadas Molins, Agustí (FGS)

Researchers

Andrés Granyo, Marta (FGS)
Anguera Palacios, Geòrgia (FGS)
Arqueros Núñez, Cristina (FGS)
Barba Joaquín, Andrés (FGS)
Calvo Verges, Núria (FGS)
Cerdà Serdà, Paula (FGS)
Cotaina Recio, Maria (FGS)
Escuin Borràs, Daniel (IR)
Gallego Rubio, Óscar Salvador (FGS)
Juan Linares, Eva (FGS)
Larrañaga Blanc, Itziar (FGS)
López Pousa, Antonio (FGS)
López SanMartín, Consuelo (FGS)
Majem Tarruella, Margarita (FGS)
Maroto Rey, José Pablo (FGS)
Mora Brugués, Josefina (FGS)
Páez López-Bravo, David (FGS)
Ramón y Cajal Asensio, Teresa (FGS)
Romero Montenegro, Daniel (FGS)
Salazar Blanco, Juliana (IR)
Sebio García, Ana (FGS)
Serra López, Jorgina (FGS)
Terés Lleida, Raúl (FGS)
Tibau Martorell, Ariadna (FGS)
Virgili Manrique, Anna Cristina (FGS)

Research technicians

Alfonso Ruiz, Rosa (IR)
Andrés Nieto, Marta (IR)
Bell Ramírez, Olga Lúcia (IR)
Benítez Manzananas, Laia (IR)
Calero Pérez, María del Pilar (IR)
Carmona Alonso, Ana (IR)
Castells Tello, Diana (IR)
Clua Serra, Marina (IR)
Colomer Merino, Lucía (IR)
Cruz Ibáñez, Cristina (IR)
García Belinchón, Mercé (IR)
Gisbert Beamud, Alexandra (IR)
González Guerrero, Laura (IR)
Hernández García, Ricardo (IR)
Lavernia Rosell, Laia (IR)
Layana Antepará, Michelle Elizabeth (IR)
Llobet Busquets, Mireia (IR)
Martínez Aranda, Rodrigo Antonio (IR)
Menéndez Cuervo, Dulce María (IR)
Molina Bayona, Sílvia (IR)
Moreno Gómez, Laura (IR)
Pérez Gorrini, Tiziana Giselle (IR)
Ramírez García, Ona (IR)
Reyes Vilasalo, Judith (IR)
Ribas Bellavista, Laia (IR)
Ribas Carbonell, Romina (IR)
Roca Solà, Marc (IR)
Sallés Niubó, Mireia (IR)
Suris Cumicheo, Paola Maria (IR)
Tortosa Gallego, Belén (IR)
Tricas Albareda, Andrea (IR)
Vall Montero, Gaudi (IR)
Van Veen Romero, Erika (IR)



DESCRIPTION

Our research group conduct clinical trials to assess new therapeutic strategies, the effectiveness of targeted treatments and detection of residual disease, and research studies to evaluate prognostic and predictive molecular biomarkers, the molecular mechanisms of action and resistance to drugs and the pharmacogenetics of cancer. We aim to translate this knowledge to predict patients at higher risk of recurrence, select those more likely to benefit from specific therapies, and assess the risk of treatment toxicity according to patients' genetic characteristics.

MAIN LINES OF RESEARCH

- Breast cancer. (Barnadas Molins, Agustí; Tibau Martorell, Ariadna; Arqueros Núñez, Cristina; Andrés Granyo, Marta; Escuin Borràs, Daniel; Dr. Rivera).
- Lung cancer and melanoma. (Majem Tarruella, Margarita; Barba Joaquín, Andrés).
- Neuroendocrine tumors. (Páez López-Bravo, David).
- Head and neck and Central neural tumors. (Gallego Rubio, Oscar Salvador; López Pousa, Antonio).
- Hereditary cancer and genetic counselling. (Ramón Y Cajal Asensio, Teresa; Calvo Verges, Nuria; López SanMartín, Consuelo).
- Digestive tumors. (Páez López-Bravo, David; Sebio García, Ana; Virgili Manrique, Anna Cristina; Cerdà Serdà, Paula).
- Urological tumors. (Maroto Rey, José Pablo; Anguera Palacios, Georgia).

- Sarcoma unit. (López Pousa, Antonio; Sebio García, Ana; Terés Lleida, Raul; Sebio García, Ana).
- Laboratory of translational research. (Escuin Borràs, Daniel; Salazar Blanco, Juliana).

SCIENTIFIC CHALLENGES

- To increase our participation in stable cooperative research groups in cancer (CIBER; RETICS, etc).
- To improve our success rate in national and international competitive grant calls and postdoctoral and clinical research fellowships.
- To promote translational research in cancer in cooperation with other internal and external research groups.
- To develop new drugs in phase 0/1 studies.

ACTIVE & AWARDED GRANTS

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Oncogenesis and Antitumour Drugs

Group leader

Mangues Bafalluy, Ramon (IR)

Researchers

Álamo Vargas, Patricia Virginia (Nanoligent)

Alba Castellón, Lorena (IR)

Arena, Lourdes Ailen (IR)

Casanova Rigat, Isolda (IJC)

García León, Annabel (CIBER)

Mendoza Fernández, Julián Ignacio (CIBER)

Romero Pérez, Inés (CIBER)

Rueda Matas, Ariana (IR)

Sierra Cruz, Marta (IR)

Unzueta Elorza, Ugutz (IR)

Varona Álvarez, Saray (IR)

Research technicians

Carrasco Díaz, Luis Miguel (IR)

Díez Serrano, Álvaro (IR)

Huaca Manchego, Vanessa (IR)

Miranda Tovar, Eva (IR)

Navas Jiménez, Luis Carlos (IR)

Seira Oriach, Clara (IR)



DESCRIPTION

We are developing protein-based targeted nanoparticles and nanoconjugates to selectively ablate cancer stem cells and cancer-associated fibroblasts, as well as inhibitors of Immune checkpoints, to improve the current treatment of solid tumours and haematological neoplasms. We also generate immunosuppressed and immunocompetent, subcutaneous or orthotopic cancer mouse models to preclinically evaluate the anticancer effects and associated toxicities of these nanomedicines and their combinations for clinical translation and industrial transfer.

MAIN LINES OF RESEARCH

- To develop a humanised nanoconjugate of auristatin directed to leukemic stem cells for the treatment of Acute Myeloid Leukemia. Within this line, the activity of the nanoconjugate is being evaluated in new animal models derived from patient samples (PDX) and humanised murine models. We are also studying the ability of the nanoconjugate to activate the immune system and the possible synergies of its combination with other precision drugs (Casanova Rigat, Isolda).
- To design and develop protein nanodrugs for the treatment of cancer. This line seeks to offer innovative therapeutic proposals based on rational design and development of active targeted protein nanoparticles for the selective delivery of therapeutic protein domains or conjugated antitumor drugs to tumor cells (Unzueta Elorza, Ugutz).

- To develop and preclinical validation of tumor microenvironment targeted nanoparticles. This research line aims to target cancer-associated fibroblasts within solid tumors to reprogram the tumor microenvironment to reduce cancer cell aggressiveness and blocking metastatic dissemination (Alba Castellón, Lorena).
- To develop targeted nanoparticles, that incorporate bacterial toxins, to induce local tumor pyroptosis, to recruit and activate T cells in tumor and metastatic tissues, and their combination with Immune Checkpoint inhibitors and T Cell Receptor Agonists to reverse immune exhaustion, to fight microsatellite stable solid cancers (Mangues Bafalluy, Ramon).

SCIENTIFIC CHALLENGES

- To develop nanomedicines based on preclinical protocols able to achieve effective immunogenic cell death in solid tumors, which are currently resistant to Immunotherapy.
 - To develop new protein nanoconjugates for targeted delivery of antitumor drugs with innovative mechanisms of action for the treatment of tumors resistant to standard drugs.
 - To develop efficient protein nanovehicles for the targeted delivery of therapeutic nucleic acids to tumor cells in vivo as an alternative to viral vectors.
 - To develop protein nanopharmaceuticals for the activation of the immune system against cancer as a more effective nano-immuno-oncology approach than current treatments.
 - To develop targeted-nanotherapy to reprogram the tumor microenvironment to enhance its antitumor role.
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 - Mangues Bafalluy, Ramon. Piroptosis e infiltración de células T en tumor local, por nanotoxinas dirigidas, y su combinación con inhibidores de control inmune y agonistas de revigorización (EfectPiroTIL). PI24/01476. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 265.000,00 €
 - Sierra Cruz, Marta. Contratos Sara Borrell 2024. CD24/00149. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 95.000,00 €

ACTIVE & AWARDED GRANTS

- Alamo Vargas, Patricia Virginia. Multivalent presentation for enhanced drug-internalization and cytotoxicity of nanoparticles targeting CXCR4-overexpressing tumors. PTQ2021-

- Unzueta Elorza, Ugutz. Conjugación dirigida de nanomedicinas proteicas inteligentes para la mejora de la terapia selectiva del cáncer metastásico de colon. PI20/00400. Instituto de Salud Carlos III (ISCIII). Duration: 2021-2025. 171.820,00 €
- Unzueta Elorza, Ugutz. Eliminación selectiva de células madre metastásicas del cáncer colorrectal por bloqueo de la RNA polimerasa II. PI23/00318. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2026. 230.000,00 €
- Unzueta Elorza, Ugutz. Nanoimmunoterapia de precisión contra células madre leucémicas CXCR4+ en Leucemia Mieloide Aguda. Fundació Investigació per a la Salut i el Progrés (FISP). FISP 2024. Duration: 2025-2026. 99.880,00 €
- Unzueta Elorza, Ugutz. Targeted Nano-immunotherapy Against CXCR+ Cancer Stem Cells. Fundació La Caixa. INPhINIT 2024. Duration: 2024-2028. 160.272,00 €
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- SCIENTIFIC PRODUCTION
- Favaro MTP, Alamo P, Roher N, Chillon M, Lascorz J, Márquez M, Corchero JL, Mendoza R, Martínez C, Ferrer N, Ferreira LCS, Mangues R, Vázquez E, Parladé E, Villaverde A. Zinc-Assisted Microscale Granules Made of the SARS-CoV-2 Spike Protein Trigger Neutralizing, Antivirus Antibody Responses. ACS Materials Letters. 2024; 6(3). DOI:10.1021/acsmaterialslett.3c01643. IF:9,600 (Q1/2D). Document type: Article.
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- Virgili AC, Salazar J, Gallardo A, López A, Terés R, Bagué S, Orellana R, Fumagalli C, Mangues R, Alba L, Unzueta U, Casanova I, Sebío A. CXCR4 Expression as a Prognostic Biomarker in Soft Tissue Sarcomas. Diagnostics. 2024; 14(11):1195. DOI:10.3390/diagnostics14111195. PMID:38893721. IF:3,000 (Q1/2D). Document type: Article.

Haematological Diagnosis

Group leader

Nomdedéu Guinot, Josep Francesc (FGS)

Researchers

Blanco, María Laura (FGS)

Fuentes Hernández, Francisca (FGS)

González Álvarez, Nuria (FGS)

Martínez Valverde, Clara Maria (FGS)

Pratcorona Canela, Marta (FGS)

Ramil López, Guillermo (IR)

Remacha Sevilla, Ángel Francisco (FGS)

San José Alonso, Paula (FGS)

Sánchez García, Jana (FGS)

Research technicians

Brell Martínez, Albert (FGS)

Bussaglia Petrillo, Elena Mart (FGS)

Carricondo Morcillo, Maite (FGS)

Espadaler Pare, Montserrat (FGS)

Fernández Rosales, Maria Nieves (FGS)

Giné Vilalta, Anna (IR)

Martínez Sánchez, Elisabeth (FGS)

Ortín Quílez, Rosa (FGS)

Serra Ferrer, Marta (FGS)

Úbeda Rodenas, José (FGS)



DESCRIPTION

The general objective of our line is to introduce improvements in the diagnosis and monitoring of haematological neoplasms using immunophenotypic and molecular biology techniques.

For more than 20 years (first project 1994), we have received funding for our proposals from the ISCIII on the following topics:

1. Molecular mechanisms of leukemogenesis: Identification of the molecular mechanisms associated with chromosomal translocations, in which we ruled out the presence of point mutations of RAG1 and RAG2, (Leukemia 1995;9:229-30;Hum Mutat 1996;8:191-2; Leukemia 1996;10:1715-8;Leukemia 2002;16:1571);the implication of repetitive Alu sequences at the origin of some chromosomal translocations (IgH-ID4)(cloned for the first time in our laboratory)(Haematologica 2003; 88:994-1001) and the role of microsatellite instability in acute myeloid leukemias (limitations of BAT26, interference of LOH lesions and characteristics of some areas promoters of p53 response genes (Leuk Lymphoma 2008;49:1178-83;Leukemia 2004;18:1148-9;Ann Hematol 2005;84:368-75;Leuk Res 2008;32:186-8).
2. Importance of p53 lesions in hematological malignancies: B and T line acute lymphoblastic leukemias, chronic lymphoproliferative syndromes, acute myeloid leukemias with complex karyotype and 17p lesions, transformations of bcr-abl negative chronic myeloproliferative syndromes

- (Genes Chrom Cancer 1995;14:106-11; Genes Chrom Cancer 1996;15:48-53, Leuk Lymphoma 1998;29:595-605;Haematologica 1999;84:757-8;Med Clin (Barc)2000;115:573-5;Haematologica 2002;87:908-17;Med Clin (Barc)2002;119:497-9).
3. Application of flow cytometry techniques in the haematology laboratory: population enumeration of lymphoid cells, identification of lymphoproliferative syndromes in peripheral blood, nodal expression, and marrow involvement. Description of the first broad distribution of CD123 in haematological malignancies, including first cases in hairy cell leukemia (Haematologica 2001;86:1261-9).
 4. Study of acute leukemias with KMT2a lesions: description of the differential morphology compared to other cases with myelomonocytic differentiation, presence of p53 mutations, description of nodal forms of KMT2a neoplasms, identification of the characteristic phenotype (monocytic markers + immaturity), participation in international study in which the associated mutations were exhaustively described (Leukemia 1995;9:955-9;Leuk Res 1999;23:585-8;Haematologica 2001;86:218-9,Leukemia 2003;17:76-82;Cancer Genet Cytogenet 2003;142:8-12;Blood 2016;128:e1-9;Hematol Oncol 2017;35:778-88;Hemasphere 2019;3:e181).
 5. Residual disease studies in acute leukemias with tandem approach (cytometry and biology molecular): application to LAL Ph+, AML with CBFb-MYH11 and RUNX1-RUNX1T1 rearrangements. Participation in the development of the standardised test for the quantification of WT1 and application to the monitoring of myeloid neoplasms using conventional chemotherapy, stem cell transplant, demethylating agents, and the development of a PCR-specific digitalis (Leukemia 2000;14:339-40;Haematologica 2003;88:637-45;Leuk Res 2005;29:1109-16;Leukemia2006;20:87-94;Leuk Res 2009;33:1643-9;J Clin Oncol 2009;27:5195-201;Leukemia 2013;27:2157-64;Biol Blood Marrow Transplant 2018;24:55-63;Eur J Haematol 2019;103:208-14;Ann Hematol 2020;99:765-72).
 6. Application of genotypic techniques and new molecular platforms in haematological diagnosis focused on acute myeloid leukemias, multiple myeloma, lymphomas, and chronic lymphoproliferative syndromes (Haematologica 2002;87:828-35; Expert Rev Mol Diagn 2019;19:571-8;Blood 2013;121:1403-12;Blood 2013;121:4902-5;Leukemia2016;30:929-36; Cytometry B Clin Cytom 2018;94:121-8;Cytometry B Clin Cytom 2019;96:143-8)
 7. Reference laboratory in the protocols of the CETLAM cooperative group: clinical and genotypic correlation work. Reference laboratory for the Novartis Ratify trial, which allowed the approval of midostaurin as first-line treatment in AML with FLT3 mutations. Work on allelic ratios: the importance of the load in the forecast. Design of protocols based on post-consolidation treatments according to molecular findings and MRD. We are currently dealing with the rapid molecular diagnosis of recently diagnosed AML (Helena Castellet, team member). We analyze mutations of NPM1, FLT3, CEBPA, IDH1, IDH2, KMT2a, and chromosomal translocations included in the AML-plex kit. We have incorporated the UBTF tandem analysis and metabolism studies in leukemia (published in 2025).

MAIN LINES OF RESEARCH

- Germ cells neoplasms. (Pratcorona Canela, Marta).
- Erythropathology. (González Álvarez, Nuria).
- Flow cytometry. (Leoz, Pilar).

SCIENTIFIC CHALLENGES

- Long-read sequencing and optical genome mapping applied to complex molecular abnormalities.

- Clonal evolution assessed by ddPCR and NGS.
- Metabolism parameters in the diagnosis and treatment of hematologic neoplasms.
- Structural studies to assess the pathogenic potential of mutants.
- Rare red cell disorders diagnosis.

ACTIVE & AWARDED GRANTS

- San José Alonso, Paula. Estados ferrodeficitarios enmascarados: valores de ferritina, hepcidina y receptor soluble de transferrina. FUND. JL CASTAÑO 2024. Fundación José Luis Castaño. Duration: 2024-2026. 12.000,00 €
- Sierra Gil, Jordi & Pratcorona Canela, Marta. Poblaciones subclonales de LMA y células madre leucémicas identificadas mediante secuenciación de ARN de una sola célula y citometría de flujo multiparamétrica: impacto en la respuesta al tratamiento. PI20/01621. Instituto de Salud Carlos III (ISCIII). Duration: 2021-2025. 304.920,00 €

DOCTORAL THESES DEFENDED

- Cisa Wieczorek, Sabina. Estudio metabólico de c-KIT en líneas celulares mieloides y LMA en casos con sobreexpresión de WT1. 03/12/2024. Universitat Autònoma de Barcelona. Supervisors: Nomdedeu Guinot, Josep Francesc; Blanco Vaca, Francisco. <https://hdl.handle.net/10803/693201>.

SCIENTIFIC PRODUCTION

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Molecular Pathology of Gynaecologic Cancer

Group leader

Lerma Puertas, Enrique (FGS)

Researchers

Bagué Rosell, Sílvia (FGS)

Catasús Cols, Lluís (FGS)

Espinosa Mariscal, Iñigo (FGS)

Ferré Figa, Malena (FGS)

Fumagalli, Caterina (FGS)

Fuste Chimisana, Victoria (FGS)

Gallardo Alcañiz, Alberto (FGS)

López Vilaró, Laura (FGS)

Manzotti, Carolina (FGS)

Mozos Rocafort, Ana (FGS)

Orellana Fernández, Ruth (FGS)

Szafranska, Justyna (FGS)

Research technicians

Clua González, Agustín (FGS)

González Vidal, Alan (FGS)

Gutiérrez Montalbán, Raquel (FGS)



DESCRIPTION

The group focuses on molecular and translational research of breast and gynecological tumors. Our research aims to apply the results in the field of biomedicine, particularly in the development of methods that aid in the diagnosis, prognosis, and treatment of breast and gynecological tumors.

MAIN LINES OF RESEARCH

- Pathogenic mechanisms of gynaecological cancer (breast/endometrial/ovarian cancer). (Lerma Puertas, Enrique).
- Molecular mechanisms of stromal response and immunosuppression in breast and endometrial cancer. (Lerma Puertas, Enrique).
- Clinical application of prognostic factors in common cancers (breast, endometrial, ovarian, etc). (Lerma Puertas, Enrique).
- Clinical application of tumour markers. (Lerma Puertas, Enrique).
- Molecular biology of uterine and extra-uterine sarcomas. (Lerma Puertas, Enrique).

SCIENTIFIC CHALLENGES

- Progress as a productive translational gynaecological cancer research group, capable of competing with other highly visible groups in Barcelona that publish regular articles in reputable journals.
- Cooperate with other groups at the national and international levels.

SCIENTIFIC PRODUCTION

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Otorhinolaryngology and Head and Neck Cancer

Group leader

Quer Agustí, Miquel (FGS)

Researchers

Casasayas Plass, Maria (FGS)

De Juan Beltran, Júlia (FGS)

Gras Cabrerizo, Juan Ramón (FGS)

Holgado Clua, Anna (FGS)

Kolanczak, Katarzyna Alicj (FGS)

León Vintró, Xavier (FGS)

López Vilas, Montserrat (FGS)

Orús Dotú, César (FGS)

Pujol Olmo, Albert (FGS)

Valero Mayor, Cristina (FGS)

Vázquez López, Cristina (FGS)

Venegas Pizarro, María Del Prado (FGS)



DESCRIPTION

Our group is dedicated to research related to Otolaryngology and Head and Neck tumors, both at the clinical and translational levels.

The main area of research of our group is Head and Neck Cancer. In this field, we have an extensive database of all Head and Neck Cancers treated in our Hospital since 1985. We research clinical aspects, as well as the study of genetic, molecular, and inflammatory factors that are relevant to prognosis and/or response to different treatments. In recent years, we have also focused on the use of nanoparticles in the treatment of head and neck cancer. In this field, we have permanent and strong collaborations. Inside the IR, we collaborate with two main groups: Oncogenesis and antitumour drugs (Dr Ramon Mangues) and Genomics of Complex Diseases (Dr Mercedes Camacho). Outside our institution, we have also permanent collaborations with national and international groups.

Also, we are dedicated to clinical studies in endoscopic nasal and skull base surgery. Finally, we also work on different otological problems, mainly genetic deafness with strong collaboration with the Genetic Department.

MAIN LINES OF RESEARCH

- Head and Neck Cancer. (León Vintro, Xavier).
- Endoscopic nasal and skull base surgery. (Gras Cabrerizo, Juan Ramon).
- Otologic genetic disorders. (Venegas Pizarro, María Del Prado).

SCIENTIFIC CHALLENGES

- **Heterogeneity of Head and Neck Cancers.** Head and Neck Cancers encompass a diverse group of tumors with varying anatomical sites, histological subtypes, and biological behaviour, complicating efforts to standardise prognostic models and treatment strategies.
- **Integration and Analysis of Longitudinal Clinical Data.** Managing and extracting meaningful insights from an extensive, longitudinal clinical database (spanning since 1985) requires advanced bioinformatics tools and robust data integration strategies.
- **Identification of Reliable Biomarkers.** Discovering genetic, molecular, and inflammatory biomarkers that can predict prognosis or treatment response remains challenging due to tumor heterogeneity and the complexity of molecular interactions within tumors.
- **Translating Nanoparticle Research into Clinical Practice.** While nanoparticles hold great promise, challenges remain in optimising their delivery, reducing toxicity, ensuring reproducibility, and conducting robust clinical trials in head and neck oncology.
- **Interdisciplinary and Multicenter Coordination.** Maintaining and expanding effective collaborations across multiple groups—both internal and external—requires continuous alignment of scientific goals, data-sharing protocols, and administrative support.
- **Precision Medicine in Genetic Deafness.** Developing targeted interventions for genetic forms of hearing loss is hindered by the genetic diversity of deafness-related mutations and limited therapeutic options for most identified genes.
- **Advancement of Endoscopic Skull Base Surgery Techniques.** Improving surgical outcomes while minimising complications in endoscopic nasal and skull base surgery demands ongoing innovation in instrumentation, imaging, and anatomical navigation.
- **Bridging Translational Gaps.** Ensuring that findings from molecular and preclinical studies

can effectively inform and transform clinical practice remains a core challenge, especially in complex diseases such as Head and Neck Cancer.

ACTIVE & AWARDED GRANTS

- León Vintro, Xavier & Quer Agustí, Miquel. Búsqueda de marcadores celulares y moleculares que predigan respuesta a inhibidores de punto de control inmune en pacientes con cáncer escamoso de cabeza y cuello de mal pronóstico. PI24/01605. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 121.250,00 €
- Quer Agustí, Miquel. Nanopartículas dirigidas al estroma tumoral como nuevo tratamiento para el cáncer escamoso de cabeza y cuello. PI21/00232. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2026. 159.720,00 €

DOCTORAL THESES DEFENDED

- Bejarano Panadés, Natàlia. Estudio y caracterización de la inmunoexpresión de la Podoplanina en el carcinoma escamoso de cabeza y cuello virus Papiloma humano negativo. 08/01/2024. Universitat Autònoma de Barcelona. Supervisors: Rama López, Julio; Quer Agustí, Miquel. <https://hdl.handle.net/10803/691552>
- Pardo Muñoz, Laura. Factores predictores funcionales de la cirugía transoral robótica en el cáncer de orofaringe. 20/12/2024. Universitat Autònoma de Barcelona. Supervisors: Virós Porcuna, David; Quer Agustí, Miquel. <http://hdl.handle.net/10803/693450>

SCIENTIFIC PRODUCTION

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 - Gras JR, Martel M, Casasayas M, Villatoro JC, García A, Masegur H, Reina F, Muñoz F. Transpalpebral transorbital endoscopic lateral approach to the middle cranial fossa: anatomical study in cadaver. European Journal Of Anatomy. 2024; 28(3). DOI:10.52083/HNNK7711. Document type: Article.
 - Holgado A, León X, Llansana A, Valero C, Casasayas M, Fernández A, Quer M. Warthin's Tumour as a Parotid Gland Incidentaloma Identified by PET-CT Scan in a Large Series of Cases. Indian Journal of Otolaryngology and Head & Neck Surgery. 2024; 76(4). DOI:10.1007/s12070-024-04592-0. PMID:39130264. IF:0,054 (Q4/10D). Document type: Article.
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 - Sansa A, Valero C, Pujol A, Sauter B, Gayà J, Quer M, León X. Prognostic capacity of PIV (pan-immune-inflammation value) in patients with head and neck squamous cell carcinoma. Acta Otorrinolaringologica Espanola. 2024;

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 - Valero C, León X, Quer M. Host-related indexes in head and neck cancer. Current Opinion in Otolaryngology & Head and Neck Surgery. 2024; 32(2). DOI:10.1097/MOO.0000000000000954. PMID:38116851. IF:1,900 (Q2/3D). Document type: Article..

Oncology Haematology and Transplantation

Group leader

Briones Meijide, Javier (FGS)
Sierra Gil, Jordi (FGS) (until 08/02/2024)

Researchers

Amat Fernández, Alba (FGS)
Argüello de Tomás, Miquel (FGS)
Aso Ferreras, Olga (FGS)
Caballero González, Ana Carolina (FGS)
Canaleta Ros, Cristina (FGS)
Cortés Barba, Susana (FGS)
Escribà García, Laura (IR)
Espallargas Ariño, María Isabel (FGS)
Esquirol Sanfeliu, Albert (FGS)
García Cadenas, Irene (FGS)
Garrido Díaz, Ana (FGS)
González Álvarez, Iria (FGS)
Jara Bustamante, Paola (IJC)
Lahuerta Berzal, Esther (FGS)
López Burgués, Miriam (FGS)
López Pardo, Jordi (FGS)
Martino Bofarull, Rodrigo (FGS)
Papell Penetró, Aina (FGS)
Pérez Toral, Elisabet (FGS)
Petit Gascón, Patricia (FGS)
Poyatos Dorado, Paula (IR)
Quinto Llego, Kimberly (FGS)
Rojas Baena, Francisca (FGS)
Saavedra Gerosa, Silvana Daniela (FGS)
Sierra Gil, Jordi (FGS)
Sorribes Portella, Marina (FGS)
Ujaldón Miró, Cristina (IR)

Research technicians

Artigas Baleri, Alícia (IR)
Bober, Anna (IR)
Castellet Farrús, Helena (IR)
de la Riva Buissen, Antonio (IR)
de Rueda Gamboa, María Jessica (IR)
González Álvarez, Nuria (IR)
Grau Novellas, Neus (IR)
Guardiola Perelló, María (IR)
Iniesta Ruiz, Elena (IR)
Iranzo Ribera, Eva (IR)
Lin Yao, Shengjie (IR)
López Moreno, Sonia (IR)
Miqueleiz Alamos, Sara (IR)
Montserrat Torres, Rosanna (IR)
Pascual Latorre, Irene (IR)
Pérez García, Nuria (IR)
Pujol Fernández, Paula (IR)
Rodríguez Fernández, Diana (IR)
Rosal Muntadas-Prim, María Josefa (IR)
Samsó Zamora, Clàudia (IR)
Victoria Fraj, Sara (IR)



DESCRIPTION

The group develops translational and clinical research in the field of blood cancer and hematopoietic transplants, focusing on the prognostic impact of molecular markers in acute myeloid leukemia and lymphoma. The group is intensively focused on the study of innovative genetically modified T cells with antigen-specific chimeric receptors (CARs) and their clinical application in patients with haematological cancer.

The group also develops innovative strategies for allogeneic hematopoietic transplantations, including novel strategies for reducing graft-versus-host disease complications.

MAIN LINES OF RESEARCH

- Clinical trials with academic-developed CART cells for Hodgkin and B cell non-Hodgkin Lymphoma (Briones Meijide, Javier; Caballero González, Ana Carolina).
- Development of memory-enriched CART cells under GMP conditions for clinical application (Escribà García, Laura; Briones Meijide, Javier; Caballero González, Ana Carolina).
- Preclinical development of fourth-generation CART cells for hematological malignancies.

(Poyatos Dorado, Paula; Escribà García, Laura; Caballero González, Ana Carolina; Briones Meijide, Javier).

- Study of the prognostic value of clinical and biological parameters in acute myeloid leukemia. (Garrido Díaz, Ana; Sierra Gil, Jordi).
- Study of the molecular prognostic factors in lymphoma and chronic lymphocytic leukemia. (Caballero González, Ana Carolina; Arguello De Tomas, Miquel; Briones Meijide, Javier).
- Molecular studies of minimal residual disease (liquid biopsy) in lymphoid malignancies and myeloma. (Caballero González, Ana Carolina; Arguello De Tomas, Miquel; López Pardo, Jordi; Briones Meijide, Javier).
- Design of new modalities of allogeneic stem-cell transplantation. (Esquirol Sanfeliu, Albert; García Cadenas, Irene; Martín Bofarull, Rodrigo).
- Innovative pharmacokinetic strategies for reducing hematopoietic transplantation complications. (García Cadenas, Irene; Esquirol Sanfeliu, Albert; Martín Bofarull, Rodrigo).

SCIENTIFIC CHALLENGES

- Development of academic CAR-T cell therapies for Phase I/ II clinical trials for hematological malignancies.
- Development of novel CART cells (4th and 5th generation) with enhanced antitumor efficacy.
- Identify new prognostic parameters for risk and therapeutic stratification in leukemia and lymphoma.
- Molecular characterisation of acute myeloid leukemia and lymphoma for designing molecular-targeted precision therapies
- Establish Liquid biopsy for monitoring residual disease in acute leukemia, lymphoma and myeloma.
- Reduce toxicity and complications of allogeneic transplants. New conditioning treatments and strategies for monitoring targeted therapies for graft versus host disease.

ACTIVE & AWARDED GRANTS

- Briones Meijide, Javier/Sierra Gil, Jordi. RICORS TERAV. RD21/0017/0011. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 169.222,90 €
- Briones Meijide, Javier. TERAV+. RD24/0014/0036. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 224.001,25 €
- Briones Meijide, Javier. CAR T cells with costimulatory chimeric receptors for improving antitumor efficacy against Hodgkin lymphoma. GINJOL 2024-13-010. Fundació Institució dels Centres de Recerca de Catalunya (iCERCA). Duration: 2024-2025. 10.000,00 €
- Briones Meijide, Javier. Terapia con CART de cuarta generación con secreción de citoquinas con efecto dual. PI24/01917. Instituto de Salud Carlos III (ISCIII). Duration: 2024-2027. 121.250,00 €
- Briones Meijide, Javier. Accelerating Development and Improving Access to CAR and TCR-engineered T cell therapy. T2EVOLVE IMI2-RIA 945393-1. European Commission. Duration: 2021-2025. 271.370,00 €
- Sierra Gil, Jordi. Medicina Personalizada para la mejora del tratamiento de la Leucemia Mieloide Aguda: combinación de terapias de precisión con un nanoconjugado de auristatina dirigido a las células madre leucémicas. PI24/00013. Instituto de Salud Carlos III (ISCIII). Duration: 2024-2027. 252.500,00 €

DOCTORAL THESES DEFENDED

- Berengua Pereira, Carla. Aportación del cultivo virológico en la interpretación de las pruebas moleculares en dos modelos de infección respiratoria: Citomegalovirus y SARS-CoV-2. 26/02/2024. Universitat Autònoma de Barcelona. Supervisors: Marcos Maeso, Maria Ángeles; Martín Bofarull, Rodrigo; Navarro Risueño, Ferran. <https://hdl.handle.net/10803/691629>

SCIENTIFIC PRODUCTION

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- Salas MQ, Cascos E, López A, Pérez E, Baile M, Rodríguez CM, Cascón MJP, Luque M, Esquirol A, Fernando IH, Peña F, Ormtegi IO, Marín A, Fernández S, Domínguez JJ, Fernández SV, Girón MFD, Pinedo LG, García L, González AP, Torrado T, Filaferro S, Cedillo A, Ortí G, Chacón MJ, G. Cardiac events after allo-HCT in patients with acute myeloid leukemia. *Blood Advances*. 2024; 8(21). DOI:10.1182/bloodadvances.2024013535. PMID:39178345. IF:7,400 (Q1/2D). Document type: Article.
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Cancer Predisposition and DNA Repair Syndromes

Group leader

Surrallés Calonge, Jordi (IR)

Researchers

Agbo, Lynda Marie Clemence (IR)

Bogliolo, Massimo (UAB)

Camps Fajol, Cristina (IR)

Cavero Moreno, Debora (IR)

López De Heredia, Miguel (CIBER)

Marsal Oliván, Aina (IR)

Mora Rodríguez, Ángel (IR)

Muñoz Pujol, Gerard (IR)

Pujol Calvet, Roser (CIBER)

Ramírez de Haro, María José (CIBER)

Rodríguez Santiago, Benjamín (FGS)

Tejero Laguna, Eudald (IR)

Research technicians

Carceller Gental, Berta (IR)

Molina Romero, Ana (UAB)

Ortega Aceituno, Jennifer Paola (IR)

Peiró Navarro, Montserrat (UAB)



DESCRIPTION

This research group works in the field of genetic diseases characterised by a high predisposition to cancer. Many of these syndromes are caused by mutations in DNA repair genes. These genes are therefore crucial in preventing cancer transformation. Research on these syndromes is crucial not only to improve their diagnosis and treatment but also to unravel the mechanisms that protect us from cancer.

Over the past few years, the team has identified and studied several novel genes involved in such syndromes and performed therapeutic research leading to two orphan drug designations by the European Medicines Agency and several academic clinical trials, including gene therapy and drug repurposing. They also investigate DNA repair genes involved in these syndromes as therapeutic targets to induce cancer-specific lethality through synthetic lethality.

There is an increasing number of novel therapeutic strategies based on the deep knowledge of the genetic causes of the disease. Therefore, a proper genetic diagnosis is essential not only to provide adequate genetic counselling and clinical management to patients and their families but also to provide personalised medicine based on genomic information.

MAIN LINES OF RESEARCH

- Genetics and molecular biology of cancer-prone genetic syndromes with a focus on familial breast cancer and Fanconi Anemia and

- related chromosome fragility syndromes such as ataxia telangiectasia. (Bogliolo, Massimo).
- Development of new diagnostic and therapeutic tools in Fanconi anemia, including gene therapy, regenerative medicine and drug repurposing. (Surralles Calonge, Jordi).
- Mechanism of genomic instability and predisposition to cancer. Study of DNA repair mechanism and biological and clinical consequences of DNA repair failure. (Bogliolo, Massimo).
- Fanconi/BRCA pathway in cancer. Implications of Fanconi genes in cancer and their use as therapeutic target against cancer. Development of DNA repair inhibitor against cancer by synthetic lethality. (Surralles Calonge, Jordi).
- Application of next generation sequencing, genome medicine and genome editing to better identify pathogenic mutations and perform functional studies of variants of known significance in rare diseases. (Muñoz Pujol, Gerard).

SCIENTIFIC CHALLENGES

- Optimisation of our drug candidate to inhibit the FA pathway as a novel anticancer therapy based on cancer-specific synthetic lethality.
- Follow-up of functional assays to classify variants of unknown significance in cancer-predisposing genes.
- As we signed a collaboration agreement with US-based Rocket Pharma Ltd for 10 10-year follow-up of FA patients undergoing gene therapy, we will continue to do so.
- Running of the AFAN clinical trial for the repurposing of afatinib to treat Fanconi anemia patients with advanced head-and-neck cancer.
- Performing a drug screening to find drugs reactivating the Fanconi pathway in cells expressing a FANCA mutant protein.
- Develop and apply advanced genomic medicine tools and pipelines for detecting pathogenic mutations in genes associated with rare diseases.

- Validation of gene candidates identified in a genome-wide CRISPR-Cas screen to identify synthetic lethal and viable interactions with the Fanconi/BRCA pathway.

ACTIVE & AWARDED GRANTS

- Mora Rodríguez, Angel. Ayudas para contratos predoctorales para la formación de doctores 2022. PRE2022-104819. Ministerio de Ciencia, Innovación y Universidades. Duration: 2024-2028. 111.758,00 €
- Surralles Calonge, Jordi. The Fanconi anemia/BRCA pathway: Genomic medicine and advanced therapies. (FABRAT). PID2021-122411OB-I00. Ministerio de Ciencia e Innovación. Duration: 2022-2025. 417.000,00 €
- Surralles Calonge, Jordi. Ayudas Programa Investigo 2022. 2022 INV-1 00048. Agència de Gestió d'Ajuts Universitaris i de Recerca AGAUR. Duration: 2022-2024. 66.217,84 €
- Surralles Calonge, Jordi. Reposicionamiento de afatinib para HNSCC en pacientes con anemia de Fanconi. ICI22/00076. Instituto de Investigación Carlos III (ISCIII). Duration: 2023-2026. 396.101,20 €
- Surralles Calonge, Jordi. Valorización y prueba de concepto de un inhibidor de la reparación del DNA por la vía Fanconi/BRCA para el tratamiento del cáncer por letalidad sintética. PDC2022-133233-I00. Ministerio de Ciencia, Innovación y Universidades (MICIU). Duration: 2022-2024. 149.500,00 €
- Surralles Calonge, Jordi. Genomic medicine and rare diseases group. 2021 SGR 00835. Duration: 2022-2025. 40.000,00 €
- Surralles Calonge, Jordi. AFAN trial. Phase Ib/II study to investigate the safety and efficacy of Afatinib when administered as therapy in Fanconi anemia patients with unresectable and / or metastatic locoregionally advanced squamous cell carcinoma of the oral cavity, oropharynx or hypopharynx or larynx. (FARF) Fanconi Anemia Research Fund. Conv. FARF Research Grant Award (RGA) Program. Duration: 2023-2027. 296.303 €

- Surrallés Calonge, Jordi. Genómica funcional: desarrollo e implementación de una plataforma para el estudio de casos de cáncer hereditario sin resolver (IMPaCT_VUSCan). PMP22/00064. Duration: 2023-2025. 352.479,05 €

DOCTORAL THESES DEFENDED

- Caveró Moreno, Debora. DNA repair in cancer therapeutics: developing a specific inhibitor for tumors and targeted therapies to treat solid tumors in rare diseases. 18/10/2024. Universitat Autònoma de Barcelona. Supervisors: Surrallés Calonge, Jordi; Minguillón Pedreño, Jordi. <https://hdl.handle.net/10803/692827>.

SCIENTIFIC PRODUCTION

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Gynecologic and Peritoneal Oncology

Group leader

Céspedes Navarro, María Virtudes (IR)

Researchers

Caruana Santiago, Pablo (IR)

Edwards, Maria Charlotte (IR)

Farrés Rubí, Alba (FGS)

Luna Guibourg, Rocío (FGS)

Magret Descamps, Eva (FGS)

Martín Lorente, Cristina (FGS)

Muñoz Sánchez, Raquel (FGS)

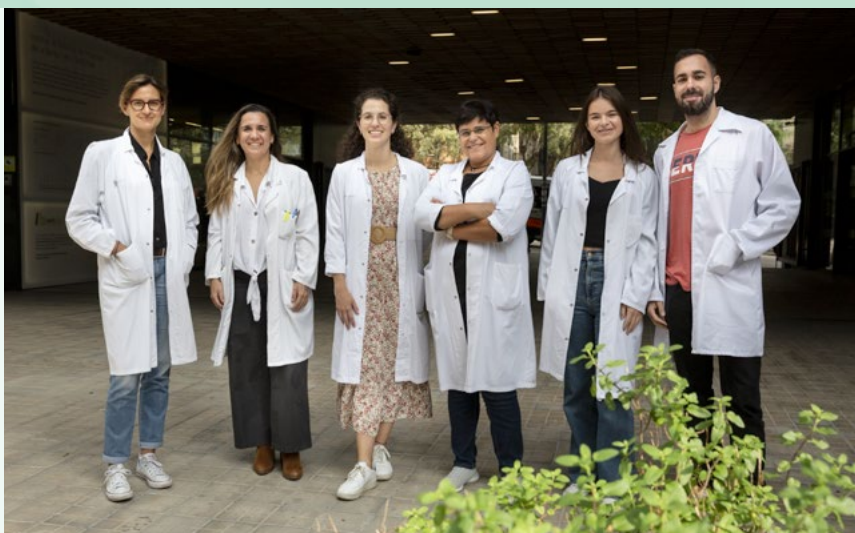
Rovira Negre, Ramón (FGS)

Soler Moreno, Cristina (FGS)

Teixera, Natalia (FGS)

Research technicians

Zapater Enrique, Oscar (FGS)



DESCRIPTION

The Gynecologic and Peritoneal Oncology research group (GOGYP), coordinated by Dr. Maria Virtudes Céspedes, is an emerging group, led by an established scientist from the Miguel Servet Programme. GOGYP is a clinic-translational research team that belongs to the onco-haematological diseases research area at the Institut de Recerca Sant Pau (IR-HSCSP). They are actively engaged in advancing surgical techniques, developing diagnostic tools, and creating innovative therapies based on nanotechnology. Their research encompasses patient and sample screening, as well as in vitro and in vivo modelling and experimentation. The team also possesses strong expertise in the preclinical development of drugs and clinical assays. The results of their multidisciplinary efforts contribute to three transversal research programs in IR-HSCSP: Advanced Therapies, Prognostic and Diagnostic Biomarkers, and Women's Health and Care.

MAIN LINES OF RESEARCH

- Identify new prognostic biomarkers and new therapeutic targets for risk and therapeutic stratification in endometrial cancer patients. (Céspedes Navarro, Maria Virtudes).
- Study the effect of the Nervous system in tumor progression and metastasis in gynecological and peritoneal cancers. (Céspedes Navarro, Maria Virtudes).
- Modeling gynecological and peritoneal cancers in animals to better understand tumor

pathophysiology and the use for preclinical drug evaluation. (Céspedes Navarro, Maria Virtudes).

- Evaluation and preclinical development of new antitumor compounds, using nanotechnology, aimed at the treatment of metastases in high-grade gynecological cancers. (Céspedes Navarro, Maria Virtudes).

SCIENTIFIC CHALLENGES

- Promote clinical and translational research into gynaecological cancers with a huge database and study relevant clinical issues.
- Obtain funding from FIS, regional authorities and private companies.
- Enhance cooperation with other clinical and research groups both within Sant Pau and outside the hospital, and attract predoctoral and postdoctoral fellows.
- Develop molecular markers for informed therapeutic decision-making in patients with endometrial cancer.
- Identification and validation of novel therapeutic targets related to neuromodulation in the tumour progression of gynaecological cancers.
- Achieve antitumor and antimetastatic effects by targeting drugs at cancer stem cells in gynaecological and peritoneal cancers.

ACTIVE & AWARDED GRANTS

- Caruana Santiago, Pablo. Contractes predoctorals PFIS 2021. FI21/00146. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2025. 119.567,00 €
- Céspedes Navarro, Maria Virtudes. Innovative nanotherapy for highly-metastatic peritoneal cancers: activating neuroreceptors to kill cancer stem cells. PI20/00623. Instituto de Salud Carlos III (ISCIII). Duration: 2021-2024. 173.030,00 €
- Céspedes Navarro, Maria Virtudes. GRUP D'ONCOLOGIA GINECOLOGICA I PERITONEAL (GOGyP). 2022 INV-1 00048.

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- Céspedes Navarro, Maria Virtudes. Grup d'Oncologia Ginecològica i peritoneal (GOGYP). 2021 SGR 00976. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). Duration: 2022-2025. 36.000 €.
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- Céspedes Navarro, Maria Virtudes. Validación de herramientas diagnósticas OMICS para la identificación de dianas terapéuticas y monitoreo de la recurrencia en glioblastoma. AC24/00157. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 199.467,00 €
- Edwards, Maria. InPHINIT 22. Fundació La Caixa. Duration: 2022-2025. 115.092,00 €

DOCTORAL THESES DEFENDED

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SCIENTIFIC PRODUCTION

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Clinical Research in Transfusion Medicine

Group leader

Medina Marrero, Laura (BST)

Researchers

Bosch Llobet, Maria Alba (BST)

Ene, Gabriela Simona (BST)

Ferrer Garrido, Gonzalo José (BST)

Sanz Linares, Gabriela (BST)



DESCRIPTION

Regarding cellular apheresis, our main aim is to take part in the ongoing CART clinical trials in the haematology field. Nowadays, this is our primary focus as a research group. Not only being involved in academic CARTs manufactured by our own Research Institute, but also in every new CART that is upcoming from other services, such as neurology or rheumatology.

In the apheresis field, an unipuncture ecoguided programme has been developed, which has reduced central venous access requirements before collection. This project is now focused on including not only patients or donor candidates for cellular collections but also for therapeutic procedures.

In the transfusion area, another edition of Transfusion Indications Audit is being developed by the Transfusion Hospital Committee (a platelet audit has been performed in 2023, but next one will include red blood cells which were audited last time in 2019). In this regard, a massive transfusion interhospital audit has been taking place in 2024, with results to be analysed shortly. In the transfusion field, a new outpatient transfusion programme should also be taken into account, in coordination with the haematology service, which has been working since February 2024.

Two projects are underway in the donation area. The first one relates to the re-enrollment of excluded patients for total blood donation, but they are acceptable as plasma donors. The second one, with a planned kick-off in July, will include ferritin controls in regular donors.

MAIN LINES OF RESEARCH

- CART: novel clinical trials upcoming in the field of neurology and rheumatology. (Sanz Linares, Gabriela; Medina Marrero, Laura).
- Transfusion: hospital transfusion audit as a starting point for the patient blood management program. (Ferrer Garrido, Gonzalo José; Bosch Llobet, Maria Alba).
- Ferritin follow-up in regular donors. (Sanz Linares, Gabriela; Medina Marrero, Laura).
- Therapeutic erythrocyte exchange with red blood cells reduction programme. (Ferrer Garrido, Gonzalo José; Sanz Linares, Gabriela).

SCIENTIFIC CHALLENGES

- Novel CART clinical trials upcoming: RNAC-MG-002; Descartes: neurology (for myasthenia gravis), IM060-0001: rheumatology (for lupus, arthritis, myositis and systemic sclerosis), CYTB323K12201: rheumatology (for systemic sclerosis).
- Comparative study between therapeutic erythrocyte exchanges with red blood cells reduction versus only exchange—interhospital study in collaboration with the haematology service.
- Patient blood management protocol in outdoor patients, previous to admission for surgery (in collaboration with anesthesia service). According to this project, a transfusion audit will be developed by the Hospital Transfusion Committee in 2025.
- Comparative study between therapeutic plasma exchanges (TPE) alone versus TPE in combination with immunoglobulins in immune-mediated neurologic pathology, in collaboration with the neurology service.
- Immunotherapy pharmacokinetic (especially with novel agents: ruxolitinib, abatacept, etc), in patients undergoing therapeutic plasma exchange (TPE), in collaboration with the neurology service.

SCIENTIFIC PRODUCTION

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- Romera Martínez I, Avendaño-Solá C, Villegas Da Ros C, Bosch Llobet A, García Erce JA, González Fraile MI, Guerra Domínguez L, Vicuña Andrés I, Anguita Velasco J, González Rodríguez VP, Contreras E, Urcelay Uranga S, Pajares Herraiz ÁL, Jiménez-Marco T, Ojea Pérez AM, Arroyo Rodríguez JL, Pérez-Olmeda M, Ramos-Martínez A, Velasco-Iglesias A, Bueno Cabrera JL, Duarte RF. Factors related to the development of high antibody titres against SARS-CoV-2 in convalescent plasma donors from the ConPlas-19 trial. *Vox Sang*. 2024; 119(1):27-33. DOI:10.1111/vox.13561. PMID:37986640. IF:1,800 (Q3/7D). Document type: Article.



5.1.3 Neurological Diseases, Neuroscience & Mental Health Area

Juan Fortea

Area Director

This area covers research in neurological, neurodevelopmental and mental disorders. Among these are diseases such as stroke, neuromuscular conditions, neurodegenerative diseases, schizophrenia, depression, and chronic pain. A wide range of neuroscience techniques is employed in this area. Some groups focus on the genetic basis of neurological diseases, the identification of biomarkers, brain imaging, neurosurgical methods, deep-brain stimulation, or omics sciences, while other groups work with models of pain, in the biology of synapses, or neuropharmacology. Large population cohorts of patients with clinical follow-ups are analysed in this area.

RESEARCH GROUPS

Cerebrovascular Diseases

Martí Fàbregas, Joan

Neuromuscular Diseases

Olivé Plana, Montserrat

Parkinson's Disease and Movement Disorder

Kulisevsky Bojarski, Jaime

Molecular Neuropharmacology

Pol Rigau, Olga

Pharmacological Research in Humans

Antonijuan Arbós, Rosa

Mental Health

Portella Moll, Maria

Neurobiology of Dementias

Fortea Ormaechea, Juan

Molecular Physiology of the Synapse

Bayés Puig, Alejandro

Stroke Pharmacogenomics and Genetics

Fernández Cadenas, Israel

Genetic Diseases

Gallano Petit, María Pía

Neurosurgery

Muñoz Hernández, Fernando

Molecular Neurodegeneration

Belbin, Olivia Elizabeth

Epilepsy

Boronat Guerrero, Susana

Multiple Sclerosis and Central Nervous System Autoimmune Diseases Research (New group from November 2024)

Vidal Jornada, Àngela

Cerebrovascular Diseases

Group leader

Martí Fàbregas, Joan (FGS)

Researchers

Camps Renom, Pol (FGS)

Ezcurra Díaz, Garbiñe (IR)

Fernández Vidal, Joan Miquel (FGS)

Guasch Jiménez, Marina (FGS)

Lambea Gil, Álvaro (IR)

Martínez Domeño, Alejandro (FGS)

Martínez González, José Pablo (FGS)

Prats Sánchez, Luis Antonio (FGS)

Ramos Pachón, Anna (FGS)

Research technicians

Aguilera Simón, Ana (IR)

Marín Bueno, Rebeca (IR)

Puig Grifol, Núria (IR)

Yélamos Morales, África (IR)



DESCRIPTION

The stroke team dedicates its research to ischemic and hemorrhagic stroke. Research is mainly oriented towards clinical projects, but also includes translational studies. The group is primarily composed of clinical neurologists dedicated especially to stroke, with postdoctoral or predoctoral training, as well as laboratory research personnel (biotechnology) and clinical trial support. The group undertakes intramural projects, either in collaboration with or independently of other groups within the same Institution, as well as extramural projects in collaboration with both national and international institutions.

MAIN LINES OF RESEARCH

- Cerebrovascular complications of carotid atheromatosis. Study of the vulnerability of the atheromatous plaque (Camps Renom, Pol).
- Prevention of cardiovascular events in patients with intracranial hemorrhage and atrial fibrillation (ENRICH-AF) and in patients with lobar intracerebral hemorrhage who take statins (Martí Fàbregas, Joan).
- Intracerebral hemorrhage due to anticoagulants (Prats Sánchez, Luis Antonio).
- Endovascular treatment to prevent hematoma growth in the acute phase (Prats Sánchez, Luis Antonio).
- Perilesional edema in patients with spontaneous intracerebral hemorrhage (Ramos Pachon, Anna).

- Management of patients with subarachnoidal hemorrhage (Ramos Pachon, Anna)
- Benefits and risks of intravenous thrombolysis and endovascular treatment (Camps Renom, Pol).
- Management of arterial blood pressure after endovascular treatment in patients with ischemic stroke and large vessel occlusion (Martí Fábregas, Joan).
- Relevance of the microbiota in cerebrovascular diseases (Prats Sánchez, Luis Antonio).
- Prognosis of catastrophic brain damage (Martínez Domeño, Alejandro).
- Participation in clinical trials (Camps Renom, Pol).
- Our centre is accredited as a centre of maximum complexity in the management of stroke patients (European Stroke Organisation), and our work is carried out in the framework of a tertiary university hospital.

ACTIVE & AWARDED GRANTS

- Camps Renom, Pol. Impacto de la Inflamación en la Progresión de la Aterosclerosis Carotídea y el Riesgo de Ictus (estudio INCREASE). PI22/01659. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2025. 141.570,00 €
- Camps Renom, Pol. RICORS-ICTUS. RD24/0009/0010. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 193.600,00 €
- Lambea Gil, Álvaro. Contratos Río Hortega 2022. CM22/00265. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2024. 65.000,00 €
- Martí Fábregas, Joan. Ensayo clínico sobre optimización hemodinámica de la perfusión cerebral tras el tratamiento endovascular en pacientes con ictus isquémico (Estudio HOPE). ICI20/00137. Instituto de Salud Carlos III (ISCIII). Duration: 2021-2026. 362.939,50 €
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SCIENTIFIC CHALLENGES

- Our research focuses on the acute management of patients with ischemic stroke or spontaneous intracerebral hemorrhage and the secondary prevention of stroke.
- We are interested in conducting research with applicability of the results to the clinical problems raised. To this end, we apply for funding in national calls for competitive funds (mainly from the Instituto Carlos III) or from private entities (for example, the Fundació Marató TV3). We are part of a national stroke research network (RICORS) that includes clinical and basic researchers. We aim to internationalise our research and for this we are involved in the writing and design of guidelines of the European Stroke Organization, we participate or are the promoters of multiple national or international clinical trials (with academic initiative or funded by pharmaceutical companies), we are represented in multiple collaborative consortia (e.g. biomarkers of vulnerable carotid plaque, brain microbleeds). We publish our research in high-impact journals (Q1, D1) and present our results at international conferences. The stroke group is expanding, and we aim to incorporate new researchers from diverse fields of knowledge to enhance multidisciplinary.

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Neuromuscular Diseases

Group leader

Olivé Plana, Montserrat (FGS)

Researchers

Carbayo Viejo, Álvaro (FGS)

Castilla Silgado, Juan (CIBER)

Collet Vidiella, Roger (IR)

Cortés Vicente, Elena (FGS)

Díaz Manera, Jorge Alberto (IR)

Gallardo Vigo, Eduard (IR)

Guardiola Ripoll, Maria (CIBER)

Llansó Caldentey, Laura (IR)

Lleixà Rodríguez, Maria Cinta (IR)

Martín Aguilar, Lorena (FGS)

Mederer Fernández, Tania Isabel (FGS)

Pascual Goñi, Elba (FGS)

Querol Gutiérrez, Luis Antonio (FGS)

Rojas García, Ricardo (FGS)

Tejada Illa, Clara (IR)

Turon Sans, Joana (FGS)

Ugarte Orozco, María José (IBEC)

Research technicians

Blanco Soto, Rosa María (IR)

Domenech García, Roger (IR)

García Loza, Iván (IR)

Llarch Cegarra, Paula (IR)

Martínez Bernal, Carmen (Ahead Therapeutics)

Rocaspana Codana, Josep (IR)

Segovia Simón, Sonia (IR)

Vesperinas Castro, Ana (IR)

Vidal Fernández, Maria Núria (IR)



DESCRIPTION

The Neuromuscular Diseases Unit is a multidisciplinary unit with extensive experience in the diagnosis, treatment and research of neuromuscular diseases. It is a team in which clinical and research activities are perfectly overlapped and in which clinical problems are addressed in the laboratory to find new biomarkers and diagnostic tools, new pathological mechanisms of disease and new therapeutic targets. The Unit is composed of neurologists, biologists and laboratory technicians who are all experts in basic and translational research and in the organisation and management of sample collections.

MAIN LINES OF RESEARCH

- Autoimmune neuromuscular diseases (myasthenia, neuropathies, and myopathies). (Querol Gutiérrez, Luis Antonio; Cortes Vicente, Elena; Gallardo Vigo, Eduard).
- Characterisation of new target antigens in Myasthenia Gravis (MG), and immune neuropathies (CIDP, GBS, MMN). Their use as diagnostic and therapeutic biomarkers.
- Nerve damage biomarkers.
- Pathogenesis of newly recognised antigens both in MG and in CIDP.
- Collaborators of the IGOS database for Guillain Barre syndrome.
- Coordinators of the INCBBase (international database for CIDP).

- GENRARE Spanish registry for neuromuscular diseases.
- Muscular dystrophies. (Olive Plana, Montserrat).
 - Muscle MRI analysis as a biomarker of different muscular dystrophies.
 - Natural history of Dysferlinopathies. The international COS-study Jain Foundation.
 - Development of cell models of NMD diseases to study pathogenic mutations.
 - Clinical, pathological and molecular characterisation of rare myopathies.
- Amyotrophic lateral sclerosis. (Rojas García, Ricardo).
 - Gene profile of ALS patients in Spain.
 - Biomarkers profile in different phenotypes of ALS.

SCIENTIFIC CHALLENGES

- Advances in the knowledge of the immunological mechanisms involved in the pathogenesis of autoimmune neuromuscular diseases (MG, CIDP, MMN).
- Evaluate the use of NFL and myelin proteins as biomarkers of nerve damage in inflammatory neuropathies.
- To develop mouse models to demonstrate the pathogenic effect of antibodies to new antigens in MG.
- Advances in the knowledge of the pathogenetic mechanisms of inflammatory myopathies (DM, necrotising myopathies).
- Search for new antigens and develop diagnostic tests using both known and novel biomarkers in immune-mediated neuropathies, myasthenia gravis, and inflammatory myopathies.
- Advances in the knowledge of the pathogenetic mechanisms involved in muscular dystrophies.
- Search for new genes and biomarkers in the different phenotypes of ALS.
- Advances in the knowledge of the pathogenetic mechanisms involved in ALS.

ACTIVE & AWARDED GRANTS

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- Gallardo Vigo, Eduard & Cortes Vicente, Elena. Estudio exhaustivo de la miastenia "seronegativa": de la clínica al descubrimiento de nuevos autoantígenos y su validación in vitro e in vivo. PI22/01786. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2025. 135.520,00€
- Gallardo Vigo, Eduard. Valorización de una terapia antígeno-específica para el tratamiento disruptivo de la diabetes tipo 1; esclerosis múltiple, miastenia gravis, enfermedad celíaca y artritis reumatoide. CPP2021-008475. Ministerio de Ciencia e Innovacion (MICINN). Duration: 2023-2025. 138.873,88 €
- Gallardo Vigo, Eduard. Characterization and optimization of myasthenia gravis care. OptiMyG. Competitiu. EJPR23-104 European Joint Programme of Rare Diseases. AC23_2/00030 EJP-RD ISCIII. 2024-2026. 174.918,00 €
- Olive Plana, Montserrat. Abordaje multidisciplinar para el diagnóstico y caracterización de enfermedades musculares raras. PI21/01621. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 123.420,00 €



- Pascual Goñi, Elba. Biomarkers in the diagnosis and follow-up of CIDP. GBS-CDIP-ELBA. GBS CDIP Foundation International. Duration: 2022-2025. 337.563,00 €
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- Querol Gutiérrez, Luis Antonio. Red Española de Neuropatías Autoinmunes. PMPER24/00018. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2026. 1.634.710,00 €
- Rojas García, Ricardo. Validación de biomarcadores candidatos para el diagnóstico y la progresión de la Esclerosis Lateral Amiotrófica y estudio de las vías fisiopatogénicas implicadas. PI19/01543. Instituto de Salud Carlos III (ISCIII). Duration: 2020-2024. 123.420,00 €
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Parkinson Disease and Movement Disorders

Group leader

Kulisevsky Bojarski, Jaime (FGS)

Researchers

Aracil Bolaños, Ignacio (FGS)

Campolongo Perillo, Antonia (FGS)

García Sánchez, Carmen (FGS)

Gironell Carrero, Alexandre (FGS)

Horta Barba, Andrea (IR)

Martínez Horta, Saül Indra (FGS)

Olmedo Saura, Gonzalo (IR)

Pagonabarraga Mora, Javier (FGS)

Pascual Sedano, Berta M (FGS)

Pérez Pérez, Jesús (FGS)

Ruiz Barrio, Iñigo (IR)

Sampedro Santaló, Frederic (FGS)

Vázquez Oliver, Anna (CIBER)

Research technicians

Alonso del Olmo, Gloria (IR)

Berzosa González, Irene (IR)

Bojtos, Lúcia (IR)

Bonavita, Sofía (IR)

Burgos Renedo, María (IR)

Fernández Vizuete, Cristina (IR)

Franch Martí, Carla (IR)

Pérez Carasol, Laura (IR)

Pla Sánchez, Mónica (IR)

Pons Pons, Gràcia (IR)

Puig Davi, Arnau (IR)

Rivas Asensio, Elisa María (IR)

Rodríguez Salgueiro, Sílvia (IR)

Rodríguez-Antigüedad Muñoz, Jon (IR)

Rubio Romera, Margarita (IR)

Salvat Rovira, Nil (IR)

Socarrás Arredondo, María Andrea (IR)

Soler Almendros, Judit (IR)



DESCRIPTION

Led by Jaime Kulisevsky MD, PhD, and based at the Movement Disorders Unit of Sant Pau Hospital and the Biomedical Research Institute, the group focuses on Parkinson's disease, Huntington's disease, atypical parkinsonisms, tremor, and other movement disorders. Priority lines include the study of neuronal mechanisms underlying cognitive impairment and neuropsychiatric symptoms, the development of specific diagnostic tools, and the analysis of pharmacological responses using neuroimaging, neuropsychology, clinical assessment, brain stimulation, genetics, and fluid biomarkers, among others.

MAIN LINES OF RESEARCH

- Research on cognitive impairment, behavioural dysfunctions, and other motor and non-motor symptoms in Parkinson's disease, using neurophysiological and neuroimaging techniques to identify biomarkers and to develop disease-specific tools for cognitive and functional assessment. (Kulisevsky Bojarski, Jaime; Pagonabarraga Mora, Javier; Pascual Sedano, Berta M).
- Investigation of clinical progression, cognitive phenotypes, and biomarkers in Huntington's disease, both in premanifest and manifest stages, through international cohort studies, multimodal neuroimaging, and the analysis of large-scale databases. (Martínez Horta, Saül Indra; Pérez Pérez, Jesús).

- Development of specific cognitive assessment tools for progressive supranuclear palsy and study of the neural correlates of clinical progression, cognitive decline, and behavioural alterations. (Pagonabarraga Mora, Javier).
- Clinical, neurophysiological, and neuroimaging characterisation of essential tremor, aimed at improving diagnostic accuracy and understanding disease mechanisms. (Gironell Carrero, Alexandre).
- Subthalamic DBS study in PD: Functional reorganisation of brain networks and repercussions on postsurgical complications.
- Monitoring the mobility using a sensor in fluctuating PD for therapeutic purposes. Multicenter Clinical Trial (INV-PROC-A118).

SCIENTIFIC CHALLENGES

- 1. Parkinson's Disease (PD)
 - General
 - COPPADIS: Cohort of Patients with Parkinson's Disease in Spain (national collaborative study).
 - Intensification for Specialist Physicians of the "Strategic Research and Innovation Plan" (PERIS) Expedient Number: SLT008 / 18.
 - Cognition
 - DuoCog: randomised, double blind and crossed study (immediate levodopa vs. intraduodenal in cognition and mood).
 - Neuropsychiatric disorders.
 - Prospective study: new method of music therapy in apathy and depression.
 - Choral singing in patients with PD. Study on its effects on apathy and depression.
 - Effects of Mindfulness on the Presence and Development of TCI.
 - Natural history and neural correlates of psychotic symptoms in PD patients.
 - Advanced PD
 - Nutritional analysis in patients with intraduodenal levodopa.
 - Prospective study of cognitive, behavioural, sleep and quality of life in patients with deep brain stimulation (DBS) and intraduodenal levodopa.
 - Prospective study of patient satisfaction after DBS.
- 2. Huntington's Disease (HD).
 - Coordination of the "Cognitive Phenotype Working Group" (European Huntington's Disease Network).
 - Spanish Coordination of Enroll-HD: A Prospective Registry Study in a Global Huntington's Disease Cohort (PI in Spain: J. Kulisevsky)
 - Validation of cognitive (HD-CRS) and functionality (HD-CFRS) scales.
 - Development and validation of new tools for cognitive and functional assessment of cognitive impairment in HD.
- 3. Tremor
 - Development of a tremor diagnostic system using a mobile app and software. Joint project with the Mediktora company.
 - Perampanel in essential tremor. "Real life" study.
- 4. Other neurodegenerative diseases
 - Neural correlates of hypofrontality in different subtypes of progressive supranuclear palsy (PSP).
 - Neuropsychiatric and behavioural symptoms in PSP subtypes.
 - FXTAS: collaborative research with Genetics from Hospital Clínic (Barcelona) and Associació Catalana X Fràgil (ACXF).
 - Collaboration with GEMT-CAT (Movement Disorders Group Catalan Neurology Society) in the Consensus Document on Genetics in Movement Disorders.
- 5. Neuroimaging and data engineering
 - Dynamic connectivity models in cognitive impairment in PD. In collaboration with Center for Brain and Cognition, Pompeu Fabra University, Barcelona.

- Neuroimaging and neurophysiology of hallucinations in PD: Project: “Unravelling dysfunctional brain networks in patients with Parkinson’s disease suffering from hallucinations”, in collaboration with Prof. Blanke, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland.
- Effects of dopaminergic treatment of PD on neurocognitive networks. Collaborative study with Hospital del Mar, Barcelona.
- Functional and structural brain correlates in HD: cognition, apathy, depression, irritability, biomarkers, oxytocin levels. Collaborative study with Hospital de Burgos (HUBU).
- Analysis of collaborative databases (“big-data”): ENROLL (EH), PPMI (EP), COPPADIS (EP).
- Analysis of local databases: PSP, EH, EP.
- 6. Parkinson’s disease and other movement disorders’ laboratory
- Processing, biobanking and biomarker analyses of human liquid biological samples (plasma, serum, CSF and urine) from different movement disorders.
- Development and optimisation of methods for extracellular vesicle isolation from different biofluids in movement disorders.
- Identification of molecular signatures in brain, plasma, CSF and urine extracellular vesicles in Huntington’s disease to improve disease prognosis and stratification of patients in clinical trials.
- To explore the clinical utility of the determination of tau and phosphorylated alpha-synuclein in skin tissue, for the early and differential diagnosis of Atypical Parkinsonian Syndromes.
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- Kulisevsky Bojarski, Jaime. Investigación y desarrollo de una nueva terapia para el tratamiento de la enfermedad de Huntington. CPP2022-009575. Ministerio de Ciencia e Innovación (MICIIN). Duration: 2023-2026. 312.446,20 €
- Kulisevsky Bojarski, Jaime. Contratos para la intensificación de la actividad investigadora en el Sistema Nacional de Salud 2023. INT23/00090. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2024. 30.000,00 €
- Olmedo Saura, Gonzalo. Contratos Río Hortega 2024. CM24/00023. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 65.000,00 €
- Ruiz Barrio, Iñigo. Contratos Río Hortega 2022. CM22/00072. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2024. 65.000,00 €

ACTIVE & AWARDED GRANTS

- Aracil Bolanos, Ignacio. Contratos Juan Rodés 2022. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2026. 180.000,00 €
- García Sánchez, Carmen. Dramatitzant la salut: el paper del teatre per al benestar emocional,

DOCTORAL THESES DEFENDED

- Campolongo Perillo, Antonia. Infusión intestinal continua de levodopa/carbidopa en la enfermedad de Parkinson: factores concomitantes digestivos que influyen en su eficacia y seguridad. 16/10/2024.



- Universitat Autònoma de Barcelona.
Supervisors: Kulisevsky Bojarski, Jaime;
Pascual Sedano, Berta M.; Román Abal, Eva
María; Martí Fábregas, Joan. <https://hdl.handle.net/10803/692806>
- España Irla, María Goretti. Relationship between cardiorespiratory fitness, cognition, structural and functional brain health in middle-aged adults. 21/02/2024. Universitat Autònoma de Barcelona. Supervisors: Morris, Timothy P.; Albu, Sergiu; Kulisevsky Bojarski, Jaime. <https://hdl.handle.net/10803/691592>
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Molecular Neuropharmacology

Group leader

Pol Rigau, Olga (IR)

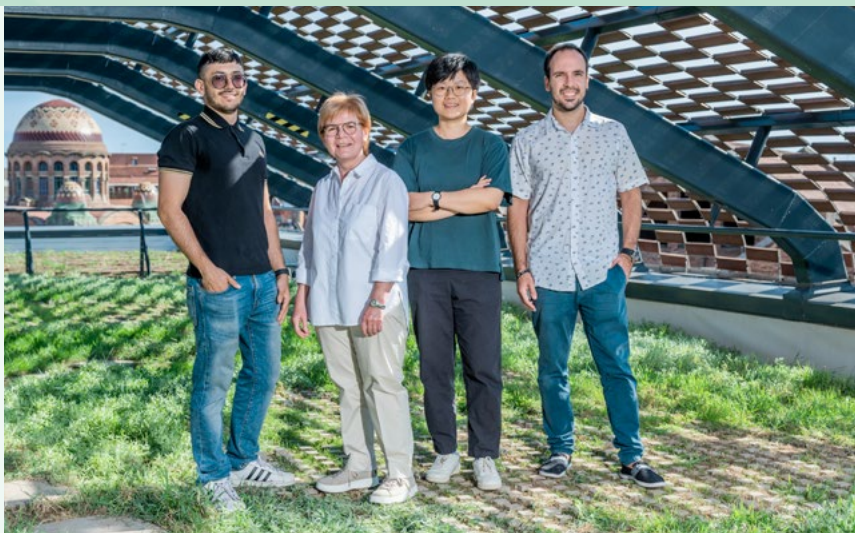
Researchers

Bai, Xue (UAB)

Martínez Martel, Ignacio (UAB)

Negrini Ferrari, Sylmara Esther (UAB)

Pereira Coutinho, Joana (UAB)



DESCRIPTION

Chronic pain is an important clinical problem due to the low efficacy of conventional treatments and their numerous side effects. Chronic pain is also accompanied by emotional disorders such as depression, anxiety, and memory loss, which negatively influence the perception of pain, creating a vicious circle that contributes to the deterioration of the patients' quality of life. Our primary objective is to develop new treatments that effectively relieve chronic pain and the associated comorbidities by using pharmacological, molecular, and genetic techniques.

MAIN LINES OF RESEARCH

- ReseaNew strategies for the treatment of chronic pain. Identification of new compounds that effectively inhibit postoperative, inflammatory, osteoarthritic, and/or neuropathic pain induced by nerve injury or chemotherapy and their underlying mechanisms of action. (Pol Rigau, Olga).
- New therapies for the emotional disorders associated with chronic pain. Investigation of the role played by new drugs in the modulation of anxiety- and depressive-like behaviours and/or cognitive deficits accompanying persistent pain. (Pol Rigau, Olga).
- Neuropharmacology of opioids and cannabinoids. Development of new strategies to potentiate the pain-relieving effects of

- opioids, cannabinoids and other conventional analgesics during chronic pain, minimising the adverse effects of these drugs. (Pol Rigau, Olga).
- Sex-related differences in chronic pain and mood disorders. Evaluation of the impact of sex on pain sensitivity and tolerance, and on the effectiveness of treatments used for chronic pain and related mental illnesses. (Pol Rigau, Olga).
- New stratagems for the treatment of fibromyalgia. Identification of new approaches to treat two main symptoms of fibromyalgia, sensory and emotional deficits, and study the main mechanisms implicated. (Pol Rigau, Olga).
- Develop new strategies to enhance the effectiveness of conventional analgesics for avoiding their side effects during chronic pain.
- Find new pharmacological targets for treating pain and emotional behaviours associated with fibromyalgia, and study their mechanism of action.

ACTIVE & AWARDED GRANTS

- Pol Rigau, Olga. Nuevas dianas moleculares para el tratamiento del dolor crónico. PI21/00592. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2026. 166.980,00 €

SCIENTIFIC CHALLENGES

- Identify new pharmacological compounds that effectively abolish chronic pain with few side effects and whose use can be transferred to clinical practice and/or be patentable.
- Evaluate the antidepressant, anxiolytic and pain-relieving effects of novel nanoparticles capable to liberate one or more gases and study their actions on the functional disability and memory loss linked with chronic pain.
- Identify new antioxidants as potential therapeutic targets and study their effects on pro-inflammatory signals and plasticity changes induced by nerve injury, chemotherapeutic agents, or metabolic disorders.
- Evaluate the neuroprotective, anti-inflammatory and antioxidant mechanisms involved in the modulation of inflammatory pain induced by the heme oxygenase 1 enzyme and its interaction with the endogenous cannabinoid and opioid systems.
- Analyse the impact of sex on pain sensitivity and the efficacy of molecular hydrogen in inhibiting the allodynia and anxiodepressive-like behaviours accompanying chemotherapy-induced neuropathic pain.
- Martínez I, Bai X, Kordikowski R, Leite C, Pol O. The Combination of Molecular Hydrogen and Heme Oxygenase 1 Effectively Inhibits Neuropathy Caused by Paclitaxel in Mice. *Antioxidants*. 2024; 13(7):856. DOI:10.3390/antiox13070856. PMID:39061924. IF:6,000 (Q1/2D). Document type: Article.

SCIENTIFIC PRODUCTION

Pharmacological Research in Humans

Group leader

Antonijuan Arbós, Rosa (FGS)

Researchers

Cortés Pestana, Mayro Jaime (FGS)

Pontes García, Caridad (FGS)

Research technicians

Castillo Ocaña, Marta (IR)

Coimbra Hurtado, Maria Jimena (IR)

Filippi Arriaga, Maria Francesca Eugenia (IR)

Fraga Varela, Ángela (IR)

Garrido Sánchez, María Teresa (IR)

González Cuadros, Mireia (IR)

Martínez Bonifacio, David (IR)

Martínez Martínez, María Isabel (IR)

Molina Perelló, Pol (IR)

Puntes Rodríguez, Montserrat (IR)

Ruiz Barberà, Montserrat (IR)

Sánchez Núñez, Isabel (IR)



DESCRIPTION

The main objective (CIM) is to perform clinical drug trials and/or clinical research ensuring compliance with the legal, ethical and methodological requirements stated in international standards.

Clinical trials (phase I): Activity is focused on the evaluation of systemic and local tolerability, pharmacokinetics, bioavailability and bioequivalence (generics) as well as pharmacological effects.

Studies are also performed in healthy volunteers and special populations with specific characteristics, such as the healthy elderly, obesity, postmenopausal women, or those renal or hepatic insufficiency.

Clinical trials (phases Ib, IIa): Specific interventions are performed in this phase, and controlled monitoring of the patient's response is required.

Furthermore, support from the integration of administrative, computer, and statistical systems enables the optimal performance of clinical studies.

MAIN LINES OF RESEARCH

- Phase I clinical trials (healthy volunteers) whose main objectives include: first-time-in-humans, safety and tolerability, pharmacokinetics, bioavailability and bioequivalence (generic drugs), pharmacodynamics, interactions (drug-drug, drug-food), evaluation and characterization of

- biomarkers, proofs of concept, acceptability and preference studies (Coimbra Hurtado, Maria Jimena; Molina Perello, Pol).
- Follow-up studies in populations with the same or different characteristics: the elderly, obese volunteers, postmenopausal volunteers, patients with liver or kidney failure (Puntes Rodríguez, Montserrat).
- Collaboration with clinical services to conduct phase II or phase III studies (Garrido Sánchez, Maria Teresa).
- Antonijoan Arbos, Rosa. Desarrollo clínico de una nueva terapia para el tratamiento de la narcolepsia (Adenowake). CPP2023-010422. Ministerio de Ciencia, Innovación y Universidades (MICIU). Duration: 2024-2027. 153.550,00 €
- Antonijoan Arbos, Rosa. Descubrimiento y desarrollo clínico de antagonistas no esteroideos del receptor de progesterona para el tratamiento de los fibromas uterinos (PR4UF). CPP2023-010778. Ministerio de Ciencia, Innovación y Universidades (MICIU). Duration: 2024-2027. 367.263,05 €
- Antonijoan Arbos, Rosa. Mejoras en la UiC para una Participación Accesible, Cómoda y Humana de Pacientes Vulnerables en la Investigación Clínica. UICM24/00039. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2026. 1.406.625,00 €

SCIENTIFIC CHALLENGES

- Consolidate and strengthen leadership in this field in Spain, conserve relationships with the pharmaceutical industry at the national level, and strengthen and extend relations abroad with multinational enterprises and industries from other sectors.
- Broaden the range of questions addressed in research projects.
- Promote dissemination of our activity with a double objective: to return the knowledge generated to the society and to demystify research in humans, bringing it closer to the community so as to foster participation in clinical trials (particularly in specific sectors of the populations, such as the elderly).
- Set up educational activities related to the two main research lines, i.e., the application of Good Clinical Practices (GCPs) in clinical research (pathology and treatment) and the social (quality of life, prevention of accident risk) consequences.

ACTIVE & AWARDED GRANTS

- Antonijoan Arbos, Rosa. Investigación del potencial de nuevas moléculas para el tratamiento de enfermedades fibróticas (DEFIBER III). CPP2021-008747. Ministerio de Ciencia e Innovación (MICINN). Duration: 2022-2025. 243.536,44 €
- Antonijoan Arbos, Rosa. ERA4TB (European Accelerator of Tuberculosis Regime) project. ERA4TB GA 853989. European Commission. Duration: 2022-2025. 277.500,00 €
- Coimbra J, Puntes M, Molina P, Gich I, Antonijoan R, Gilaberte I, Arranz P, Sánchez C. Comparative inhibition by oral bilastine, parenteral dexchlorpheniramine, and a new bilastine parenteral (i.v. and i.m.) formulation of histamine-induced wheal and flare response: A randomised phase I trial. EUROPEAN JOURNAL OF PHARMACEUTICAL SCIENCES. 2024; 203:106900. DOI:10.1016/j.ejps.2024.106900. PMID:39265704. IF:4,300 (Q1/2D). Document type: Article.
- Filippi-Arriaga F, Molina P, Delgado-Espinoza CE, Antonijoan R. A cross-sectional study of Phase I Clinical Trials authorized in Spain: An analysis of characteristics and times of execution based on experience. Medicina Clínica. 2024; 163(11):577-82. DOI:10.1016/j.medcli.2024.06.001. PMID:39043476. IF:2,600 (Q1/3D). Document type: Article.
- Padró T, Santisteban V, Huedo P, Puntes M, Aguiló M, Espadaler J, Badimon L. Lactiplantibacillus plantarum strains KABP011, KABP012, and KABP013 modulate bile acids and cholesterol metabolism in humans. CARDIOVASCULAR RESEARCH. 2024; 120(7). DOI:10.1093/cvr/cvae061. PMID:38525555. IF:10,200 (Q1/1D). Document type: Article.

SCIENTIFIC PRODUCTION

- Pesiou S, Barcelo R, Papazisis G, Torres F, Pontes C. Prevalence of use of on-label and off-label psychotropics in the Greek pediatric population. *Frontiers in Pharmacology*. 2024; 15:1348887. DOI:10.3389/fphar.2024.1348887. PMID:38549664. IF:4,400 (Q1/2D). Document type: Article.
- Piera J, Carot G, Ramiro M, Nogueras MM, Folguera J, Ródenas P, Jiménez A, Navarro TD, Palacios J, Fajardo JC, Campillo JU, Vela E, Monterde D, Valero D, Bonet T, Tarrasó G, Cantenys R, Fabregat P, Oliveros BG, Berdún J, Michelena X, Cano I, González R, Roca J, Solans O, Pontes C, Pérez P. A 25-Year Retrospective of Health IT Infrastructure Building: The Example of the Catalonia Region. *JOURNAL OF MEDICAL INTERNET RESEARCH*. 2024; 26:e58933. DOI:10.2196/58933. PMID:39556831. IF:5,800 (Q1/1D). Document type: Article.
- Pieren M, Gutiérrez AA, Arbós R, Boyle GW, Davila M, Davy M, Gitzinger M, Husband L, Martínez MS, Mazarro DO, Pefani E, Penman SL, Remuiñán MJ, Vlasakakis G, Zeitlinger M, Dale GE. First-in-human study of alpipectir (BVL-GSK098), a novel potent anti-TB drug. *JOURNAL OF ANTIMICROBIAL CHEMOTHERAPY*. 2024; 79(6). DOI:10.1093/jac/dkae107. PMID:38656557. IF:3,900 (Q1/3D). Document type: Article.
- Ríos J, Sapena V, Marino Z, Bruix J, Forn X, Morros R, Reig M, Torres F, Pontes C. Incidence of Liver and Non-liver Cancers After Hepatitis C Virus Eradication: A Population-Based Cohort Study. *Drugs-Real World Outcomes*. 2024; 11(3). DOI:10.1007/s40801-024-00437-y. PMID:38874848. Document type: Article.
- Santisteban V, Muñoz N, López A, Puentes M, Badimon L, Padró T. Efficacy of Food Industry By-Product β -Glucan/Chitin-Chitosan on Lipid Profile of Overweight and Obese Individuals: Sustainability and Nutraceuticals. *Nutrients*. 2024; 16(19):3420. DOI:10.3390/nu16193420. PMID:39408385. IF:4,800 (Q1/2D). Document type: Article.
- Vallano A, Pontes C. Escalating costs of innovative medicines: perspective and proposals. *Frontiers in Public Health*. 2024; 12:1449707. DOI:10.3389/fpubh.2024.1449707. PMID:39381757. IF:3,000 (Q2/3D). Document type: Article.

Mental Health

Group leader

Portella Moll, Maria J.

Researchers

Abad García, Sergi (FGS)
 Alemany Santamaria, Carlo (FGS)
 Almenta Gallego, David (FGS)
 Alvarado Carrera, Pedro José (FGS)
 Àvila Parcet, Aina (FGS)
 Batlle Batlle, Francesca (FGS)
 Bauzà Ramis, Joana Maria (FGS)
 Cano Català, Marta (IR)
 Carceller Sindreu, María Del Mar (FGS)
 Cardoner Álvarez, Narcís (FGS)
 Carmona Farrés, Cristina (FGS)
 Carrasco Hernández, Júlia (IR)
 Casellas Pujol, Elísabet (FGS)
 Catalan Martínez, Anna (FGS)
 Corripio Collado, Iluminada (IR)
 Costa Juste, Sílvia Maria (FGS)
 de Diego Adeliño, Francisco Javier (FGS)
 de la Peña Arteaga, Víctor (IR)
 Díaz Pérez, Anna Maria (FGS)
 Dinamarca Cáceres, Fernando Nicolás (FGS)
 Espeso González, Rocío (FGS)
 Farré Martínez, Adriána (FGS)
 Faustino Bosch, Gloria (FGS)
 Gawron, Leonor Patricia (FGS)
 Grasa Bello, Eva María (CIBER)
 Isern Tena, Clara (FGS)
 Jaramillo Muñumer, María (CIBER)
 López Castro, María (FGS)
 Madre Rull, Mercé (FGS)
 Martín Blanco, Ana (FGS)
 Pascual Mateos, Juan Carlos (FGS)
 Pérez Blanco, Josefina (FGS)
 Pinet Ogué, María Cristina (FGS)
 Pousa Tomàs, Esther (FGS)
 Puigdemont Campos, Maria Dolors (FGS)
 Remis Rebollo, Sergio (FGS)
 Ribalta Corona, Elisa (FGS)
 Roca Tutusaus, Francisco Javier Juan (FGS)
 Roldán Bejarano, Alexandra (FGS)
 Serrano Gimeno, Víctor (FGS)
 Soler Ribaudi, Joaquim (FGS)
 Tiana Sastre, Thais (FGS)
 Tomé Pérez, José Alberto (FGS)
 Trujols Albet, Joan (FGS)
 Vera Igual, Javier (FGS)
 Vicent Gil, Muriel (FGS)

Research technicians

Borrell Pozo, Julia (IR)
 Jubero Urgell, Miriam (IR)
 Otero Castellanos, Daniela (IR)



DESCRIPTION

The Sant Pau Mental Health Research Group primarily develops clinical research lines aimed at addressing the needs of individuals treated at the Psychiatry Department of the Hospital de la Santa Creu i Sant Pau, thereby covering a wide spectrum of psychiatric disorders and mental health issues.

MAIN LINES OF RESEARCH

- **Mood Disorders and Suicide:** This research line studies major depressive disorder and suicide, in close collaboration with other research lines within the group. (Cardoner Álvarez, Narcís; De Diego Adeliño, Francisco Javier).
- **Psychotic Disorders:** Studies related to treatment-resistant schizophrenia and metacognitive therapy for patients with schizophrenia. (Grasa Bello, Eva María; Roldan Bejarano, Alexandra).
- **Borderline Personality Disorder:** Research on new third-generation psychotherapeutic approaches such as Mindfulness, Dialectical Behavior Therapy, Acceptance and Commitment Therapy, and Positive Psychology. (Soler Ribaudi, Joaquín).
- **Eating Disorders:** Research focused on evidence-based treatment strategies, mainly behavioral interventions, with ongoing projects. (Carceller Sindreu, María Del Mar; Carmona Farrés, Cristina).
- **Intensive Home Treatment (IHT) and Community Intervention:** This line focuses on studies evaluating patient and caregiver

care experiences, as well as improving home treatments, aiming to enhance people's quality of life. (Martín Blanco, Ana)

- Addictive Behaviors: This line aims to establish bidirectional connections between clinical practice and research in the field of addictive disorders in order to suggest hypotheses, incorporate recent advances, develop new measurement instruments and evaluate the effectiveness of interventions, always trying to incorporate the patient's perspective on the path towards these objectives. (Trujols Albet, Joan).

SCIENTIFIC CHALLENGES

- Foster research that reduces the healthcare, social and personal costs of mental illness by exploring areas such as epidemiology, etiopathogenesis, physiopathology, prevention and treatment.
- Foster research into mental health therapies.
- Foster research to improve the quality of life of patients with mental disorders.

ACTIVE & AWARDED GRANTS

- Cardoner Álvarez, Narcis. Predicción de la respuesta terapéutica en la depresión resistente al tratamiento a través de algoritmos de aprendizaje automático: mejora de la traslación de la neuroimagen a la atención clínica. PI21/01756. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 111.320,00 €
- Cardoner Álvarez, Narcis. Unraveling the influence of gut microbiota and derived metabolites on major depression: A cross-sectional neuroimaging-metabolomics study based on knowledge transfer from irritable bowel syndrome (IBS) and a porcine model: MOODGUT. MARATO 202209-30. Fundació La Marató de TV3. Duration: 2023-2026. 182.500,00 €
- Cardoner Álvarez, Narcis. Avaluació d'intervencions de prevenció del dol per supervivents de suïcidi: IDOLS. Fundació La Caixa. Duration: 2023-2025. 32.336,70€.
- Cardoner Álvarez, Narcis & Cano Catala, Marta. Efectos antidepresivos de la psilocibina en ausencia de experiencia psicodélica serotoninérgica: un enfoque dimensional de neuroimagen funcional. PI24/01927. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 158.750,00 €
- Corripio Collado, Iluminada. Estimulación Cerebral Profunda: hacia una nueva intervención para la recuperación del paciente con esquizofrenia resistente al tratamiento. PI19/00242. Instituto de Salud Carlos III (ISCIII). Duration: 2020-2024. 102.850,00 €
- De Diego Adeliño, Franciso Javier. Depression and its treatment: Role of miRNAs in the anterior cingulate cortex, as peripheral biomarkers, and their targeted modulation by nano-tools as a promising antidepressant therapy (DemiRNApy). MARATO 202207-32. Fundacio la Marato de TV3. Duration: 2023-2026. 72.837,50 €
- De Diego Adeliño, Franciso Javier. Biomarcadores multimodales de conectividad y señal neural para la personalización de la Estimulación Cerebral Profunda (DBS) en la depresión refractaria. PI23/00469. Instituto de Salud Carlos III (ISCIII). Duration: 2024-2026. 62.500,00 €
- De La Peña Arteaga, Víctor. Ayudas para contratos Juan de la Cierva 2022. JDC2022-048445-I. Ministerio de Ciencia e Innovacion (MICINN). Duration: 2024-2025. 67.400,00€
- Porta Casteras, Daniel. Ayudas para contratos Juan de la Cierva 2023. JDC2023-050777-I. Ministerio de Ciencia, Innovación y Universidades. Duration: 2025-2027. 72.000,00 €
- Portella Moll, Maria. Rehabilitación Integral cognitiva para DEpresión Mayor (RIDEM). Ensayo clínico multicéntrico, aleatorizado para investigar su eficacia. PI20/00270. Instituto de Salud Carlos III (ISCIII). Duration: 2021-2024. 116.765,00 €
- Portella Moll, Maria. A Phase III, Randomized, Active Comparator-controlled, Clinical Trial to

- Study the Efficacy and Safety of the INtegral Cognitive REMediation program (INCREM) in patients with Depression. MARATO 202227-30. Fundacio la Marato de TV3. Duration: 2023-2026. 186.408,75 €
- Portella Moll, Maria & Vicent Gil, Muriel. Proteínas Sinápticas e Inflamatorias como Marcadores de Disfunción Cognitiva en Pacientes con Depresión Mayor Tratados con el Programa de Remediación Cognitiva RIDEM. PI23/00468. Instituto de Salud Carlos III (ISCIII). Duration: 2024-2026. 115.000,00 €
 - Portella Moll, Maria. Grup de Recerca en Salut Mental Sant Pau. 2021 SGR 00832. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). Duration: 2022-2025. 60.000,00 €.
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Neurobiology of Dementias

Group leader

Forteza Ormaechea, Juan (FGS)

Researchers

Alcolea Rodríguez, Daniel Andrés (FGS/IR)

Arranz Martínez, Javier José (FGS)

Arriola Infante, José Enrique (IR)

Barroeta Espar, Isabel (FGS)

Bejanin, Alexandre Pierre Armand (IR)

Belvis Nieto, Robert (FGS)

Benítez Amaro, Aleyda (IR)

Carmona Iragui, María (FGS)

del Hoyo Soriano, Laura (IR)

Dols Icardo, Oriol (IR)

García Castro, Jesús (IR)

Giménez Badia, Sandra (FGS)

Illán Gala, Ignacio (FGS)

Lleó Bisa, Alberto (FGS)

Maure Blesa, Lucía (IR)

Rodríguez Baz, Íñigo (IR)

Sala Matavera, Isabel (FGS)

Sánchez Aced, Erika (IR)

Santos Santos, Miguel Ángel (FGS)

Sirisi Dolcet, Sònia (IR)

Valle Tamayo, Natalia (IR)

Vaqué Alcázar, Lúdia (IR)

Videla Toro, Laura (IR)

Research technicians

Álvarez Sánchez, Esther (IR)

Aumatell Escabias, Joaquim (IR)

Bueno López, Ana (IR)

Canovas Segura, Ana Belén (IR)

Carreras Vega, Mireia (IR)

Clos Batet, Susana (IR)

El Bounasri El Bennadi, Shaimaa (IR)

Farré Maduell, Ariadna (IR)

Filella Mercè, Júlia (IR)

Flores Ramírez, María (IR)

Franquesa Mullerat, María (IR)

Gallardo Rubiales, Berta (CIBER)

García Hernández, Estefanía (IR)

Lorente Gordillo, Oriol (IR)

Marqués Kiderle, Sonia Karin (IR)

Morcillo Nieto, Alejandra Omaira (IR)

Mota Rodríguez, Cecilia (IR)

Muñoz Llahuna, Laia (IR)

Palmieri Zinna, Marisa Alejandra (IR)

Reyes Santiago, Daniel (IR)

Ribosa Nogué, Roser (IR)

Rozalem Aranha, Mateus (IR)

Rubio Guerra, Sara (IR)

Sánchez López, Oriol (IR)

Sánchez Saudinos, María Belén (IR)

Sanjuan Hernández, Aida (IR)

Selma González, Judit (IR)

Subirana Castillo, Andrea (IR)

Torres Alcalá, Soraya (IR)

Valldeu Castell, Sílvia (IR)

Vera Campuzano, Elena (IR)

Zhu, Nuole (IR)

Zsadanyi, Sara Erzsebet (IR)



DESCRIPTION

This multidisciplinary team comprises more than 40 researchers, including neurologists, neuropsychologists, biologists, biochemists, engineers, and laboratory technicians. This is a highly translational team combining basic research with clinical research in humans to advance our understanding of these diseases. The group is very productive in generating publications and attracting competitive resources. The group regularly trains national and international residents, as well as Master's students and pre- and postdoctoral researchers. The group provides an excellent setting for training young researchers in a unique translational environment.

MAIN LINES OF RESEARCH

- Natural History, Diagnosis and Treatment of Frontotemporal Lobular Degeneration. (Illan Gala, Ignacio).
- Characterisation of epilepsy in Alzheimer's disease and Down syndrome. (Carmona Iragui, Maria).
- Sleep and neurodegeneration. (Giménez Badia, Sandra).
- Integrative Genomic and Transcriptomic Approaches to Neurodegenerative Diseases with a Focus on Neuroinflammation. (Dols Icardo, Oriol).
- Clinical application of biochemical markers in degenerative dementias. (Alcolea Rodríguez, Daniel Andrés).
- New tools for neuropsychological assessment in people with Down syndrome. (Del Hoyo Soriano, Laura).

- New neuropsychological assessment tools in neurodegenerative dementias, sporadic. (Sala Matavera, Isabel).
- Multimodal neuroimaging in neurodegenerative diseases. (Bejanin, Alexandre Pierre Armand).
- Cellular and neuropathological basis of neurodegenerative diseases. (Lleó Bisa, Alberto).
- Neurobiology of Language and Cognition in Degenerative Disease: From Mechanisms to Clinical Application. (Santos Santos, Miguel Ángel).
- Sporadic and Genetically Determined Alzheimer's Disease: From Natural History to Biological Diagnosis and Treatment. (Fortea Ormaechea, Juan).

SCIENTIFIC CHALLENGES

Since its founding over 15 years ago, our group has experienced a continual and exponential growth, firmly consolidating itself as a leader in translational research into neurodegenerative dementias. We currently have a total of 11 principal investigators of active, competitive research grants. Although this is a positive sign of our growth in recent years, it also brings with it many organisational challenges that need to be met. Within our research setting, our group is a relative exception not only in size but also in the levels of clinical care and scientific excellence it achieves. Moving forward, our objective is to maintain sustainable growth without compromising the values and vision that we have sustained until now and that have made this growth possible.

Recent advances in the field of Dementia are expected to herald a revolution in the coming years that will have a substantial impact on our clinical and research activities. For example, digital tools and plasma biomarkers are already here, and pharmacological treatments that alter the course of Alzheimer's disease could be available in the next 24 months. The detection of low-abundant proteins in plasma requires ultrasensitivity, such as that provided by Single Molecule Array (SIMOA) digital ELISA technology (Quanterix), which is available in our group. Combined with our active

participation in multiple clinical trials, our group is perfectly placed to lead the charge in this field and adapt to these changes.

Based on the aforementioned advances, the challenges moving forward include:

- Maintain our scientific production and funding, prioritising the projects with higher impact.
- Consolidate our number of granted projects in European and international applications.
- Unfold the potential to collaborate with pharma and technological companies to foster additional patent applications and contracts.
- Adapt our research in response to the integration of the first disease-modifying therapy.
- Continue to innovate by developing ever more sensitive technologies for digital and blood-based biomarkers.

ACTIVE & AWARDED GRANTS

- Alcolea Rodríguez, Daniel Andrés. Caracterización multimodal de las etapas prodrómicas del espectro Alzheimer-Lewy. PI22/00611. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2025. 153.670,00 €
- Alcolea Rodríguez, Daniel Andrés. Contratos para la intensificación de la actividad investigadora en el Sistema Nacional de Salud 2023. INT23/00048. Instituto de Salud Carlos III (ISCIII). Duration: 2024-2026. 60.000,00 €
- Aumatell Escabias, Joaquim. Contratos PFIS 2024. FI24/00215. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2028. 119.567,00 €
- Arriola Infante, José Enrique. Contratos Río Hortega 2022. CM22/00219. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2024. 65.000,00 €
- Bejanin, Alexandre Pierre Armand. Contractes Miguel Servet I 2020. CP20/00038. Instituto de Salud Carlos III (ISCIII). Duration: 2021-2026. 202.500,00 €
- Bejanin, Alexandre Pierre Armand. Neuroimagen multimodal de la enfermedad de pequeños vasos relacionada con la



- enfermedad de Alzheimer en el síndrome de Down. PI22/00307. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2025. 165.770,00 €
- Bejanin, Alexandre Pierre Armand. Multimodal imaging of small vessel disease in genetic AD. AARG-22-923680. Alzheimer's Association. Duration: 2022-2025. 126.532,76 €
- Bejanin, Alexandre Pierre Armand. Urban design for brain and cognitive health: exploring its impact on aging and dementia. 23S06157-001. Ajuntament de Barcelona. Duration: 2023-2025. 35.401,10 €
- Benítez Amaro, Aleyda. Contratos Sara Borrell 2024. CD24/00083. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2028. 95.000,00 €
- Carmona Iragui, Maria. Caracterización de la epilepsia y de los trastornos de sueño en la enfermedad de Alzheimer esporádica y asociada al síndrome de Down. PI22/00785. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2025. 135.520,00 €
- Carmona Iragui, Maria. Ensayo en fase III para evaluar la seguridad y eficacia de LEvetiracetam para prevenir las crisis epilépticas en adultos con síndrome de Down y enfermedad de Alzheimer. ICI23/00032. Instituto de Salud Carlos III (ISCIII). Duration: 2024-2027. 905.677,30 €
- Carmona Iragui, Maria. Multimodal assessment of brain inflammatory biomarkers in DS-associated AD. AARG-22-973966. Alzheimer's Association. Duration: 2023-2025. 141.246,28 €
- Carmona Iragui, Maria. 2nd Conference on Genetically determined Alzheimer's Disease: Research Advances in Down Syndrome & Autosomal Dominant Alzheimer's Disease. #2425_GRT-2024B. Jérôme Lejeune Foundation. Duration: 2024-2025. 10.000,00 €
- Del Hoyo Soriano, Laura. Contratos Miguel Servet 2024. CP24/00112. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2029. 268.600,00 €
- Del Hoyo Soriano, Laura. A Novel Digitalized Measure for Preventive Clinical Trials in Down syndrome. No.2326 2024a. Jérôme Lejeune Foundation. Duration:2024-2027. 49.985,00 €
- Dols Icardo, Oriol. Estudio longitudinal del papel de las células inmunitarias periféricas en la evolución de la ELA. FUND.HNA. Fundación HNA. Duration: 2021-2024. 100.000,00 €
- Dols Icardo, Oriol. Caracterización transcriptómica y neuropatológica del tejido postmortem de pacientes con esclerosis lateral amiotrófica portadores de la expansión en el gen C9orf72. PI21/01395. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 87.120,00 €
- Dols Icardo, Oriol. Assessing peripheral inflammation in DS at different stages of AD. AARF-22-924456. Alzheimer's Association. Duration: 2022-2025. 147.402,61 €
- Dols Icardo, Oriol Dols Icardo, Oriol. Identificación de ARN pequeños en suero como biomarcadores subrogados de los niveles de pTDP43 en el sistema nervioso central. FUNDELA 2023. Fundela Fundación Española Investigación Esclerosis Lateral (FUNDELA). Duration: 2023-2025. 50.000,00 €
- Dols Icardo, Oriol. PMP-DEGESCO: Validation of a precision medicine tool based on online cognitive evaluation, genetic risk stratification and bloodbased biomarkers for the identification of preclinical Alzheimer's Disease. PMP22/00022. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2025. 290.400,00 €
- Dols Icardo, Oriol. Assessing the role of CSF immune cells in ALS. FUND. LUZON 2024. Fundación Luzon. Duration: 2024-2027. 158.960,00 €
- Dols Icardo, Oriol. Caracterización del papel de las células Natural Killer y sus exosomas en la ELA. FUNDELA 2024. Fundela Fundación Española Investigación Esclerosis Lateral. Duration: 2024-2025. 69.850,00 €
- Dols Icardo, Oriol. Estudio del papel de la inflamación periférica en el continuo esclerosis lateral amiotrófica/demencia frontotemporal a resolución celular. PI24/01087. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 121.250,00 €



- Dols Icardo, Oriol. Assessing the role of the peripheral immune system in the Down Syndrome population at different stages of Alzheimer's Disease using single-cell RNA sequencing. PDC-2023-51. Jerome Lejeune Foundation. Duration: 2024-2025. 130.000,00 €
- Fortea Ormaechea, Juan. Interacción de la inflamación del sistema nervioso periférico y central en la enfermedad de Alzheimer y el síndrome de Down. PI23/01786. Instituto de Salud Carlos III (ISCIII). Duration: 2024-2026. 252.500,00 €
- Fortea Ormaechea, Juan. INMUNGEN-CoV2: Estudio genético de la severidad de COVID-19. F. TATIANA PREDOC 2020. Fundación Tatiana Pérez de Guzmán El Bueno. Duration: 2021-2024. 39.160,00 €
- Fortea Ormaechea, Juan. Mes-CoBraD: Multidisciplinary Expert System for the Assessment & Management of Complex Brain Disorders. MES-CoBraD 965422. Unión Europea. Duration: 2021-2024. 482.771,25 €
- Fortea Ormaechea, Juan. Clinical trials to prevent Alzheimer's Disease in Down Syndrome. NIH SOUTHERN R33AG066543. University of Southern California. Duration: 2019-2024. 340.242,00 €
- Fortea Ormaechea, Juan. Sleep and Temperature Disturbance as risk factors for Alzheimer's Disease in Down Syndrome: a Longitudinal Study. NIH NY Fortea 1RF1AG080769-01. National Institute on Aging (NIA) at the National Institute of Health (NIH). Duration: 2023-2028. 1.829.573,72 €
- Fortea Ormaechea, Juan. DS-ARC: A Remote Digital Cognitive Assessment for Down Syndrome-Associated Alzheimer's Disease. NIH FORTEA Washington 1R01AG081394-01. National Institute On Aging/NIH/DHHS. Duration: 2023-2028. 751.864,51 €
- Fortea Ormaechea, Juan. Longitudinal multicenter headtohead harmonization of tau PET. 5R01AG073267-04. National Institute of Health (NIH). Duration: 2024-2025. 502.069,00 €
- Fortea Ormaechea, Juan. The role of immune deregulation and NGF dysmetabolism in the development of Alzheimer disease in individuals with Down syndrome. AG087280. National Institute of Health (NIH). Duration: 2024-2025. 247.100,00 €
- García Castro, Jesús. Contratos Río Hortega 2023. CM23/00176. Instituto de Salud Carlos III (ISCIII). Duration: 2024-2026. 65.000,00 €
- Giménez Badia, Sandra. Síndrome de apnea-hipopnea del sueño y síndrome de Down: cognición, biomarcadores de Enfermedad de Alzheimer en plasma, líquido cefalorraquídeo y resonancia magnética. PI20/00836. Instituto de Salud Carlos III (ISCIII). Duration: 2021-2024. 77.440,00 €
- Giménez Badia, Sandra. The impact of Alzheimer's disease on sleep in adults with Down Syndrome. JLF #1801 -S Giménez. Jérôme Lejeune Fondation. Duration: 2020-2024. 86.699,13 €
- Giménez Badia, Sandra. Evaluation of the circadian rest-activity rhythm in adults with DS. GBHI ALZ UK-23-971107. Alzheimer's Association. Duration: 2023-2026. 24.987,00 €
- Illan Gala, Ignacio. Contractes Juan Rodés 2020. JR20/00018. Instituto de Salud Carlos III (ISCIII). Duration: 2021-2024. 180.000,00 €
- Illan Gala, Ignacio. Avanzando la clasificación de la demencia frontotemporal y la esclerosis lateral amiotrófica mediante neuroimagen microestructural y funcional, y biomarcadores sanguíneos de neurodegeneración y neuroinflamación. PI21/00791. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 129.470,00 €
- Illan Gala, Ignacio. Unveiling the impact of biological sex along sporadic and genetic FTL. AACSF-21-850193. Alzheimer's Association. Duration: 2021-2024. 147.286,04 €
- Illan Gala, Ignacio. Cambios Microestructurales en la Degeneración Lobular Frontotemporal: Implicaciones diagnósticas, Pronósticas y Etiológicas. PI24/00598. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 215.000,00 €

- Lleó Bisa, Alberto. NEUROBIOLOGIA DE LES DEMENCIES. 2022 INV-1 00048. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). Duration: 2022-2024. 66.217,84 €
- Lleó Bisa, Alberto. Estudio de la patología sináptica de Tau mediante Array Tomography y microscopia de superresolución. FUND. TATIANA 2022. Fundación Tatiana Pérez de Guzmán El Bueno. Duration: 2023-2025. 33.000,00 €
- Lleó Bisa, Alberto & Sirisi Dolcet, Sonia. APP-C99 como componente patogénico clave y una diana terapéutica en la enfermedad de Alzheimer. PI23/01767. Instituto de Salud Carlos III (ISCIII). Duration: 2024-2026. 215.000,00 €
- Lleó Bisa, Alberto. Mecanismos de vulnerabilidad de interneuronas parvalbumina dependientes de sexo en la enfermedad de Alzheimer. AC24/00133. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 155.000,00 €
- Lleó Bisa, Alberto. Are epigenomic changes in the Alzheimer's Disease continuum modifiable? A discovery, validation and interventional study. FPM 2022-1227. Fundació Pasqual Maragall. Duration: 2024-2029. 147.372,47 €
- Lleó Bisa, Alberto. A novel therapeutic target for Alzheimer's disease beyond A β . GINJOL 2024-13-002. Fundació Institució dels Centres de Recerca de Catalunya (iCERCA). Duration: 2025-2025. 10.000,00 €
- Maure Blesa, Lucía. Contratos Río Hortega 2023. CM23/00291. Instituto de Salud Carlos III (ISCIII). Duration: 2024-2026. 65.000,00 €
- Rozalem Aranha, Mateus. Evaluation of cortical microinfarcts in individuals with Down syndrome. AARFD-21-852492. Alzheimer's Association. Duration: 2022-2025. 147.627,00 €
- Rodríguez Baz, Iñigo. Contratos Río Hortega 2022. CM22/00052. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2024. 65.000,00 €
- Sánchez Aced, Erika. Contratos i-PFIS 2022. IFI22/00015. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2026. 89.900,00 €
- Sánchez Aced, Erika. Caracterización de nuevos anticuerpos monoclonales contra la proteína precursora de amiloide en tejido cerebral humano usando Array Tomography Microscopy. MV24/00031. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2025. 9.660,00 €
- Santos Santos, Miguel Ángel. Afasia primaria progresiva: Caracterización multimodal de los síntomas, fisiopatología y progresión. PI19/00882. Instituto de Salud Carlos III (ISCIII). Duration: 2020-2024. 111.320,00 €
- Santos Santos, Miguel Ángel. Molecular bases of bilingualism's protective effect vs cognitive decline. AACSF-22-972945. Alzheimer's Association. Duration: 2023-2025. 164.789,51 €
- Santos Santos, Miguel Ángel. Bilingual Factors Associated with Cognitive Reserve and Linguistic Resilience in Hispanics with Primary Progressive Aphasia. NIH - UTexas 1R01AG080470-01. National Institute on Aging (NIA) at the National Institute of Health (NIH). Duration: 2023-2027. 1.063.462,00 €
- Sirisi Dolcet, Sonia. Ayudas para contratos Juan de la Cierva - Incorporación 2019. IJC2019-038962-I. Ministerio de Ciencia e Innovación (MICINN). Duration: 2021-2024. 93.000,00 €
- Valle Tamayo, Natalia. Contratos PFIS 2022. FI22/00077. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2026. 119.567,00 €
- Valle Tamayo, Natalia. The role of Neuropentraxin 2 pathology in ALS and other neurodegenerative diseases. MV24/00056. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2025. 10.580,00 €

SCIENTIFIC PRODUCTION

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Molecular Physiology of the Synapse

Group leader

Bayés Puig, Alejandro (IR)

Researchers

Antón Galindo, Ester (UB)

Cazurro Gutiérrez, Ana Laura (VHIR)

Tristán Noguero, Alba (UB)

Viñola Renart, Carla (IR)

Zerpa Ríos, Oriana Victoria (UAB)

Research technicians

del Castillo Berges, Diego (IR)



DESCRIPTION

The Molecular Physiology of the Synapse Laboratory is focused on understanding the organisation and dynamics of the proteome from synapses of the forebrain, particularly excitatory synapses from the cortex and hippocampus. We want to unravel how synaptic proteome physiology orchestrates synaptic plasticity, ultimately contributing to cognition and behaviour. Furthermore, we aim to understand how disruption of normal molecular synaptic physiology can contribute to specific disorders, particularly cognitive disorders such as Intellectual Disability or Autism.

MAIN LINES OF RESEARCH

- Molecular and cellular analyses of the vertebrate synapse (Bayés Puig, Alejandro).
- Molecular and cellular dysfunctions underlying intellectual disability and autism (Bayés Puig, Alejandro).
- Research into animal models of mental and behavioural disorders (Bayés Puig, Alejandro).
- Development of new biochemical methods to study the synapse (Bayés Puig, Alejandro).

SCIENTIFIC CHALLENGES

- Characterise the molecular roots of cognition and behaviour.
- Identify the synaptic molecules and mechanisms involved in mental and behavioural disorders, mainly intellectual disabilities and autism spectrum disorders.

- Identify drugs which might help treat mental and behavioural disorders.
- Study the reversibility of neurodevelopmental disorders affecting cognition after birth.

ACTIVE & AWARDED GRANTS

- Bayés Puig, Alejandro. La Sobre-activación de Camk2 Sustentaría las Disfunciones Sinápticas Observadas en la Encefalopatía Epiléptica SYNGAP1. PID2021-124411OB-I00. Ministerio de Ciencia e Innovación (MICINN). Duration: 2022-2026. 181.500,00 €
- Bayés Puig, Alejandro. Grup De Senyalització Sinàptica. 2021 SGR 01005. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). Duration: 2022-2025. 40.000,00 €.
- Bayés Puig, Alejandro. Blood Cells as a New Resource for Clinical Research in SYNGAP1-related Disorders. SEEDGRANT 2024. SynGAP Research Foundation. Duration: 2024-2025. 25.000,00 €

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SCIENTIFIC PRODUCTION

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Stroke Pharmacogenomics and Genetics

Group leader

Fernández Cadenas, Israel (IR)

Researchers

Cárcel Márquez, Jara (IR)

Cullell Fornés, Natalia (Fundació Mutua Terrassa)

Fernández Vidal, Joan Miquel (FGS)

Gallego Fabrega, Cristina (IR)

Lledós de Benito, Miquel (IR)

Marine Llorente, Laia (IR)

Martín Campos, Jesús María (IR)

Muiño Acuña, Elena (FGS)

Villatoro González, Paula (IR)

Research technicians

Alzate Piñol, Sayoa (IR)

Boldo Cobo, Paula (IR)

Llucià Carol, Laia (IR)



DESCRIPTION

The Stroke Pharmacogenomics and Genetics group is a multidisciplinary group composed of 12 members, including biologists, biotechnologists and neurologists. The objectives of the group are to find treatments for stroke and other neurological diseases that can be used in the clinical practice. To identify these treatments, we are utilising genome-wide techniques such as GWAS, EWAS, TWAS, PWAS, or microbiome analysis. This includes genetics, epigenetics, transcriptomics, proteomics and microbiomics with large cohorts of patients.

MAIN LINES OF RESEARCH

- L1 Genetic risk factors in stroke. (Cárcel Márquez, Jara).
- L2 Pharmacogenetics of neurovascular diseases. (Fernández Cadenas, Israel).
- L3 Genetic and epigenetic risk factors associated with the neurological deterioration and the disability after stroke. (Gallego Fabrega, Cristina; Cullell Fornes, Natalia).
- L4 Genetic, epigenetic and proteomic factors associated with the endophenotypes of the acute phase of stroke. Integromics. (Fernández Cadenas, Israel).
- L5 Microbiome and Stroke. (Fernández Cadenas, Israel).
- L6 Lipids and Stroke. (Martín Campos, Jesús María).
- L7 CADASIL and other neurological diseases. (Muiño Acuña, Elena).

SCIENTIFIC CHALLENGES

- Integration of multi-omic data to find the key drivers associated with stroke risk and outcome.
- To find drug targets and treatments in stroke risk and outcome using bioinformatic and AI analysis.
- To understand the biological mechanisms of stroke and other neurological pathologies.
- To find treatments for CADASIL, a rare disease that causes vascular dementia and stroke.

ACTIVE & AWARDED GRANTS

- Cárcel Márquez, Jara. Gen-X project: Genetic and epigenetic study of ischemic stroke and its sex differences. MARATO 202306-30. Fundació La Marató de TV3. Duration: 2024-2027. 199.801,25 €
- Fernández Cadenas, Israel. COPYCTUS: Estudio de la variación en el número de copias y análisis genómico 3D para encontrar dianas terapéuticas en relación al deterioro neurológico post-ictus. PI21/01088. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 96.800,00 €
- Fernández Cadenas, Israel. Biomarcadors proteòmics cardiometabòlics i immunitaris de la Covid-19 per a l'avaluació clínica de la infecció, la gravetat de la malaltia i les complicacions postpandèmiques de salut. MARATO 202107-31. Fundació La Marató de TV3. Duration: 2022-2024. 129.750,00 €
- Fernández Cadenas, Israel. Elucidating the Key Mediators and Mechanisms of Cerebral Edema and Hemorrhagic Transformation after Hemispheric Stroke using Quantitative Imaging and Genetics. NIH RO1 edema. (Raj Dhar and Spanish network) NIH - WUSTL. Duration: 2022-2027. 344.242,00 €
- Fernández Cadenas, Israel. CNV and Stroke (CaNVAS). NIH MARYLANDO (CaNVAS) 1R01NS114045-01. National Institute of Neurological Disorders. Duration: 2020-2024. 120.084,00 €
- Fernández Cadenas, Israel. CADASIL-Historia Natural (CADANHIS). AC23_2/00041. Instituto de Salud Carlos III (ISCIII). Duration: 2024-2026. 179.375,00 €
- Fernández Cadenas, Israel. Stopped-Stroke. Reversible epigenetic therapies to STOp biological age and reduce STroke risk. MARATO 202310-30. Fundació La Marató de TV3. Duration: 2024-2027. 133.972,50 €
- Fernández Cadenas, Israel. OneCareAI - AI Powered Neurovascular Health Monitoring. 2024 PROD 00080. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). Duration: 2024-2026. 38.500,00 €
- Fernández Cadenas, Israel. Evaluación de la eficacia de la leriglitzona y búsqueda de potenciales biomarcadores en enfermedades de la sustancia blanca. CPP2023-010519. Ministerio de Ciencia, Innovación y Universidades. Duration: 2024-2027. 331.125,64€
- Fernández Cadenas, Israel. PROMETEO: Estudio Proteo-genómico y de integrómica de datos para identificar tratamientos que mejoren la evolución neurológica del ictus. PI24/02102. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 196.250,00 €

DOCTORAL THESES DEFENDED

- Lledos de Benito, Miquel. Caracterización de la microbiota intestinal en pacientes con ictus isquémico: un estudio metagenómico. 15/03/2024. Universitat de Barcelona. Supervisors: Fernández Cadenas, Israel; Muiño Acuña, Elena; Rabionet Janssen, Raquel. <http://hdl.handle.net/10803/691393>.

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2024; 103(8):e209666. DOI:10.1212/
WNL.0000000000209666. PMID:39298701.
IF:7,700 (Q1/1D). Document type: Article.

Genetic Diseases

Group leader

Gallano Petit, María Pía (FGS)

Researchers

Bernal Noguera, Sara (FGS)

Cuscó Martí, Ivon (FGS)

González Quereda, Lidia (FGS)

Lasa Laborde, Adriána Maria (FGS)

Riera Armengol, Pau (FGS)

Rodríguez Santiago, Benjamín (FGS)

Segarra Casas, Alba (IR)

Serra Juhe, Clara (FGS)

Tejero Laguna, Eudald (IR)

Vega Hanna, Lourdes Rita (FGS)

Research technicians

Baena Gimeno, Manel (FGS)

Clivillé Santano, Núria (FGS)

Cornet Ciurana, Mónica (FGS)

Rodríguez Fernández, María José (FGS)



DESCRIPTION

The Genetic Diseases Group is a multidisciplinary group with an important clinical component in its research within the Genetics Department at the Hospital de Sant Pau. Its activities also have a translational orientation facilitated by the clinical environment in which it performs the laboratory work.

The primary objective of the Genetic Diseases Group is to advance the molecular diagnosis of genetic and rare diseases through genomic, transcriptomic, functional, and pharmacogenetic studies, thereby improving our understanding of the molecular mechanisms of described genes and identifying new ones. The results of these genetic studies allow for the establishment of different therapeutic options in many cases and to offer genetic counselling to the families. The fact that the group is made up entirely of Sant Pau Genetics Dept staff supports the clinical translational effect of their research work.

MAIN LINES OF RESEARCH

- Genetics of congenital myopathies, congenital and adult muscular dystrophies, including limb girdle muscle dystrophies, and congenital myasthenic syndromes.
- Spinal atrophy and SMN genes.
- Genetics of hereditary cancer.
- Pharmacogenetics.
- Cardiogenetics.
- Genetics in paediatrics-obstetrics.

SCIENTIFIC CHALLENGES

- Congenital myopathies, congenital and adult muscular dystrophies, including limb girdle muscle dystrophies, and congenital myasthenic syndromes.
 - Identification of mutations and genetic variants.
 - Studies of molecular pathology and disease mechanisms of neuromuscular disease-related genes.
 - Transcriptome analysis by RNA Seq technology.
 - Functional studies on the DMD genes to determine the pathogenic effect of the identified variants.
 - Long Read Sequencing by ONT technology to characterise long repeat expansions in size and composition.
- Spinal atrophy and SMN genes
 - To design new strategies for the study and improvement of the molecular diagnosis of atypical cases.
 - To perform functional studies for the characterisation of genetic variants of uncertain clinical effect to improve diagnosis.
 - Studies of molecular pathology, disease mechanisms, and SMN gene expression.
 - Identification of modifying genes.
 - Study of biomarkers for validation processing in spinal muscular atrophy.
 - Study of the neuromuscular junction in human development.
- Hereditary cancer
 - Development of Precision Medicine in hereditary syndromes of predisposition to cancer: an approach to the diagnosis, treatment and prevention of cancer through the identification of pathogenic variants in multigene assays.
 - Development of functional studies for the characterisation of genetic variants of uncertain clinical effects.
 - Analysis of biomarkers in liquid biopsy-free circulating tumor DNA (cfDNA) as a predictor of response to the treatment of breast cancer.
- Contribution to the development of an open database of genetic variants included in Hereditary Cancer Genetic Testing Panels.
- Pharmacogenetics
 - Identification of biomarkers of response/toxicity to drugs used in cancer, rheumatology, inflammatory bowel diseases, cardiology, hematology.
 - Congenital coagulopathies: molecular pathology of hemophilia.
 - Duchenne and Becker muscular dystrophy: molecular pathology of the DMD gene.
 - Identification of the molecular alterations responsible for hereditary hearing loss.
 - Studies of the molecular pathology causing ataxias.
 - Clinical and Molecular diagnosis of complex diseases of pediatric-onset with special attention to Neurodevelopmental Disorders.
- Cardiogenetics
 - Clinical and Molecular studies of patients with cardiomyopathies (dilated, hypertrophic, arrhythmogenic, non-compacted, etc) to identify disease-associated genetic variants.
 - Study of clinically discordant families with the same pathogenic genetic variant to identify phenotype modifiers in cardiomyopathies.
 - Clinical and Molecular characterisation of patients with aortic diseases (Aortic Aneurysms, Aortic Valvular Disease, Aortic Occlusive Disease, Traumatic Aortic Disease, Aortic Dissections).
- Paediatrics-obstetrics
 - Clinical and Molecular studies of syndromic patients: Identification of responsible variants and discovery of new genes.
 - Clinical and Molecular studies of fetal anomalies detected during pregnancy.

ACTIVE & AWARDED GRANTS

- González Quereda, Lúdia. Análisis integrado de datos genómicos y transcriptómicos para el avance en el conocimiento molecular y diagnóstico de las miopatías. PI22/O1859. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2025. 87.120,00 €
- González Quereda, Lúdia. Application of novel sequencing technologies to solve the most complex dystrophinopathy cases. DUCHENNE ESPAÑA 2024. Asociacion Duchene Parent Project España. Duration: 2025-2026. 59.907,92 €
- Riera Armengol, Pau. Integración de la farmacogenética y la telemedicina mediante salud móvil para el manejo de los efectos adversos en pacientes con cáncer colorrectal. (ePGx study). PI21/O1913. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 63.525,00 €
- Rodríguez Santiago, Benjamín. Catalan Interhospital web of genetic variants to improve genetic diagnosis in rare diseases. MARATO 202040-33. Fundació La Marató de TV3. Duration: 2021-2024. 26.625,00 €

SCIENTIFIC PRODUCTION

- Carbayo Á, Borrego-Écija S, Turon-Sans J, Cortés-Vicente E, Molina-Porcel L, Gascón-Bayarri J, Rubío MÁ, Povedano M, Gámez J, Sotoca J, Juntas-Morales R, Almendrote M, Marquí M, Sánchez-Valle R, Illán-Gala I, Dols-Icardo O, Rubío-Guerra S, Bernal S, Caballero-Ávila M, Vesperinas A, Gelpi E, Rojas-García R. Clinicopathological correlates in the frontotemporal lobar degeneration-motor neuron disease spectrum. *BRAIN*. 2024; 147(7). DOI:10.1093/brain/awae011. PMID:38227807. IF:10,600 (Q1/1D). Document type: Article.
- Cavestro C, Morra F, Legati A, D'Amato M, Nasca A, Iuso A, Lubarr N, Morrison JL, Wheeler PG, Serra-Juhé C, Rodríguez-Santiago B, Turón-Viñas E, Prouteau C, Barth M, Hayflick SJ, Ghezzi D, Tiranti V, Di Meo I. Emerging variants, unique phenotypes, and transcriptomic signatures: an integrated

study of *COASY*-associated diseases. *Annals of Clinical and Translational Neurology*. 2024; 11(6). DOI:10.1002/acn3.52079. PMID:38750253. IF:4,400 (Q1/2D). Document type: Article.

- de Dios A, Pagès N, Ojeda S, Riera P, Pelegrin R, Morollon N, Belvis R, Real J, Masip M. Persistence, effectiveness, and tolerability of anti-calcitonin gene-related peptide monoclonal antibodies in patients with chronic migraine. *HEADACHE*. 2024; DOI:10.1111/head.14827. PMID:39268992. IF:5,400 (Q1/2D). Document type: Article.
- De Pourcq JT, Riera A, Gras L, Garin N, Busquets MA, Cardenete J, Cardona D, Riera P. Physicochemical Compatibility of Ceftolozane-Tazobactam with Parenteral Nutrition. *Pharmaceuticals*. 2024; 17(7):896. DOI:10.3390/ph17070896. PMID:39065746. IF:4,300 (Q1/2D). Document type: Article.
- Dols O, Carbayo A, Jericó I, Blasco O, Álvarez E, Pérez M, Bernal S, Rodríguez B, Cusco I, Turon J, Cabezas M, Caballero M, Vesperinas A, Llansó L, Pagola I, Torné L, Valle N, Muñoz L, Rubío S, Illán I, Cortés E, Gelpi E, Rojas R. Identification of a pathogenic mutation in *ARPP21* in patients with amyotrophic lateral sclerosis. *JOURNAL OF NEUROLOGY NEUROSURGERY AND PSYCHIATRY*. 2024; DOI:10.1136/jnnp-2024-333834. PMID:38960585. IF:8,700 (Q1/1D). Document type: Article.
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- Ligeró C, Riera P, El-Amrani A, Bazan V, Guerra JM, Herraes S, Viñolas X, Alegret JM. Impact of Body Mass Index in the Cardioverter Efficacy of Amiodarone in Persistent Atrial Fibrillation. *Pharmaceuticals*. 2024; 17(6):693. DOI:10.3390/ph17060693. PMID:38931360. IF:4,300 (Q1/2D). Document type: Article.

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- Martín-Cullell B, Virgili AC, Riera P, Fumagalli C, Mirallas O, Pelegrín FJ, Sánchez-Cabús S, Molina V, Szafranska J, Páez D. Histopathological, Clinical, And Molecular (HICAM) score for patients with colorectal liver metastases. *BRITISH JOURNAL OF SURGERY*. 2024; 111(3):znae016. DOI:10.1093/bjs/znae016. PMID:38488528. IF:8,600 (Q1/1D). Document type: Article.
- Masip M, Pagès-Puigdemont N, López-Ferrer A, de Paz HD, Serra-Baldrich E, Puig L, Riera P. Defining the Care Pathway in Patients with Psoriasis and Atopic Dermatitis. Patient Preference and Adherence. 2024; 18DOI:10.2147/PPA.S489731. PMID:39574936. IF:2,000 (Q2/4D). Document type: Article.
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- Palones E, Curto E, Plaza V, González-Quereda L, Segarra-Casas A, Querol L, Bertoletti F, Rodríguez MJ, Gallano P, Crespo-Lessmann A. Clinical and functional characteristics, possible causes, and impact of chronic cough in patients with cerebellar ataxia, neuropathy, and bilateral vestibular areflexia syndrome (CANVAS). *J Neurol*. 2024; 271(3):1204-1212. DOI:10.1007/s00415-023-12001-9. PMID:37917234. IF:4,800 (Q1/2D). Document type: Article.
- Palones E, Plaza V, González-Quereda L, Segarra-Casas A, Querol L, Bertoletti F, Rodríguez MJ, Gallano P, Crespo-Lessmann A. Chronic Cough and Cerebellar Ataxia With Neuropathy and Bilateral Vestibular Areflexia Syndrome (CANVAS): Screening for Mutations in Replication Factor C Subunit 1 (RFC1). *ARCHIVOS DE BRONCONEUMOLOGIA*. 2024; 60(8). DOI:10.1016/j.arbres.2024.04.028. PMID:38755058. IF:8,700 (Q1/1D). Document type: Article.
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 - Segarra A, Yopez VA, Demidov G, Laurie S, Esteve A, Gagneur J, Parkhurst Y, Muni R, Harris E, Marini C, Straub V, Töpf A. An Integrated Transcriptomics and Genomics Approach Detects an X/Autosome Translocation in a Female with Duchenne Muscular Dystrophy. INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES. 2024; 25(14):7793. DOI:10.3390/ijms25147793. PMID:39063034. IF:4,900 (Q1/3D). Document type: Article.
 - Sierra-Marcos A, Ribosa-Nogué R, Vidal-Robau N, Aldecoa I, Turón E, Rodríguez-Santiago B, Turón M, Boronat S, Molina-Porcel L. Inherited *SCN1A* missense mutation in a Dravet Syndrome family: Neuropathological correlation, family screening and implications for adult carriers. EPILEPSY RESEARCH. 2024; 199:107266. DOI:10.1016/j.eplepsyres.2023.107266. PMID:38061235. IF:2,000 (Q3/7D). Document type: Article.

Neurosurgery

Group leader

Muñoz Hernández, Fernando (FGS)

Researchers

Aibar Durán, Juan Ángel (FGS)

Anka, Michael Oladotun (FGS)

Borràs Pino, Xavier (FGS)

de Quintana Schmidt, Cristian José (FGS)

Freixer Palau, Berta (FGS)

Leidinger, Andreas (FGS)

Noguera Martí, Marc (FGS)

Patino Alvarado, Juan Diego (FGS)

Perales Susan, Mario (IR)

Rico Pereira, Marta (FGS)

Rodríguez Rodríguez, Rodrigo (FGS)

Roig Arsequell, Clara (FGS)

Sánchez Nevado, Raquel (FGS)

Tello Vicente, José Antonio (FGS)



DESCRIPTION

The neurosurgery team is a young research group with a clear mission: to improve the quality of life for patients and, at the same time, contribute to advancements in healthcare practice through research into potentially surgical neurological diseases. There are 4 areas of knowledge where our group stands out nationally and internationally: neurooncology, skull base surgery, functional neurosurgery, and spine surgery.

MAIN LINES OF RESEARCH

- Tumour biology: gliomas (prognostic value of different mutations in anaplastic astrocytoma and GBM). (De Quintana Schmidt, Cristian José).
- Tumour biology: Neuroendocrine Tumors (pituitary adenomas). (Muñoz Hernández, Fernando).
- Biomarkers in anaplastic astrocytomas and glioblastoma multiforme. (De Quintana Schmidt, Cristian José).
- Application of new technologies in the resection of intracranial tumors. (De Quintana Schmidt, Cristian José).
- Towards a pharmacological treatment for SYNGAP1 deficiency. Preclinical studies to investigate the efficacy of 4 drugs in the rescue of the main phenotypes. (De Quintana Schmidt, Cristian José).
- Prospective study of patients operated by endoscopic endonasal approach. (Muñoz Hernández, Fernando).

- Anatomical studies of the skull base. (Muñoz Hernández, Fernando).
- Clinical evaluation of neurostimulation techniques in different neurological entities (Parkinson disease and neuropathic pain). (Rodríguez Rodríguez, Rodrigo; Aibar Duran, Juan Angel).
- Neurostimulation for resistant craniofacial pain (jointly with Neurology and Pain Clinic Unit). (Rodríguez Rodríguez, Rodrigo; Aibar Duran, Juan Angel).
- "Study of brain neuromodulation techniques for psychiatric indications (depression and schizophrenia)" (Rodríguez Rodríguez, Rodrigo; Aibar Duran, Juan Angel).
- Use of intraoperative ecography for treatment of brain tumors. (De Quintana Schmidt, Cristian José).
- Monitor the glioma tumor diagnosis, treatment and prognostic factors (Hospital Sant Pau - Hospital del Mar). (De Quintana Schmidt, Cristian José).
- Pituitary adenoma treatment: medial cavernous sinus wall approach to cure adenomas. (Muñoz Hernández, Fernando).
- Intraoperative neuromonitoring of oculomotor cranial nerves in skull base tumors. (Muñoz Hernández, Fernando).
- Pre-op and post-op volumetric study in OPEN laminectomies vs MISS (tubular) laminectomies. (Patino Alvarado, Juan Diego; Leidinger, Andreas).
- The impact of lateral lumbar interbody fusion on psoas muscle morphology. (Patino Alvarado, Juan Diego; Leidinger, Andreas).
- Use of tractography in resection of brain tumors.
- Better outcomes in Pituitary Surgery by removing the tumor inside the cavernous sinus.
- Use of artificial intelligence and volume calculation to assess outcomes of spine surgery.
- Implementation of HIFU treatment in patients with neurological and psychiatric disorders.
- Implementation of the Neurotechnology Laboratory for the study of new treatment devices for neurological diseases.

SCIENTIFIC PRODUCTION

- Aibar JA, Salgado L, Anka MO, Mirapeix RM, Alcañiz AG, Alvarado JDP, Pereira MR, Rodríguez RR, Munoz F, Quintana CD. Navigated intraoperative ultrasound in neuro-oncology: volumetric accuracy and correlation with high-field MRI. JOURNAL OF NEUROSURGED12:D20171/2023.10. JNS231244. PMID:38181499. IF:3,500 (Q1/2D). Document type: Article.
- Aibar JÁ, Villalba G, Freixer B, Araus E, Morollón Sánchez N, Belvis R, Revuelta M, Molet J, García C, de Quintana C, Muñoz F, Rodríguez R. Long-Term Results of Cortical Motor Stimulation for Neuropathic Peripheral and Central Pain: Real-World Evidence From Two Independent Centers. Neurosurgery. 2024; 94(1). DOI:10.1227/neu.0000000000002638. PMID:37638720. IF:3,900 (Q1/1D). Document type: Article.
- Fernández JM, Aracil I, García C, Campolongo A, Curell M, Rodríguez R, Aibar JA, Kulisevsky J, Pascual B. Cognitive phenotyping of *GBA1*-Parkinson's disease: A study on deep brain stimulation outcomes. PARKINSONISM & RELATED DISORDERS. 2024; 128:107127. DOI:10.1016/j.parkreldis.2024.107127. PMID:39357432. IF:3,100 (Q2/4D). Document type: Article.
- González C, Calafat M, Gisbert JP, Iglesias E, Minguez M, Sicilia B, Aceituno M, Gomollón F, Calvet X, Ricart E, De Castro L, Rivero M,

SCIENTIFIC CHALLENGES

- Neurostimulation for resistant craniofacial pain (jointly with Neurology and Pain Clinic Unit).
- Deep brain stimulation for resistant psychiatric disease: depression and schizophrenia.
- Use of intraoperative ecography for treatment of brain tumors. How to maximise the extent of resection.

- Mesonero F, Márquez L, Nos P, Rodríguez A, Guardiola J, García M, García S, Lorente RH, Alba C, Sánchez R, Vera I, Madero L, Riestra S, Navarro M, Pérez JL, Camps B, Van M, Lucendo AJ, Martín MD, Montoro MA, Sierra M, Liao J, Carpio D, Varela P, Merino O, Fernández L, Piqueras M, Sese E, Busquets D, Tardillo C, Maroto N, Riera J, Martínez C, Muñoz F, Gordillo J, Bertolotti F, García E, Domènech E, ENEIDA G. Influence of familial forms of inflammatory bowel disease on the use of immunosuppressants, biological agents, and surgery in the era of biological therapies. Results from the ENEIDA project. *POSTGRADUATE MEDICAL JOURNAL*. 2024; DOI:10.1093/postmj/qgae076. PMID:38913019. IF:3,600 (Q1/2D). Document type: Article.
- Gras JR, Martel M, Casasayas M, Villatoro JC, García A, Masegur H, Reina F, Muñoz F. Transpalpebral transorbital endoscopic lateral approach to the middle cranial fossa: anatomical study in cadaver. *European Journal Of Anatomy*. 2024; 28(3). DOI:10.52083/HNNK7711. Document type: Article.
 - Ikwuegbuenyi CA, Woodfield J, Waterkeyn F, Zuckerman SL, Cheserem B, Leidinger A, Lazaro A, Shabani HK, Haertl R, Mangat HS. Is mechanism of injury associated with outcome in spinal trauma? An observational cohort study from Tanzania. *PLoS One*. 2024; 19(7):e0306577. DOI:10.1371/journal.pone.0306577. PMID:39024312. IF:2,900 (Q1/3D). Document type: Article.
 - Mármol MCC, Aguado M, Cajal TRY, Gallardo A, Catasús L, González A, Méndez JE, Lasa A, Arumi M, Rubío OG, Serra JB, Hernández FM, von A, Kommos FKF, Espinosa I. Non-*C19MC*-altered embryonal tumor with multilayered rosettes in a young woman with DICER1 syndrome: case report and review of the literature. *Pathologica*. 2024; 116(3). DOI:10.32074/1591-951X-970. PMID:38979591. Document type: Review.
 - Mosteiro A, Llull L, Pedrosa L, Amaro S, Reyes LA, Basco J, Zattera L, de Riva N, Arikán F, Gandara D, Villalba G, Cuadrado E, Rodríguez A, Blanco A, Muñoz F, Rico M, Romero F, Álvarez P, Ojeda PL, Chirife O, Salvat M, Ros J, de la Ossa NP, Torné R. The HSACat Project: A Prospective Multicenter Observational Study of Spontaneous Subarachnoid Hemorrhage in Catalonia, Spain. *World Neurosurgery*. 2024; 191DOI:10.1016/j.wneu.2024.08.078. PMID:39168244. IF:1,900 (Q2/5D). Document type: Article.

Molecular Neurodegeneration

Group leader

Belbin, Olivia Elizabeth (IR)

Researchers

Cervantes González, Alba (IR)

Lidón Gil, Laia (IR)

Research technicians

Perlaza Meneses, Danna Alejandra (IR)

Serrano Requena, Sara (IR)



DESCRIPTION

The Molecular Neurodegeneration research line was formed in 2014 and was officially recognised as an emerging research group in 2022. Our focus is on the search for novel biomarkers and therapeutic targets to aid in the diagnosis and management of patients with neurodegenerative diseases and psychiatric disorders characterised by synaptopathy, employing techniques such as mass spectrometry, immunoassays, biochemical fractionation, and in vitro cell-based assays. The group is supported by national and international research and knowledge transfer grants, and our biomarkers are protected by a patent, licensed to ADx Neurosciences.

MAIN LINES OF RESEARCH

- Development and validation of fluid biomarkers of synapse degeneration in neurodegenerative diseases and psychiatric disorders characterised by synapse degeneration and dysfunction. (Belbin, Olivia Elizabeth).
- Omic approaches to understand the molecular basis of synapse degeneration in Alzheimer's disease. (Belbin, Olivia Elizabeth).
- Development of pathway-based polygenic risk scores to elucidate the genetic factors underlying Alzheimer's disease and use of in vitro cell-based assays to assess their function. (Belbin, Olivia Elizabeth).

SCIENTIFIC CHALLENGES

- Consolidating our own niche while maintaining synergy with the Neurobiology of Dementia research group.
- Maintain our scientific production and funding, prioritising the projects with higher impact.
- Establishing Tools for Early Detection of Alzheimer's disease through polygenic risk score.
- Incorporating Synaptic biomarkers into longitudinal studies and clinical trials through closer relations with pharma.
- Exploring synaptic biomarker utility in primary psychiatric disorders.
- Explore the effect of disease comorbidities on synaptic biomarkers.

ACTIVE & AWARDED GRANTS

- Belbin, Olivia Elizabeth. Prediagnostic early synaptic disturbances in neurodegenerative diseases. JPND2021-650-078. EU JOINT ACTIONS. Alteraciones preclínicas de sinapsis en enfermedades neurodegenerativas. AC21_2/00017. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 154.880,00 €
- Belbin, Olivia Elizabeth. Estudio traslacional de una predicción de riesgo poligénico y biomarcadores para la detección de la degeneración sináptica en la enfermedad de Alzheimer. PI21/00063. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 111.320,00 €
- Belbin, Olivia Elizabeth. Role of synaptic miRNA and astrocyte miRNA delivery in Alzheimer's disease. AARG-22-974373. Alzheimer's Association. Duration: 2022-2025. 141.222,50 €
- Belbin, Olivia Elizabeth. Validación de prototipos de inmunoensayos para la detección y seguimiento de sinaptopatía en biofluidos de pacientes con enfermedades neurodegenerativas y trastornos afectivos. DTS22/00111. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2025. 84.700,00 €
- Belbin, Olivia Elizabeth. Grup de Recerca en Demències: Sant Pau. 2021 SGR 00979. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). Duration: 2022-2025. 40.000,00 €.
- Belbin, Olivia Elizabeth. Evaluación de proteínas del complejo SNARE como biomarcadores en líquido cefalorraquídeo de la degeneración sináptica en cohortes de demencia con cuerpos de Lewy. PI24/00968. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 115.000,00 €
- Belbin, Olivia Elizabeth. Synapsing Mental Disorders and Neurodegenerative diseases: Towards more effective diagnosis and management of psychiatric symptoms.101156566. HORIZON-HLTH-2024-DISEASE-03-14-two-stage. European Union. Duration: 2024-2029. 1.014.147,61 €
- Cervantes González, Alba. Contratos PFIS 2022. FI22/00241. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2026. 119.567,00 €
- Cervantes González, Alba. Proteínas sinápticas y lisosomales como biomarcadores en enfermedades neurodegenerativas. MV24/00054. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2025. 20.700,00 €
- Lidon Gil, Laia. Contratos Sara Borrell 2024. CD24/00161. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 95.000,00 €

SCIENTIFIC PRODUCTION

- Fortea J, Pegueroles J, Alcolea D, Belbin O, Dols O, Vaqué L, Videla L, Gispert JD, Suárez M, Johnson SC, Sperling R, Bejanin A, Lleó A, Montal V. *APOE4* homozygosity represents a distinct genetic form of Alzheimer's disease. NATURE MEDICINE. 2024; DOI:10.1038/s41591-024-02931-w. PMID:38710950. IF:58,700 (Q1/1D). Document type: Article.
- Jácome D, Cotrufo T, Andrés P, Lidón L, Martí E, Ferrer I, del Río JA, Gavín R. miR-519a-3p, found to regulate cellular prion protein during Alzheimer's disease pathogenesis, as a biomarker of asymptomatic stages. BIOCHIMICA ET BIOPHYSICA

ACTA-MOLECULAR BASIS OF DISEASE.

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(Q1/2D). Document type: Article.

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- Sirisi S, Sánchez E, Belbin O, Lleó A. APP dyshomeostasis in the pathogenesis of Alzheimer's disease: implications for current drug targets. *Alzheimers Research & Therapy*. 2024; 16(1):144. DOI:10.1186/s13195-024-01504-w. PMID:38951839. IF:7,900 (Q1/1D). Document type: Review.
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Epilepsy

Group leader

Boronat Guerrero, Susana (FGS)

Researchers

Díaz Gómez, María Asunción (FGS)

Ros Castelló, Victoria (FGS)

Sierra Marcos, Alba (FGS)

Tristán Noguero, Alba (FGS)

Turón Viñas, Eulàlia (FGS)

Turón Viñas, Marc (FGS)

Research technicians

Artigas Baleri, Alícia (IR)



DESCRIPTION

This is a multidisciplinary group that includes the fields of epileptology, pediatric neurology, neuropsychology, and clinical genetics. We study several aspects of Epilepsy, mainly genotype-phenotype correlation of genetic epilepsy, electroclinical phenotyping, status epilepticus and neuropsychological comorbidities. Our research encompasses patients of all ages, including children and adults, to expand knowledge about the natural history of epilepsy. We offer also new treatments for refractory patients with no other therapeutic options, providing them access to clinical trials.

MAIN LINES OF RESEARCH

- Genotype-phenotype correlation in genetic epilepsy (Boronat Guerrero, Susana; A Díaz Gómez, María Asunción; Ros Castelló, Victoria).
- Electroclinical and neuroimaging phenotyping (Sierra Marcos, Alba).
- Neuropsychological comorbidities (Turón Viñas, Marc).
- Emergency management of acute seizures and status epilepticus (Turón Viñas, Eulàlia).

SCIENTIFIC CHALLENGES

- Increase knowledge about deep phenotyping of genetic epilepsies, including electroclinical phenotyping and neuroimaging features.
- Description of new epileptic genetic syndromes.

- Improving therapeutic options for acute seizures, status epilepticus and neuropsychological comorbidities.

ACTIVE & AWARDED GRANTS

- Boronat Guerrero, Susana. VISOR EEG (dispositivo reglStro hOlter seRas EEG). CPP2021-008311. Ministerio de Ciencia e Innovación (MICINN). Duration: 2022-2025. 121.887,00 €
- Boronat Guerrero, Susana. Study of genomic disease burden to complement Cause of Death investigation in Sub-Saharan African: a pilot study from Child Health and Mortality Prevention Surveillance (CHAMPS) Network. OPP1126780 GATES. Gates Foundation. Duration: 2023-2025. 252.118,96 €
- Turon Viñas, Eulàlia. PReDICT: Ictus pediàtric asociado a enfermedades raras: Diagnòstico y tratamiento integrando Multi-òmica e inteligencia artificial. PMPER24/00021. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2026. 39.764,37 €

SCIENTIFIC PRODUCTION

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- Codes H, Magallares B, Park HS, Mariscal A, Juárez C, Boronat S, Martínez L, Corominas H. Diagnostic accuracy of serum calprotectin measured by CLIA and EIA in juvenile idiopathic arthritis: a proof-of-concept study. Frontiers in Pediatrics. 2024; 12:1422916. DOI:10.3389/fped.2024.1422916. PMID:38962573. IF:2,100 (Q2/4D). Document type: Article.
- Esmel R, Miguel LDD, Artigas A, Turón E, Cuscó I, Díaz A, Panadés LPD, Rocamora R, Boronat S. Cardiovascular abnormalities in patients with SHANK3 pathogenic variants: Beyond neurodevelopmental disorders and epilepsy. European Journal of Medical Genetics. 2024; 71:104965. DOI:10.1016/j.ejmg.2024.104965. PMID:39094681. IF:1,600 (Q3/8D). Document type: Article.
- Giorgi S, Auvin S, Schoonjans AS, Turón E, Sánchez I, Gil A, Lagae L, Aibar JA. A tool for Dravet syndrome-associated neuropsychiatric comorbidities evaluation (DANCE). EPILEPSY & BEHAVIOR. 2024; 158:109958. DOI:10.1016/j.yebeh.2024.109958. PMID:39067307. IF:2,300 (Q2/5D). Document type: Article.
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- Muiño E, Cárcel J, LLucía L, Gallego C, Culléll N, Lledós M, Martín JM, Villatoro P, Sierra A, Ros V, Aguilera A, Martí J, Fernández I. Identification of Genetic Loci Associated With Intracerebral Hemorrhage Using a Multitrait Analysis Approach. *NEUROLOGY*. 2024; 103(8):e209666. DOI:10.1212/WNL.0000000000209666. PMID:39298701. IF:7,700 (Q1/1D). Document type: Article.
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 - Schesquini KRP, Rodríguez GMF, Castellanos JCB, Martínez L, Guerrero SB, Rodrigo C, Badell I. Celiac disease diagnosis: transglutaminase, duodenal biopsy and genetic tests correlations. *Frontiers in Pediatrics*. 2024; 12:1330511. DOI:10.3389/fped.2024.1330511. PMID:39268360. IF:2,100 (Q2/4D). Document type: Article.
 - Sierra A, Ribosa R, Vidal N, Aldecoa I, Turón E, Rodríguez B, Turón M, Boronat S, Molina L. Inherited <i>SCN1A</i> missense mutation in a Dravet Syndrome family: Neuropathological correlation, family screening and implications for adult carriers. *EPILEPSY RESEARCH*. 2024; 199:107266. DOI:10.1016/j.eplepsyres.2023.107266. PMID:38061235. IF:2,000 (Q3/7D). Document type: Article.
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 - Turón-Viñas E, López-Torija I, Coca-Fernández E, Badell I, Sierra-Marcos A, Turón M, Ribosa-Nogué R, Boronat S. Seizures in children undergoing stem cell transplantation. *Pediatr Transplant*. 2024; 28(1):e14619. DOI:10.1111/petr.14619. PMID:37803946. IF:1,200 (Q3/7D). Document type: Article.. DOI:45323. PMID:Article. IF:PEDIATRICTurón-Viñas E, López-Torija I, Coca-Fernández E, Badell I, Sierra-Marcos A, Turón M, Ribosa-Nogué R, Boronat S. Seizures in children undergoing stem cell transplantation. *Pediatr Transplant*. 2024; 28(1):e14619 Document type: PEDIATRIC TRANSPLANTATION.
 - Villanueva V, Villar EG, Fernández A, Zurita J, López FJ, Rodríguez X, Parejo B, Estevez JC, Mercedes B, Ojeda J, Rubío M, García A, Gómez A, Martínez J, Martínez P, Calle R, Sierra A, González AM, Herrera JD, Rodríguez J, Cabezas B, Martínez E, Renau J, de Toledo M, Hampel KG, Alarcón C, Barceló MI, Monterde A, Lara LB, Sansa G, Serratosa JM. BRIVA-ONE study: 12-month outcomes of brivaracetam monotherapy in clinical practice. *Epilepsia Open*. 2024; 9(6). DOI:10.1002/epi4.13078. PMID:39470722. IF:2,800 (Q2/4D). Document type: Article.

Multiple Sclerosis and Central Nervous System Autoimmune Diseases Research

Group leader

Vidal Jordana, Àngela (FGS)

Researchers

Caballero Ávila, Marta (FGS)

Castillo Campillo, Lorena (FGS)

Gómez Gutiérrez, Cecilia (FGS)

Martín Aguilar, Lorena (FGS)

Olivé Cirera, Gemma (FGS)

Vidal Fernández, Maria Núria (FGS)



DESCRIPTION

Developing interdisciplinary research is essential to advance knowledge, optimise therapeutic strategies in multiple sclerosis and other autoimmune diseases of the central nervous system, and ultimately improve patients' quality of life. Our group comprises a multidisciplinary team with broad expertise in neurology, immunology, neuro-ophthalmology, and clinical research. Each member brings a unique and complementary perspective, enabling a comprehensive approach to neuroimmunological diseases.

MAIN LINES OF RESEARCH

- Study of biological and imaging biomarkers. (Vidal Jordana, Angela; Martín Aguilar, Lorena).
- Study of neurological complications of immunotherapy (CAR-T cells and immune checkpoint inhibitors). (Martín Aguilar, Lorena; Vidal Jordana, Angela).
- Clinical trials and patient-centred studies. (Vidal Fernández, Maria Nuria; Vidal Jordana, Angela).

SCIENTIFIC CHALLENGES

- Available biological and imaging biomarkers, when used in isolation, provide limited accuracy for diagnosing and monitoring autoimmune CNS diseases. There is a critical need to integrate and validate combined biomarkers that can reliably guide early and personalised treatment decisions.

- Neurological complications of emerging immunotherapies such as CAR-T cells and immune checkpoint inhibitors remain unpredictable and poorly characterised, representing a major challenge for early detection, risk stratification, and effective clinical management.

ACTIVE & AWARDED GRANTS

- Martín Aguilar, Lorena. Contratos Juan Rodes 2021. JR21/00060. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2026. 180.000,00 €

SCIENTIFIC PRODUCTION

- Rodríguez F, Fernández JI, Villarrubia N, Gracia J, Fernández E, Meca V, Díaz C, Sainz de la Maza S, Pacheco EM, Quiroga A, Ramió L, Martínez S, Bau L, Monreal E, López A, Rodero A, Borrega L, Díaz S, Eguía P, Espiño M, Chico JL, Barrero FJ, Martínez ML, García JM, De la Fuente S, Moreno I, Sainz R, Mañé MA, Caminero A, Castellanos F, Gómez A, Labiano A, Ayuso L, Abreu R, Hernández MA, Meca J, Martín L, Muriel A, Masjuan J, Costa L, Villar LM. Biomarkers of response to ocrelizumab in relapsing-remitting multiple sclerosis. *Frontiers in Immunology*. 2024; 15:1480676. DOI:10.3389/fimmu.2024.1480676. PMID:39606235. IF:5,700 (Q1/3D). Document type: Article.



5.1.4 Epidemiology, Public Health And Primary Care Area

Pablo Alonso Coello
Area Director

Research in this area involves studying population health and its social, political, and environmental determinants, with a special focus on inequalities and their consequences. It evaluates the effectiveness and health impact of public interventions and policies, as well as promotes evidence-based, practical medicine to make health interventions more effective, appropriate, and safe. Furthermore, it is crucial to develop and evaluate methods or strategies to improve the generation, evaluation, communication, and transfer of scientific evidence. This area focuses on the epidemiology of communicable diseases in the Barcelona population, with special attention to the impact of prevention and control strategies developed. The aim of this area is therefore to achieve wellness in public health through improving policies and medical management.

RESEARCH GROUPS

Clinical Epidemiology and Healthcare Services

Alonso Coello, Pablo Ignacio

Evaluation of Public Health Policies and Programmes

Continente García, Xavier

Urban Health Inequalities

Pérez González, Catherine

Transmissible Diseases

Rius Gibert, Cristina

Primary Care

Brotons Cuixart, Carles

Clinical Epidemiology and Healthcare Services

Group leader

Alonso Coello, Pablo Ignacio (IR)

Researchers

Bausà Peris, Roser (FGS)
 Bolibar Ribas, Ignasi (FGS)
 Bonfill Cosp, Xavier (FGS)
 Bosch Llonch, Fèlix (ACCIB)
 Bruning González, Pilar Gabriela (FGS)
 Canelo Aybar, Carlos Gilberto (ACCIB)
 Carrera Fabia, María Paz (ACCIB)
 Casino Rubio, Gonzalo (ACCIB)
 de la Torre Pérez, Laura (ACCIB)
 García Abajo, José Miguel (FGS)
 Gich Saladich, Ignasi Josep (FGS)
 Illán Cortadelles, Cristina (FGS)
 Madrid Aris, Eva Montserrat (ACCIB)
 Martínez García, Laura (IR)
 Martínez Zapata, María José (IR)
 Mira Catalá, Pablo (FGS)
 Navarro Blasco, Lydia (FGS)
 Nieto Gutiérrez, Wendy Carolina (ACCIB)
 Pereira Nunes Pinto, Ana Carolina (ACCIB)
 Pérez Bracchiglione, Javier Andrés (CIBER)
 Popova Sherozia, Ekaterine (IR)
 Puig Reixach, Maria Teresa (FGS)
 Quintana Ruiz, Maria Jesús (FGS)
 Requeijo Lorenzo, Carolina (FGS)
 Rigau Comas, David (ACCIB)
 Rojas Reyes, María Ximena (IR)
 Roqué Figuls, Marta Cristina (IR)
 Samsó Jofra, Laura (FGS)
 Santero Sosa, Marilina (IR)
 Solà Arnau, Ivan (FGS)
 Urrutia Cuchi, Gerard (FGS)
 Vïcuna Trassard, Johanna Helene (FGS)

Research technicians

Auladell Rispau, Ariadna (IR)
 Beltrán Puerta, Jessica (ACCIB)
 Bonfill García, Aleix (ACCIB)
 Cervera Alepuz, Andrea (ACCIB)
 Fernández Saenz, Fiorella Karina (ACCIB)
 García López, Yasmin (ACCIB)
 García Mas, Margarita (ACCIB)
 Girós Boixadós, Meritxell (IR)
 Gorgues Sendra, Marta (FGS)
 Haspert Nogué, Florencia Belén (IR)
 Medina Aedo, Nedavia Melixa (IR)
 Parellada Calderer, Elisenda (ACCIB)
 Savall Esteve, Olga (IR)
 Solà Roca, Judit (ACCIB)



DESCRIPTION

We are an internationally recognised research group dedicated to advancing evidence-based healthcare. Our work spans applied clinical research, health services evaluation, and non-commercial clinical trials. As a leading hub for evidence synthesis, we produce a wide range of synthesis outputs and clinical practice guidelines, conduct cutting-edge methodological research, and offer tailored advice and training to a broad spectrum of stakeholders. Our group proudly hosts both a Cochrane Centre and a GRADE Centre, and actively promotes knowledge translation through numerous collaborative initiatives.

MAIN LINES OF RESEARCH

- Applied clinical research. (Martínez Zapata, María José).
- Research in adequacy, care quality and public Health. (Bonfill Cosp, Xavier).
- Synthesis and transfer of knowledge. (Alonso Coello, Pablo Ignacio).

SCIENTIFIC CHALLENGES

- To foster the design and coordination of multicentre clinical trials—nationally and internationally—in key areas such as surgical patient safety, perioperative medicine, and non-pharmacological interventions, consolidating these as transversal programmes within the Sant Pau Research Institute.

- To promote the integration of research findings into clinical practice, supporting the implementation of evidence to improve the quality and appropriateness of care.
- To establish our group as a national and international leader in evidence synthesis production, methodological research, and education.
- To increase the global visibility and influence of our group in the field of guideline methodology and capacity building.
- To embed a gender perspective systematically across all stages of our research: from design and conduct to analysis and reporting.
- To advance shared decision-making in healthcare by better linking clinical practice guidelines with real-world clinical data.
- To continue developing user-focused knowledge translation strategies and tools to ensure the effective and timely dissemination of scientific evidence.
- To attract international talent across our priority research areas and to secure competitive international funding, particularly from the European Union.
- Martínez García, Laura. Evaluation of primary school resources from the Informed Health Choices project in improving the ability of Spanish children to assess claims about treatments. CP18/00007. Instituto de Salud Carlos III (ISCIII). Duration: 2019-2024. 202.500,00 €
- Martínez García, Laura. Contextualización de los recursos didácticos para niños en educación primaria del proyecto Decisiones Informadas en Salud. PI19/00068. Instituto de Salud Carlos III (ISCIII). Duration: 2020-2024. 36.300,00 €
- Martínez Zapata, María José. Contractes "Miguel Servet II" 2020. CPII20/00023. Instituto de Salud Carlos III (ISCIII). Duration: 2021-2024. 101.250,00 €
- Martínez Zapata, María José. Evaluación de una estrategia terapéutica para acortar el tiempo de estancia hospitalaria en apendicitis complicada pediátrica: ensayo clínico aleatorizado, paralelo, multicéntrico, abierto, de no inferioridad. ICI23/00070. Instituto de Salud Carlos III (ISCIII). Duration: 2024-2026. 252.560,00 €
- Martínez Zapata, María José. Desarrollo, implementación e impacto de una terapia digital para el seguimiento postoperatorio de pacientes de cirugía cardíaca: Estudio DIGITPOSCARD. PI24/00914. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 90.000,00 €
- Rojas Reyes, Maria Ximena. Fortalecimiento de la capacidad en la toma de decisiones en el Sistema de Salud español a través de evidencia viva: Un marco de trabajo innovador. PI21/01564. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 114.950,00 €
- Santero Sosa, Marilina. Análisis y mejora de la adecuación de la prescripción de quimioterapia al final de la vida. FI19/00335. Instituto de Salud Carlos III (ISCIII). Duration: 2020-2024. 82.400,00 €
- Urrutia Cuchi, Gerard. Resultados centrados en el paciente y utilización de recursos después de la cirugía no cardíaca (España) (PACORUS-S). PI21/01742. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 75.020,00 €

ACTIVE & AWARDED GRANTS

- Alonso Coello, Pablo Ignacio. Grup de Recerca Clínica i Sanitària Aplicada. 2021 SGR 00982. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). Duration: 2022-2025. 40.000,00 €.
- Alonso Coello, Pablo Ignacio. Desarrollos metodológicos para guías de práctica clínica en el Sistema Nacional de Salud (SNS). PI23/01813. Instituto de Salud Carlos III (ISCIII). Duration: 2024-2026. 65.000,00 €
- Bonfill Cosp, Xavier. Impacto del COVID-19 sobre la morbilidad y mortalidad de los. PI21/00062. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 168.190,00 €
- Bonfill Cosp, Xavier. CLINÈRGIA, collaborative network for the generation and knowledge translation about non-pharmacological. 2023 LLAV 00039. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). Duration: 2024-2024. 20.000,00 €

- Urrutia Cuchi, Gerard. Living Evidence to Inform Health Decisions Program. 2023 INNOV 00016. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). Duration: 2024-2025. 84.000,00 €
- Villegas Arbelaez, Esteban. Contratos PFIS 2024. FI24/00265. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2028. 89.900,00 €
- making in health care: Thromboprophylaxis during pregnancy. 11/12/2024. Universitat Autònoma de Barcelona. Supervisors: Alonso Coello, Pablo Ignacio; Perestelo Pérez, Lilisbeth; Bonfill Cosp, Xavier. <http://hdl.handle.net/10803/693667>
- Meneses-EChávez, José Francisco. Use of evidence to decision frameworks for evidence-informed decision-making in healthcare. 10/12/2024. Universitat Autònoma de Barcelona. Supervisors: Alonso Coello, Pablo Ignacio; Flottorp, Signe Agnes; Schünemann, Holger; Bonfill Cosp, Xavier. <http://hdl.handle.net/10803/693668>

DOCTORAL THESES DEFENDED

- Alemán Riganti, Alicia Valentina. Calidad de la atención materna y perinatal: estrategias para su monitorización y mejora en América Latina. 13/06/2024. Universitat Autònoma de Barcelona. Supervisors: Bonfill Cosp, Xavier; Urrutia Cuchi, Gerard. <https://hdl.handle.net/10803/692005>
- Al-Haddar Al-Sakkaf, Ali Mahdi. Evidence synthesis in the treatment for breast cancer - related Lymphedema. 27/06/2024. Universitat Autònoma de Barcelona. Supervisors: Masia Ayala, Jaume; Bonfill Cosp, Xavier. <https://hdl.handle.net/10803/692016>
- Cortés Jofré, Patricia Marcela. Quimioprevención, inmunoterapia y guías de práctica clínica en cáncer de pulmón. 11/12/2024. Universitat Autònoma de Barcelona. Supervisors: Bonfill Cosp, Xavier; Martínez Zapata, María José. <https://hdl.handle.net/10803/693452>
- De la Rosa Toribio, Andelys Virginia. Evaluación de la evidencia disponible para adaptar e implementar guías de calidad que permitan abordar los Objetivos de Desarrollo Sostenible en relación con la mortalidad materna y su desigual afectación. 25/06/2024. Universitat Autònoma de Barcelona. Supervisors: Reveiz Herault, Ludovic; Bonfill Cosp, Xavier. <https://hdl.handle.net/10803/693254>
- Hernández Álvarez, Edgar Debray. Efecte de les intervencions basades en la modificació ambiental sobre els hàbits nutricionals i l'activitat física . 24/04/2024. Universitat Autònoma de Barcelona. Supervisors: Seron Silva, Pamela Jeanette Carmen; Bonfill Cosp, Xavier. <https://hdl.handle.net/10803/691727>
- León García, Montserrat. Shared decision-
- Muñoz Millán, Patricia Karin. Estrategias preventivas de caries dental a nivel comunitario en niños (as) menores de 6 años. 15/10/2024. Universitat Autònoma de Barcelona. Supervisors: Martínez Zapata, María José; Zaror Sánchez, Carlos; Bonfill Cosp, Xavier. <https://hdl.handle.net/10803/692872>
- Ouchi Vernet, Dan. Avanzando en la modelización de la exposición al tratamiento farmacológico a través de algoritmos computacionales en registros electrónicos de salud. 01/03/2024. Universitat Autònoma de Barcelona. Supervisors: Torres Benítez, Ferran; Morros Pedros, Rosa; Gich Saladich, Ignasi Josep. <https://hdl.handle.net/10803/691644>
- Popova Sherozia, Ekaterine. Evaluación de la lesión miocárdica perioperatoria en cirugía no cardíaca con troponina T cardíaca de alta sensibilidad e imagen cardíaca avanzada. Resultados y coste efectividad de su evaluación sistemática. 14/06/2024. Universitat Autònoma de Barcelona. Supervisors: Paniagua Iglesias, Pilar; Alonso Coello, Pablo Ignacio; Bonfill Cosp, Xavier. <https://hdl.handle.net/10803/692033>
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Evaluation of Public Health Policies and Programmes

Group leader

Continente García, Xavier (ASPB)

Researchers

Barbaglia Navarro, Maria Gabriela (ASPB)

Bartroli Checa, Montse (ASPB)

Calderón Delgado, Josep (ASPB)

Cortés Francisco, Núria (ASPB)

Ferrer Fons, Maria (ASPB)

García Altés, Anna (AQuAS)

Garrido Albaina, Amaia (ASPB)

López Medina, María José (ASPB)

Pérez Giménez, Anna (ASPB)

Planell Cerezo, Raquel (ASPB)

Puigpinós Riera, Rosa (ASPB)

Sabaté Camps, Sara (ASPB)

Sánchez Martínez, Francesca (ASPB)

Serral Cano, Gemma (ASPB)

Research technicians

Henderson Mercader, Elisabet-Mae (IR)

León Pujadas, Gabriel (CIBER)



DESCRIPTION

The main objective of our group is to advance in the research related to the evaluation of policies, programs, and other interventions in public health. We promote high-quality research, internationalisation, and knowledge transfer to the scientific community, technicians, policymakers, and citizens. We generate evidence on the effectiveness and impact of public policies, plans or interventions (tobacco control law, mental health plan, housing policies, urbanistic interventions) that may affect population health. We promote the development and application of innovative methodologies for evaluation with an equity and gender perspective.

MAIN LINES OF RESEARCH

- Monitoring of behaviours and other health risk factors such as environmental exposure (FRESC survey and monitorisation of second-hand smoke). (López Medina, Maria José; Serral Cano, Gemma).
- Evaluation of public health policies and Action Plans (Tobacco control Law, Barcelona mental health action plan, housing with services, and transformation of schoolyards in Barcelona). (López Medina, Maria José; Continente García, Xavier).
- Evaluation of public health programmes and services (school-based prevention programmes, community-based interventions, breast cancer screening programmes). (Continente García, Xavier; Serral Cano, Gemma).

SCIENTIFIC CHALLENGES

- To promote research into the evaluation of policies and programmes.
- To support the debate on conceptual and methodological aspects of the impact evaluation of interventions on population health.
- To consolidate the group's research, fostering less developed aspects such as economic evaluation and evaluation of health protection interventions.
- To develop a theoretical corpus of concepts, principles, methods, and examples that contribute to filling the under and postgraduate teaching gap regarding the design and evaluation of public policies, plans, and other interventions.
- To promote the impact evaluation of policies, plans, and other interventions with an equity and gender perspective. Analysis of the molecular basis of abdominal aortic aneurysm: Identifying new therapeutic targets.

DOCTORAL THESES DEFENDED

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Urban Health Inequalities

Group leader

Pérez González, Catherine (ASPB)

Researchers

Arechavala Roé, Teresa (ASPB)
 Artazcoz Lazcano, Lucía (ASPB)
 Asensio Sala, Alba (ASPB)
 Bartoll Roca, Xavier (ASPB)
 Bolao Baró, Assumpció (ASPB)
 Borrell Thio, Carme (ASPB)
 Carrere Balcells, Julio (ASPB)
 Cortés Albaladejo, Mònica (ASPB)
 Cortés Franch, Immaculada (ASPB)
 Daban Aguilar, Ferran (ASPB)
 Díez David, Elia (ASPB)
 Fernández Sánchez, Ana (ASPB)
 Font Ribera, Laia (ASPB)
 Gómez Gutiérrez, Anna (ASPB)
 González Marín, Patricia (ASPB)
 Gotsens Miquel, Mercé (ASPB)
 Juárez Martínez, Olga (ASPB)
 Macaya Munne, Irene (CIBER)
 Malmusi, Davide (Ajuntament Barcelona)
 Marí Dell'Olmo, Marc (ASPB)
 Novoa Pardo, Ana (ASPB)
 Oliveras Puig, Laura (ASPB)
 Ollé Espluga, Laia (ASPB)
 Palencia Fernández, Laia (ASPB)
 Pasarín Rua, María Isabel (ASPB)
 Pérez Albarracín, Gloria (ASPB)
 Portaña Tudela, Samuel (ASPB)
 Puig Barrachina, Vanessa (ASPB)
 Ramos Vaquero, Pilar (ASPB)
 Reyes Segura, Alexia (ASPB)
 Rodellar Torras, Santiago (ASPB)
 Rodríguez Sanz, Maica (ASPB)
 Roel Herranz, Elena (ASPB)
 Ruiz Muñoz, Dolores (ASPB)
 Sánchez Ledesma, Esther (ASPB)
 Serra Colomer, Júlia (ASPB)
 Valmayor Safont, Sara (ASPB)
 Vázquez Vera, María Constanza (IR)
 Vázquez Álvarez, Noelia (ASPB)
 Vila Brugalla, Montserrat (ASPB)



DESCRIPTION

The GIUH is a consolidated group of researchers with extensive expertise in collective health, social determinants of health, and environmental health/urban planning/housing. It has a long research itinerary through national and international groups. The group's main objectives are to deepen the knowledge of health and the determinants of health in urban areas, as well as to analyse their unequal distribution in population groups. In addition, it seeks to assess the impact of policies aimed at reducing health inequalities. Thus, the group's activity is located in the social and environmental epidemiology field, where it works to make visible both inequalities and their causes in formulating inequitable policies, looking for points of intervention for action.

The group's main objective is to deepen the knowledge and mechanisms involved in health determinants in urban areas and their unequal distribution in population groups. It also aims to evaluate the impact of policies on the population's health and health determinants and the reduction of health inequalities.

MAIN LINES OF RESEARCH

- Health effects and its determinants of different environmental factors such as air pollution, environmental noise, or climate change, as well as other characteristics of the urban environment. (Font Ribera, Laia; Mari Dell'Olmo, Marc).
- The relationship between housing and health, such as the mechanisms and mediators

between residential insecurity, energy poverty and health, and evaluate housing policies, such as cooperatives in cession of use. (Borrell Thio, Carme; Carrere Balcells, Julio).

- Evaluation of health impacts of urban planning policies and other policies aimed at reducing air pollution and environmental noise (e.g. Eixos Verds, Protegim les escoles), including road safety, as well as policies for mitigating and adapting to climate change (e.g. climate shelters). (Pérez González, Catherine; Gómez Gutiérrez, Anna).
- Evaluation of programs to promote equitable and healthy relationships on the reduction of gender violence and on improving the health of children, adolescents and young people in schools from an intersectional perspective. (Pérez Albarracín, Gloria; Juárez Martínez, Olga).
- Relationship between working conditions and health, including lack of access to work, job insecurity or involuntary reduced working hours and time poverty, among other situations. This line includes both paid work and unpaid domestic and care work. (Cortés Franch, Immaculada; Artazcoz Lazcano, Lucía).
- Inequality in the field of prevention (vaccines, early detection, etc.) and the promotion of health and well-being, and to develop and evaluate interventions aimed at preventing and mitigating them. (Díez David, Elia; Roel Herranz, Elena).
- Evaluation of programmes of community health implemented at neighbourhood level (within the framework of Barcelona Salut als Barris) aimed at reducing social inequalities in health and analyse the mechanisms that influence the effectiveness of the programmes. (Pasarín Rúa, María Isabel; Daban Aguilar, Ferran).
- Health effects of determinants to safe, healthy, and sustainable eating, and evaluate the results, consistency and effectiveness of control and surveillance programmes and interventions related to food and marketing, production and consumption environments. (Rodríguez Sanz, Maica; Portaña Tudela, Samuel).
- There are also some areas that are cross-sectional to all areas such as social

inequalities in health according to the different axes of inequality. It is the line with the longest trajectory, with the group having extensive experience in the in-depth study of health inequalities according to gender, social class, territory, age and ethnicity, as well as the effect of the intersection between the different axes. It highlights the activity in deepening the social construction of social class, its measurement and its impact on health and health inequalities. It includes also extensive experience in gender inequalities in health and their intersection with social class. (Borrell Thio, Carme; Artazcoz Lazcano, Lucía).

SCIENTIFIC CHALLENGES

- Understanding and addressing health inequalities. The persistence of health inequalities based on various socio-demographic factors presents a scientific challenge. Effective interventions hinge upon a comprehensive understanding of the intricate interplay between social determinants of health and health outcomes.
- Harnessing digitalisation, data accessibility, and big data analytics. The scientific community faces the challenge of leveraging digitalisation and accessing vast datasets for meaningful analysis. Overcoming barriers to data accessibility and developing sophisticated analytical tools are imperative for extracting actionable insights from the increasing volume of health data.
- Promoting multi-disciplinary collaboration in public health research. The complexity of public health issues necessitates interdisciplinary collaboration to elucidate multifaceted challenges. Bridging disciplinary divides and fostering collaboration across research groups are critical scientific endeavours for addressing the intricacies of public health challenges.
- Translating research findings into practical solutions. One of the foremost scientific challenges in public health research is the translation of empirical findings into tangible and effective interventions and policies. Bridging the gap between research and practice demands innovative strategies and

robust implementation frameworks to ensure the seamless integration of evidence-based solutions into real-world settings.

ACTIVE & AWARDED GRANTS

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- Díez David, Elia. Efectividad de una intervención sobre la reticencia vacunal entre las enfermeras pediátricas y los pediatras: Un estudio de metodología mixta. PI21/01710. -Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 141.570,00 €
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- Rodríguez Sanz, Maica. Transformació digital del control oficial de la seguretat alimentària. 2024 DI 00092. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). Duration: 2024-2027. 21.600,00 €

DOCTORAL THESES DEFENDED

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Transmissible Diseases

Group leader

Rius Gibert, Cristina (ASPB)

Researchers

Artigas Baeza, Alba (ASPB)

Avellanes Gil, Ingrid (ASPB)

Bruguera Torrella, Sílvia (ASPB)

Clos Guix, Roser (ASPB)

de Andrés Aguayo, Anna (ASPB)

de Benito Langa, Javier (ASPB)

Forcadell Díez, Lluís (ASPB)

Forns Cantón, Maria Lluïsa (ASPB)

Guillaumes Puigbarraca, Montserrat (ASPB)

Hernández Pineda, Anna (ASPB)

Jansa López del Vallado, Josep Maria (ASPB)

Marcos Arroita, Isabel (ASPB)

Masdeu Corcoll, Eva (ASPB)

Mercuriali, Lilas (ASPB)

Millet Vilanova, Joan Pau (ASPB)

Montalvo Porro, Tomás (ASPB)

Ospina Valencia, Jesús Edison (ASPB)

Prieto García, Raquel (ASPB)

Rodríguez López, Raquel (ASPB)

Ros Samsó, Miriam (ASPB)

Simón Vivan, Pere (ASPB)

Vargas Leguas, Hernan Andrés (ASPB)

Research technicians

Arranz Martín, Lúdia (ASPB)

Barahona Quintana, Laura (ASPB)

Collado Quífer, Laura (ASPB)

Comerma Cotrina, Marta (ASPB)

Domingo Jiménez, Cristina (ASPB)

Noya Esteve, Jordi (IR)

Palma Díaz, David Ignacio (CIBER)

Pericas Escalé, Carlos (ASPB)



DESCRIPTION

Our group focus its activity in the area around the epidemiology of communicable diseases, developing lines of collaborative and multidisciplinary research in the surveillance, prevention and control mainly of the following communicable diseases: tuberculosis, HIV/sexually transmitted infections, hepatitis, vaccinate diseases and vaccine hesitancy and vector-borne diseases. In addition, we develop research in the area of community health workers (CHW) and their intervention in the migrant population with communicable diseases prevention and control.

The team is composed of a multidisciplinary group of epidemiologists, public health professionals and doctors of different specialities who work in the clinic field, at the laboratory or in the epidemiological surveillance of communicable infectious diseases.

1.-Tuberculosis:

- 1.1 Evaluation of interventions to improve surveillance and tuberculosis (TB) control, diagnosis, treatment and prevention.
- 1.2 Predictors of TB in a cohort of TB-infected contacts to determine the disease incidence at 2 and 5 years in Catalonia.
- 1.3 Characterisation of TB in vulnerable populations: immigrants, the homeless, children, poorly adherent TB patients, HIV, etc.
- 1.4 Latent TB infection characterisation, prescription and treatment completion in vulnerable populations.

2.- Sexually transmitted infections (STI)/ HIV:

2.1 Use of information and communication technologies for the prevention and control of STI/HIV: a) Creation of Apps to promote sexual health both in HIV positive and HIV negative men. b) Use of Apps to offer rapid tests outside the sanitary circuit

2.2 New technologies: APPS for HIV and STD contact tracing.

2.4 Study of HIV contacts to determine the incidence among them.

3. CHW for communicable diseases control:

With the increase in immigration, we have incorporated CHW that aid in the prevention and control of these diseases. They act as mediators and translators.

4.- Incidence studies of mumps, whooping cough and other vaccine-preventable diseases, as well as studies of factors influencing the transmission of these diseases in different settings, as well as the effectiveness of immunisation and chemoprophylaxis.

5.- Outbreaks:

5.1 Investigation of the causes and implementation of control measures as in the case of different kinds of outbreaks.

5.2 Characterisation of Mpox cases in Barcelona since the 2022 epidemic and implementation of prevention and control measures

6.- To monitor vaccine hesitancy, study its determinants and develop interventions to reduce and prevent it:

6.1 Effectiveness of an intervention on vaccine hesitancy among pediatric nurses and paediatricians: A mixed methodology study.

7. Vector-borne diseases: surveillance of cases and environmental factors related to vector distribution, especially *Aedes albopictus* and *Culex pipiens*, and their impact on the risk of local transmission of arboviral diseases.

MAIN LINES OF RESEARCH

- Health Tuberculosis : Characterization of TB and Latent TB in general and vulnerable populations (immigrants, homeless, children, injecting drug users, bad adherence TB patients, HIV, Diabetes etc) and evaluation of interventions to improve surveillance, prevention and control of TB. (Millet Vilanova, Joan Pau).
- Sexually transmitted infections (STI)/ VIH: Use of information and communication technologies for the prevention and control of STI/HIV (Apps to promote sexual health and to offer rapid tests outside the sanitary circuit). (Pericas Escalé, Carlos).
- Community health workers (CHW) for communicable diseases prevention and control. (Ospina Valencia, Jesús Edison).
- Study of the incidence and factors influencing the transmission of vaccine preventable diseases. (Rius Gibert, Cristina).
- Outbreaks: Characterization of Mpox cases in Barcelona since the 2022 epidemic and implementation of prevention and control measures. (Pericas Escalé, Carlos).
- To monitor vaccine hesitancy, study its determinants and develop interventions to reduce it and prevent it. (Rius Gibert, Cristina).
- Vector-borne diseases: Environmental factors related to vector distribution, specially *Aedes albopictus* and *Culex pipiens*, and their impact on risk of local transmission of arboviral diseases. (Montalvo Porro, Tomas).

SCIENTIFIC CHALLENGES

- Evaluate HIV/STI screening programs in different gay venues.
- STD/HIV and TB contract tracing and screening.
- Improve treatment adherence of tuberculosis and latent tuberculosis infection.
- Improve detection and research into the causes of C hepatitis.
- Improve detection and control measures of outbreaks.
- Evaluate public health interventions

- Describe the threats and improve the procedures of vector-borne transmitted diseases.

ACTIVE & AWARDED GRANTS

- Montalvo Porro, Tomas. An early warning and response system for the detection and prevention of vector-borne disease importation and spread in the Mediterranean (IDAlert). IDAlert. Unión Europea. Duration: 2022-2027. 93.917,00 €
- Montalvo Porro, Tomas. Eco-Epidemiological Intelligence for early Warning and response to mosquito-borne disease risk in Endemic and Emergence settings. 1010886640. HORIZON-CL6-2022-GOVERNANCE-01. Unión Europea. Duration: 2023-2026. 48.363,75 € (ASPB Participant)
- Montalvo Porro, Tomas. Mobile Bio-Lab to support first response in Arbovirus outbreaks. 1011099283. HORIZON-EIC-2022-PATHFINDEROPEN-01. Unión Europea. Duration: 2023-2027. 161.750,00 € (ASPB Participant)
- Rius Gibert, Cristina. Infecció tuberculosa latent en col·lectius vulnerables a Barcelona ciutat en risc de progressió a tuberculosi. 2024 DI 00009. Duration: 2024-2027. 21.600,00 €
- Rius Gibert, Cristina. Intervención para el fortalecimiento de capacidades en profesionales de salud ligados al continuo de cuidados del VIH y las infecciones de transmisión sexual (ITS) en la ciudad de Barcelona. PI24/02150. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 122.500,00 €
- Rius Gibert, Cristina. ITrencant barreres: Un nou enfocament per a la conscienciació, el diagnòstic, el tractament i la notificació a les parelles sexuals de les ITS en joves a Catalunya - El Projecte TESTAT-iCoNNECTA-Joves. MARATO 202401-31. Fundació La Marató de TV3. Duration: 2024-2027. 57.191,01 €

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Primary Care

Group leader

Brotons Cuixart, Carles (EAP Sardenya)

Researchers

Casasa Plana, Albert (EAP Sardenya)

Fernández Valverde, Diana Elisabeth
(EAP Sardenya)

Galán Díez, María Luisa (EAP Sardenya)

González Lera, Jara (EAP Sardenya)

Ichazo Tobella, Begoña (EAP Sardenya)

Monteserín Nadal, Rosa (EAP Sardenya)

Moral Peláez, Irene (EAP Sardenya)

Posa Santamaría, Ana Isabel (EAP Sardenya)

Puig Palma, Mireia (EAP Sardenya)

Rayo Martínez, Elisabet (EAP Sardenya)

Reyes Reyes, Carlen (EAP Sardenya)

Sellarès Sallas, Jaume (EAP Sardenya)

Serrano Pons, Helena (EAP Sardenya)

Vila García, Judit (EAP Sardenya)

Vilella Moreno, Maria Teresa (EAP Sardenya)

Research technicians

Tolrà Mabilon, Jordi (EAP Sardenya)



DESCRIPTION

Our Research Unit was created in March 2002, and we carry out our own research work funded by competitive grants from public institutions and clinical trials in pathology prevalent in primary care, financed mostly by the pharmaceutical industry. At this moment, our main research topics are cardiovascular risk estimation and cardiovascular risk factors such as hypertension, dyslipidemia, and diabetes, as well as immunisations in adults. The Research unit is integrated by a Family Physician and an epidemiologist, two research nurses, one statistician, and one administrative assistant.

MAIN LINES OF RESEARCH

- Cardiovascular risk (Brotons Cuixart, Carles)
- Prevention and Health Promotion (Brotons Cuixart, Carles)
- Hypertension (Brotons Cuixart, Carles)
- Diabetes (Brotons Cuixart, Carles)
- Lipids (Brotons Cuixart, Carles)
- Immunisation (Brotons Cuixart, Carles)
- Pharmacoepidemiology (Reyes Reyes, Carlen)
- Patients' safety studies (Reyes Reyes, Carlen)
- Artificial Intelligence applied to health (Reyes Reyes, Carlen)

SCIENTIFIC CHALLENGES

- To implement multicenter research projects in primary care.
- To encourage collaboration with other research groups of the Biomedical Research Institute Sant Pau.
- To increase the number of Primary Care Specialists with a PhD.
- To increase the number of researchers in primary care centres.
- To access competitive funding for primary care projects.
- To conduct innovative studies that can be applied in primary care.

SCIENTIFIC PRODUCTION

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Document type: Article.

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5.1.5 Translational Medicine Area

Dídac Mauricio
Area Director

Sant Pau Hospital is a tertiary high-complexity university hospital and, together with Fundació Puigvert, covers all specialities in medical care. This complexity leads to a high variety of biomedical translational research to improve patient's care in multiple fields including inflammatory or immunological processes and on factors linked to the innate immune system, osteoporosis, nephrology, surgery, aging-related macular degeneration, microbiology and infectious diseases, diabetes, pituitary, and other endocrine diseases, respiratory diseases, or perinatal health research and clinical approaches based on human cells and tissues. The primary focus of this research area is evidence-based translational medicine aimed at enhancing patient care.

RESEARCH GROUPS

Inflammatory Diseases

Vidal Alcorisa, Sílvia

Endocrinology, Diabetes and Nutrition

Mauricio Puente, Dídac

Pituitary Gland Disorders

Webb Youdale, Susana

Digestive Diseases

Escorsell Mañosa, Maria Àngels

Microbiology and Infectious Diseases

Navarro Risueño, Ferran

Multi-organ Damage and Rheumatology

Corominas Macias, Hèctor

Chronic Respiratory Diseases

Plaza Moral, Vicente

Regenerative Medicine and Tissue Bioengineering

Castells Sala, Cristina

Regenerative Medicine and Tissue Bioengineering

Castells Sala, Cristina

Nephrology

Guirado Perich, Lluís

Women and Perinatal Health

Llurba Olivé, Elisa

Advanced Medical Imaging, Artificial Intelligence, and Imaging-Guided Therapy

Munuera del Cerro, Josep Lluís

(Consolidated from November 2023)

Intensive Medicine (New group from November 2024)

Morán Chorro, Indalecio (until July 2024)

Subirà Cuyàs, Carles (from July 2024)

Inflammatory Diseases

Group leader

Vidal Alcorisa, Sílvia (IR)

Researchers

Calvet Lacruz, Anna (FGS)

De La Calle Martín, Óscar (FGS)

Franco Leyva, Teresa (FGS)

Juárez Rubío, Candido (FGS)

Lynton Pons, Elionor (FGS)

Mariscal Rodríguez, Anais (FGS)

Martínez Martínez, Laura (FGS)

Moga Naranjo, María Esther (FGS)

Sang Park, Hye (FGS)

Research technicians

Alejandro Santiago, José (IR)

Calahorra Aguilar, Verónica (FGS)

Canto Naves, Elisabeth (IR)

Mulet Gual, Maria (IR)

Ortiz De Juana, Maria Àngels (IR)

Osuna Gómez, Rubén (IR)



DESCRIPTION

The Inflammatory Diseases group is a multidisciplinary team: Our research aims are: a) to study etiopathogenic mechanisms of immune-mediated diseases to develop tools to advance toward a more personalised medicine; b) to find biomarkers of response to immunotherapy treatments in cancer and chronic inflammatory diseases to select the most suitable drugs and to identify the patient population that can benefit from them, and c) to analyse the involvement immune system in the pathogenesis of autoimmune processes, immunodeficiencies, and immunosenescence.

MAIN LINES OF RESEARCH

- The role of the immune system in the development and perpetuation of autoimmune, immune-mediated diseases and chronic inflammatory processes. (Vidal Alcorisa, Sílvia).
- The immunological response associated with the clinical course during immunomodulatory therapies. (Vidal Alcorisa, Sílvia).
- The involvement of autoantibodies, components of the adaptive immune system, in the pathogenesis of autoimmune processes. (Vidal Alcorisa, Sílvia).
- Mechanisms involved in immunodeficiency. (Vidal Alcorisa, Sílvia).
- Immunosenescence. (Vidal Alcorisa, Sílvia).

SCIENTIFIC CHALLENGES

- To understand the appearance and evolution of autoimmune events, immunodeficiencies, infections, and cardiovascular diseases to improve diagnostic tools.
- To decipher the immune response involved in the development or the control of tumors to discover new biomarkers of prognosis for immunotherapies.
- To elucidate biomarkers related to immune sense and susceptibility to infections.
- To characterise cellular immune responses in immunological disorders such as infections, hypersensitivity reactions and immunodeficiencies.
- Different strategies were applied according to the goal and pathology:
 - Characterisation of cell populations in complex human biological fluids by multiparametric flow cytometry analysis complemented with dimensionality reduction and data visualisation techniques.
 - Study the expression and dynamics of inflammatory mediators with advanced clustering analysis.
 - Identification of new specificities of autoantibodies in subgroups of patients.
 - Study of mechanisms involved in immunodeficiency caused by alterations in molecular components.

DOCTORAL THESES DEFENDED

- Alserawan de Lamo, Leticia. Monitorización inmunológica en pacientes tratados con inhibidores de puntos de control inmunitario: identificación de biomarcadores para la predicción de eventos adversos inmunomediados. 18/07/2024. Universitat Autònoma de Barcelona. Supervisors: Vidal Alcorisa, Sílvia. <https://hdl.handle.net/10803/692979>.

SCIENTIFIC PRODUCTION

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 - Osuna R, Mulet M, Barril S, Cantó E, Millán P, Pardessus A, de la Rosa D, Castillo D, Vidal S. Levels of Lysozyme and SLPI in Bronchoalveolar Lavage: Exploring Their Role in Interstitial Lung Disease. *INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES*. 2024; 25(8):4297. DOI:10.3390/ijms25084297. PMID:38673881. IF:4,900 (Q1/3D). Document type: Article.
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Endocrinology Diabetes and Nutrition

Group leader

Mauricio Puente, Dídac (FGS)

Researchers

Abraldés Zayas, Natalia (FGS)

Aguilar Galvez, Xavier (FGS)

Antentas Peraile, María (FGS)

Chico Ballesteros, Ana Isabel (FGS)

Corcoy Pla, Rosa (FGS)

Cubero Marcos, José María (FGS)

Doria Cervos, Montserrat (FGS)

Fernández Camins, Berta (IR)

Genua Trullós, Idoia (FGS)

González Blanco, Cintia (FGS)

Julvé Gil, Josep (IR)

López Argudo, Alicia (FGS)

Mangas Fernández, Natalia (FGS)

Mato Matute, Eugenia (CIBER)

Mendoza Mathison, Lilian Cristina (FGS)

Miñambres Donaire, Inka (FGS)

Miranda Olivós, Romina Andrea (IR)

Niño-Narvion García, Julia (FGS)

Pérez Pérez, Antonio (FGS)

Rosell Rusiñol, Joana (CIBER)

Sarda Simó, Helena (FGS)

Tundidor Rengel, Diana (UAB)

Research technicians

Boluda Sanson, Alejandro (IR)

Cuixart Carruesco, Gemma (IR)

García Patterson, Apolonia Gabriela (IR)

Martínez Mores, Santiago (IR)

Niño-Narvión García, Julia (IR)

Pujolar Díaz, Georgina (IR)

Rojo López, Marina Idalia (IR)

Vlacho, Bogdan (CIBER)



DESCRIPTION

Our group, led by Dídac Mauricio, is a multidisciplinary team consisting of endocrinologists, pharmacologists, biologists, and nutritionists. The group has different research lines in the area of diabetes and its associated metabolic diseases and complications, encompassing epidemiological, clinical and translational research. We also address specific aspects of the nutritional field. This is a highly active, productive, and competitive group, both at national and international levels, a member of the XARTEC Salut network, AGAUR, and with 2 research groups belonging to Centro de investigación biomédica en red (CIBER, ISCIII).

MAIN LINES OF RESEARCH

- Complications of diabetes, atherosclerosis, and cardiovascular disease. This line encompasses clinical and translational studies on the pathogenesis, biomarkers, and early detection and treatment of these complications leading most of burden in terms of morbidity and mortality in diabetes. Several projects in precision medicine in diabetes are currently under way. (Mauricio Puente, Dídac).
- Epidemiology of diabetes, primary care research, and research with large databases. This line is focused on the research of epidemiological aspects of diabetes using different sources of real-world data, with large databases, especially the SIDIAP database (real-world evidence) in collaboration with J.

- Franch (IDIAP Jordi Gol research institute). (Mauricio Puente, Dídac).
- Endocrinological diseases and pregnancy. Senior researcher in diabetes in pregnancy and technologies in the management of diabetes, such as insulin pumps and glucose sensors. This researcher's team has participated in landmark studies in gestational diabetes, such as the CONCEPTT trial. (Corcoy Pla, Rosa).
 - Thyroid nodular disease and càncer. Tumoral thyroid disease poses a diagnostic and therapeutic challenge. This researcher is currently focusing on the contribution of lipid metabolism in nodular thyroid malignancies. (Mato Matute, Eugenia).
 - Diabetes and cardiovascular risk factors. This line studies the contribution of lipoprotein metabolism disorders to the cardiovascular disease in patients with diabetes, dyslipidemia, and obesity. (Pérez Pérez, Antonio).
 - Cellular injury in diabetes and associated metabolic diseases. The general objective is to identify new biomarker candidates related to tissue damage in obesity/diabetes and explore its potential use for the diagnosis/prognosis of mainly hepatic and myocardial complications, and the evaluation of new therapeutic strategies in this area in experimental models and in patients. (Julve Gil, Josep).
 - Assessment of glycosylated immunoglobulins as serologic markers of thyroid carcinoma.
 - Autoimmune Diabetes Mellitus
 - Classic type 1 autoimmune diabetes mellitus: different aspects of the disease and its management.
 - LADA type diabetes: prevalence of metabolic syndrome among patients with LADA compared to prevalence among patients with classic type 1 diabetes, type 2 diabetes, and the general non-diabetic population in European countries
 - Diabetes and pregnancy
 - Clinical research aimed at optimising care for women with pre-gestational and gestational diabetes at preconception, pregnancy, birth, and postpartum stages. Specifically, addressing the relevance of adequate pregnancy weight gain, maternal predictive characteristics, and their association with pregnancy outcomes.
 - Technology, Telemedicine, and Intelligent Systems for Therapeutic Optimisation of Diabetes Mellitus
 - Technology in the treatment of diabetes with a special focus on insulin (new insulins, pumps), and glucose measurement, including sensors.
 - Development of a technological platform for the prediction, prevention, and treatment of obesity, DM, HTA, dyslipidemia, and cardiometabolic risk.
 - Optimisation of the Treatment of Obesity, Hyperlipidemia, Metabolic Syndrome, and Complications
 - Mechanisms linking diabetes, obesity, and dyslipidemia with cardiovascular disease
 - Optimal treatment and prevention of cardiovascular risk associated with obesity, hyperlipidemia, metabolic syndrome, and diabetes.
 - Diabetic complications: atherosclerosis and microvascular disease
 - Clinical and translational studies that explore research in the pathogenesis, biomarkers, and early detection and

SCIENTIFIC CHALLENGES

- Endocrine neoplasms
 - Molecular markers of the epithelial lineage: expression of the ABCG2 gene/BCRP1 transporter.
 - Transcriptomics and proteomics as predictive and prognostic tools for epithelial thyroid cancer.
 - Intramural CELL-NANO-THYROID project: investigation of human mesenchymal cell capacity as an instrument for administering anti-tumor cell drugs in the form of conjugated nanoparticles.
 - Role of cholesterol & cholesterol metabolites in thyroid neoplasms differentiation.

- treatment of microvascular and chronic complications, especially atherosclerosis.
- We are currently focusing on different clinical and pathogenetic aspects of MASLD (metabolic-associated dysfunction steatotic liver disease) in diabetes.
 - Erectile dysfunction (ED) in patients with type 2 diabetes: Currently, a qualitative study on healthcare professionals and an epidemiological study on ED using the SIDIAP database.
 - Precision medicine in diabetes
 - Genotyping and deep phenotyping of people with diabetes
 - Use of artificial intelligence in the characterisation of diabetes
 - Diabetic epidemiology: primary care research utilising large databases.
 - Research on diabetes mellitus in Primary Health Care of Catalonia. In recent years, the group has developed projects using the SIDIAP database in different aspects of real-world evidence
 - Use of AI as an approach to characterise diabetes mellitus using real-world practice databases.
 - Clinical trials in the area of Endocrinology, Diabetes, and Nutrition Research Group.
 - There are currently 13 ongoing clinical trials in our group.
 - Nicotinamide supplementation
 - Research on the role of nicotinamide (NAM) supplementation in several tissues of experimental models (brain, intestinal epithelial, cardiac).
 - In an interventional study, analyse the effects of NAM on the intestinal microbiome and its relationship with diabetes.
 - Identification of new NAM-sensitive biomarkers to fight diabetes.
 - and treatment (BIPCOM). EraPerMed Corcoy. Unión Europea (GenCat FUNDING - Acciones complementarias). Duration: 2023-2025. 199.977,00 €
 - Corcoy Pla, Rosa. Centro de Investigación Biomédica en Red en Bioingeniería, Biomateriales y Nanomedicina. CIBERBBN. CB06/01/0009. Instituto de Salud Carlos III (ISCIII).
 - Genua Trullós, Idoia. Ús terapèutic de nicotinamida per al maneig d'esteatohepatitis metabòlica. ACD 2023. Associació Catalana de Diabetis. Duration: 2024-2026. 10.000,00 €
 - Julve Gil, Josep. Potencial terapèutic de la suplementación con nicotinamida sobre la adiposidad, señalización de la insulina y de la enfermedad hígado graso no alcohólico. PI21/00770. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 122.210,00 €
 - Julve Gil, Josep. Contribución de moléculas derivadas del metabolismo de la nicotinamida a la enfermedad MASLD y papel de la inflamación y disbiosis intestinal: una aproximación clínica y traslacional. PI24/00156. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 240.000,00 €
 - Mauricio Puente, Dídac. Caracterización de subgrupos de diabetes tipo 2 al diagnóstico: un paso necesario hacia la medicina de precisión en diabetes. PI21/01163. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 159.720,00 €
 - Mauricio Puente, Dídac. ImpactT2D: una estrategia genómica para implementar medicina de precisión en la diabetes tipo 2. PMP21/00100. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2025. 207.900,00 €
 - Mauricio Puente, Dídac. Gestational diabetes and complications among pregnant women attended in primary care sexual and reproductive health services in Catalonia. PCDE 2021/4 PCD Europe. Research Grant 2021. Duration: 2021-2024. 10.000,00 € (CIBER)
 - Mauricio Puente, Dídac. Centro de Investigación Biomédica en Red de Diabetes y Enfermedades METabólicas Asociadas (CIBERDEM). CB15/08/00071_2. Instituto de Salud Carlos III (ISCIII).

ACTIVE & AWARDED GRANTS

- Corcoy Pla, Rosa. Medical comorbidities in bipolar disorder: clinical validation of risk factors and biomarkers to improve prevention

- Sarda Simo, Helena. Impacto de las lipoproteínas remanentes y HDL en el riesgo cardiovascular: evaluación de biomarcadores predictivos en el estudio prospectivo Di@bet.es y un estudio longitudinal en sujetos con diabetes tipo 2. SED 2023. Sociedad Española de Diabetes. Duration: 2024-2025. 20.000,00 €

DOCTORAL THESES DEFENDED

- Falguera Vilamajó, Mireia. Estudi de cohorts Mollerussa: prevalença de prediabetis i diabetis no coneguda, i relació de la prediabetis amb el patró de dieta. 02/10/2024. Universitat de Lleida. Supervisors: Mauricio Puente, Dídac; Castelblanco Echevarria, Esmeralda; Verdaguer Autonell, Joan. <http://hdl.handle.net/10803/693570>
- Genua Trullós, Idoia. Efectos de la cirugía bariátrica sobre las alteraciones lipoproteicas en la obesidad. 03/10/2024. Universitat Autònoma de Barcelona. Supervisors: Miñambres Donaire, Inka; Pérez Pérez, Antonio. <https://hdl.handle.net/10803/692886>
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Pituitary Gland Disorders

Group leader

Webb Youdale, Susana (UAB)

Researchers

Asla Roca, Queralt (FGS)

Aulinas Masó, Anna (FGS)

Gil Ortega, Joan (CIBER)

Research technicians

Mateu Salat, Manel (IR)

Santos Vives, Alicia (IR)



DESCRIPTION

We investigate pituitary diseases and their impact, such as acromegaly and Cushing's syndrome. (coordinators of the European registry ERCUSYN), hypopituitarism, among others. We are currently carrying out the project "Epidemiology in Catalonia" & investigating residual myopathy and the impact on psychological aspects and health-related quality of life (with specific questionnaires developed by us and used worldwide) after treating these diseases, pathophysiology of oxytocin deficiency including its effect on sleep and precision medicine in acromegaly, thanks to a recently funded project by the IMPACT strategy in a multicentric study.

MAIN LINES OF RESEARCH

- ERCUSYN: European Registry of Cushing's Syndrome. Maintenance and operation of the database, which contains more than 2,500 patients and is the largest one worldwide to date. (Webb Youdale, Susana; Santos Vives, Alicia).
- Study of the physiological and pathological secretion of oxytocin in humans besides pregnancy and lactation. Identification and clinical relevance of an oxytocin-deficient state in patients with hypothalamic and pituitary diseases, who are presumably at highest risk for an oxytocin deficiency. (Aulinas Maso, Anna).
- Effects of Mindfulness therapy in patients with acromegaly and Cushing's syndrome. Leader (Santos Vives, Alicia).

- Spanish Molecular Registry on Pituitary Adenomas (REMAH study). (Gil Ortega, Joan; Webb Youdale, Susana).
- ACROFAST and ACROMICS: Personalised Medicine in acromegaly, to identify markers with a therapeutic value. (Gil Ortega, Joan; Aulinas Maso, Anna ; Webb Youdale, Susana).
- Epidemiology of hypothalamic-pituitary diseases in Catalonia. (Aulinas Maso, Anna; Webb Youdale, Susana).
- Study of bone microarchitecture and resistance and factors that determine them in Cushing's syndrome or acromegaly in remission. Model for investigating the interaction between the body's bone and fat. (Webb Youdale, Susana).
- Role of myosteatosis in the development and persistence of residual muscle weakness in treated acromegaly and Cushing syndrome. Study of the involved mechanisms. (Webb Youdale, Susana).
- Pathophysiology of sleep disorders in patients with hypothalamic and pituitary damage, using a multidisciplinary approach. (Aulinas Maso, Anna).
- Conduct in vitro molecular analysis of operated pituitary adenomas within the REMAH (Molecular Registry of Pituitary Adenomas) study, initially sponsored by the Spanish Endocrinology and Nutrition Society (SEEN), to investigate personalised markers of therapeutic response (mainly in acromegaly, corticotroph adenomas and non-functioning pituitary adenomas).
- Analyse clinical and molecular aspects of pituitary adenomas diagnosed at a young age, in collaboration with Hospital Universitario Cruces.
- Perform the first epidemiological study in Catalonia on hypothalamic-pituitary diseases and compare it with the PADRIS database of CatSalut.
- Personalised Medicine (IMPACT strategy) through next-generation precision medicine in the diagnosis and treatment of Acromegaly.

SCIENTIFIC CHALLENGES

- Evaluate long-term persistent morbidity and mortality in patients who have had Cushing's syndrome or acromegaly, especially bone quality, psychological outcomes, muscular dysfunction and quality of life.
- Analyse and update the European database of patients with Cushing syndrome (ERCUSYN), which in 2024 included over 2500 patients, with partners from 61 centres in 27 countries.
- Identification of a provocative test to unmask an oxytocin-deficient state in patients with hypothalamic and pituitary diseases using a randomised, crossover, placebo-controlled design.
- Increase our understanding of oxytocin physiology and pathophysiology in healthy humans and clinical conditions (patients with hypothalamic and pituitary diseases, obesity and eating disorders), and its effect on sleep abnormalities.

ACTIVE & AWARDED GRANTS

- Aulinas Maso, Anna. Identificación y relevancia clínica de un estado deficiente de oxitocina: estudio piloto fisiopatológico aleatorizado, cruzado y controlado con placebo. PI20/O1165. Instituto de Salud Carlos III (ISCIII). Duration: 2021-2025. 210.540,00 €.
- Aulinas Maso, Anna. Enfoque multidisciplinar para elucidar la fisiopatología de los trastornos del sueño en pacientes con daño hipotalámico e hipofisario. PI24/O1428. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 190.000,00 €

DOCTORAL THESES DEFENDED

- Manuel Mateu Salat. Title: Epidemiology, physiopathology and healthcare management of pituitary diseases in Catalonia. Start of PhD studies: 30/10/2020. Directors: Prof. S Webb and Dr. A Aulinas. Tutor: A Aulinas. Universitat de Vic-Universitat Central de Catalunya. Foreseen defence date: 2026.
- Queralt Asla Roca. Title: Physiology and pathophysiology of endogenous oxytocin secretion in patients with hypopituitarism:

identification and clinical relevance of an oxytocin deficient state. Directors: Dr. A Aulinas and Prof. SM Webb. Tutor: A Aulinas. Universitat de Vic-Universitat Central de Catalunya. Start of PhD studies: 30/10/2021. Foreseen defense date: 2026.

- Francesca Galbiati. Title: Oxytocin effects on anterior pituitary hormone dynamics in humans with obesity. Directors: Dr. Aulinas and Dr. Elizabeth Lawson (Harvard Medical School, Boston). Tutor: Dr. A Aulinas. Universitat de Vic-Universitat Central de Catalunya. Start of PhD studies: 30/10/2023. Foreseen defense date: 2027.

SCIENTIFIC PRODUCTION

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- Bryk AH, Minasyan M, Swiatkowska R, Undas A, Hubalewska A, Webb SM, Valassi E, Gilis A. The thrombotic risk in Cushing's syndrome-questions, answers, and the algorithm to consider in its assessment: part I-thrombotic risk not related to surgery. *Frontiers in Endocrinology*. 2024; 15:1350010. DOI:10.3389/fendo.2024.1350010. PMID:38529392. IF:3,900 (Q2/3D). Document type: Article.
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Digestive Diseases

Group leader

Escorsell Mañosa, Maria Àngels (FGS)

Researchers

Alvarado Tapias, Edilmar Auxiliadora (FGS)

Bertoletti, Federico (FGS)

Brujats Rubírola, Anna (FGS)

Concepción Martín, María Del Mar (FGS)

Cuyas Espi, Berta (FGS)

Escudé Torrella, Laia (FGS)

Gallego Moya, Adolfo (FGS)

García Planella, Esther (FGS)

Gómez Oliva, Cristina (FGS)

González Muñoz, Carlos (FGS)

Gordillo Ábalos, Jorge (FGS)

Guarner Argente, Carlos (FGS)

Guinart Cuadra, Albert (CIBER)

Kaur, Naujot (FGS)

Murzi Pulgar, Marianne Carolina (FGS)

Oblitas Susanibar, Elida (FGS)

Pedregal Pascual, Patricia (FGS)

Poca Sans, Maria (FGS)

Roig Ramos, Cristina (FGS)

Román Abal, Eva María (FGS)

Romero Mascarell, Cristina (FGS)

Romito, Raffaella (FGS)

Ros Fargas, Oliva (FGS)

Sainz Sáenz-Torre, Sergio (FGS)

Sánchez Ardid, Elisabet (CIBER)

Soriano Pastor, Germán (FGS)

Torras Colell, Javier (FGS)

Villanueva Sánchez, Cándido (FGS)

Research technicians

Giordano, Antonio (IR)

Huerta Vélez, Anna (IR)



DESCRIPTION

Our research group is highly diverse and encompasses both clinical and experimental research. Our experience in clinical research has a wide circulation, starting more than 30 years ago. Experimental studies have also been done, including gastroenterological as well as hepatic diseases, either with high prevalence (alcoholic and viral liver diseases, non-alcoholic steatohepatitis, inflammatory bowel disease, etc) or outstanding relevance (variceal bleeding, esophageal diseases, Barrett's esophagus, etc). Indeed, our group plays a vital role in the structure of CIBERehd (ISCIII).

MAIN LINES OF RESEARCH

- Experimental rat model of cirrhosis and ascites. (Soriano Pastor, German; Sánchez Ardid, Elisabet).
- Mechanisms and prevention of bacterial translocation in rats with cirrhosis. (Soriano Pastor, German; Sánchez Ardid, Elisabet).
- Experimental model of spontaneous and induced bacterial peritonitis: physiopathology and treatment. (Soriano Pastor, German; Sánchez Ardid, Elisabet).
- MiRNAs expression profile in inflammatory bowel disease after stimulation with toll-like receptor ligands. (Soriano Pastor, German; Sánchez Ardid, Elisabet).
- Cirrhosis regression in cirrhosis. (Villanueva Sánchez, Candido; Alvarado Tapias, Edilmar Auxiliadora).

- Physiopathology, diagnosis, treatment and prevention of compensated cirrhosis. (Soriano Pastor, German; Poca Sans, Maria; Roman Abal, Eva María).
- Physiopathology, diagnosis, treatment and prevention of decompensated cirrhosis (bacterial infections, ascites, hepatorenal syndrome in cirrhosis and hepatic encephalopathy in cirrhosis. (Soriano Pastor, German; Roman Abal, Eva María).
- Cognitive impairment, falls and quality of life in patients with cirrhosis. (Soriano Pastor, German; Roman Abal, Eva María).
- Physiopathology of portal hypertension and varicose haemorrhage. (Villanueva Sánchez, Candido; Alvarado Tapias, Edilmar Auxiliadora; Brujats Rubírola, Anna).
- Physiopathology of non-varicose haemorrhage. (Villanueva Sánchez, Candido; Alvarado Tapias, Edilmar Auxiliadora; Brujats Rubírola, Anna; Roman Abal, Eva María).
- Diagnosis, treatment and prevention of hepatic vascular diseases. (Villanueva Sánchez, Candido; Alvarado Tapias, Edilmar Auxiliadora; Brujats Rubírola, Anna).
- Evaluation of alcohol hepatitis. (Alvarado Tapias, Edilmar Auxiliadora; Brujats Rubírola, Anna).
- Diagnosis, prevention and treatment of non-alcoholic fatty liver disease. (Alvarado Tapias, Edilmar Auxiliadora; Cuyas Espi, Berta).
- Diagnosis and treatment of autoimmune and metabolic liver diseases. (Alvarado Tapias, Edilmar Auxiliadora; Torras Colell, Javier; Gallego Moya, Adolfo).
- Diagnosis and treatment of chronic hepatitis B and C. (Torras Colell, Javier; Gallego Moya, Adolfo).
- Diagnosis and treatment of hepatocarcinoma. (Gallego Moya, Adolfo; Cuyas Espi, Berta; Roman Abal, Eva María).
- Screening for colorectal cancer (Gordillo Abalos, Jorge; Pedregal Pascual, Patricia).
- Study of Biliary and pancreatic diseases and pancreatic cancer (Concepción Martín, María Del Mar; Guarner Argente, Carlos; Romito, Raffaella; Gómez Oliva, Cristina).
- Physiopathology, diagnosis and treatment of intestinal inflammatory disease (inflammatory bowel disease). (García Planella, Esther; Bertoletti, Federico; Gordillo Abalos, Jorge).
- Physiopathology, diagnosis, treatment and prevention of reflux disease, Helicobacter infection and esophageal (Poca Sans, Maria; Escude Torrella, Laia).
- Study of the Small bowel diseases (Romero Mascarell, Cristina).
- Diagnosis and treatment in advanced gastrointestinal endoscopy. (Guarner Argente, Carlos; Concepción Martín, María Del Mar; Romero Mascarell, Cristina).
- Diagnosis and treatment of acute pancreatitis, prevention of acute post-ERCP pancreatitis and chronic pancreatitis and pancreatic neoplasms: molecular studies, early detection and treatment. (Gómez Oliva, Cristina; Romito, Raffaella).
- Participation in various public-private clinical trials. (Escorsell Mañosa, Maria Àngels; Soriano Pastor, German; Villanueva Sánchez, Candido; Alvarado Tapias, Edilmar Auxiliadora; Gallego Moya, Adolfo; Guarner Argente, Carlos; García Planella, Esther; Gordillo Abalos, Jorge; Torras Colell, Javier; Cuyas Espi, Berta; Brujats Rubírola, Anna; Roman Abal, Eva María; Sánchez Ardid, Elisabet).

SCIENTIFIC CHALLENGES

- Consolidate the CIBEREHD, CIBER, Institut de salut Carlos III research group by studying complications in cirrhosis.
- Research Grup de Recerca de la UAB (Universitat Autònoma de Barcelona): Grup de Recerca de Complicacions de la Cirrosis Hepàtica.
- Grup de Recerca Consolidat de la Generalitat (SGR).
- Expand the hepatology research lab and develop new research.
- Consolidate the portal hypertension research group.
- Consolidate the non-alcoholic fatty liver disease research group.

- Consolidate the pancreatic illness research line.
- Consolidate the research line on inflammatory bowel disease.
- Consolidate the polyps and colon cancer research line.
- Develop a research line in digestive endoscopy.
- Consolidate the endoscopy unit as CSUR (central for reference and excellence) in peroral endoscopic myotomy in Spain.
- Group CIBERehd-evs.
- Expand the Hepatology research lab and develop new research initiatives.
- Consolidate the portal hypertension research group.
- Consolidate the non-alcoholic fatty liver disease research group.
- Consolidate the pancreatic illness research line.
- Consolidate the research line on inflammatory bowel disease.
- Consolidate the polyps and colon cancer research line.
- Develop a research line in digestive endoscopy.
- Consolidate the endoscopy unit as CSUR (central for reference and excellence) in peroral endoscopic myotomy in Spain.
- Group CIBERehd-evs.
- Steering Committee of the Spanish REHEVASC registry.
- Giordano, Antonio. Evaluación de los cambios en la composición corporal y predicción de respuesta al tratamiento médico mediante bioimpedancia eléctrica en la enfermedad inflamatoria intestinal (estudio BAMBIE). GETECCU 2024. Grupo Español de Trabajo en Enfermedad de Crohn y Colitis Ulcerosa. Duration: 2024-2026. 12.000,00 €
- Gordillo Abalos, Jorge. Prevalencia del Virus del Papiloma Humano y sus implicaciones clínicas en población masculina con enfermedad inflamatoria intestinal de un hospital de tercer nivel (estudio PAPIMALE). GETECCU 2023. Grupo Español de Trabajo en Enfermedad de Crohn y Colitis Ulcerosa. Duration: 2024-2026. 12.000,00 €
- Soriano Pastor, German. Fragilidad en pacientes con cirrosis: valor pronóstico del ángulo de fase en pacientes hospitalizados y efecto de una intervención multifactorial (ejercicio en domicilio, aminoácidos ramificados y probiótico). PI19/00275. Instituto de Salud Carlos III (ISCIII). Duration: 2020-2024. 141.570,00 €
- Villanueva Sánchez, Candid. Caracterización de la interrelación entre la hipertensión portal y la inflamación en la circulación intra-hepática y sistémica en la cirrosis descompensada. PI22/01917. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2025. 93.170,00 €

ACTIVE & AWARDED GRANTS

- Alvarado Tapias, Edilmar. Contractes Juan Rodés 2020. JR20/00047. Instituto de Salud Carlos III (ISCIII). Duration: 2021-2025. 180.000,00 €
- Alvarado Tapias, Edilmar. Identificación de biomarcadores no invasivos de reversión en la enfermedad hepática por alcohol a través del estudio: vesículas extracelulares y parámetros hemodinámicos. PI21/01995. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 87.120,00 €
- Escorsell Mañosa, Maria Àngels. PATOLOGIA DIGESTIVA. 2022 INV-1 00048. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). Duration: 2022-2024. 66.217,84 €

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- Campolongo Perillo, Antonia. Infusión intestinal continua de levodopa/carbidopa en la enfermedad de Parkinson: factores concomitantes digestivos que influyen en su eficacia y seguridad. 16/10/2024. Universitat Autònoma de Barcelona. Supervisors: Kulisevsky Bojarski, Jaime;

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Microbiology and Infectious Diseases

Group leader

Navarro Risueño, Ferran (FGS)

Researchers

Altaba Sastre, Raul (FGS)

Ballarín Laliena, Gemma (FGS)

Berengua Pereira, Carla (FGS)

Cermeño Reyes, Sílvia (FGS)

Córdoba Herrera, Christian (F. Puigvert)

Cortés Palacios, Ana Pilar (FGS)

De Benito Hernández, Maria Natividad (FGS)

Escola Verge, Laura (FGS)

Facundo Molas, Carme (F. Puigvert)

Fayós de Arizon, Leonor (F. Puigvert)

Fernández Piqueras, Engracia (FGS)

Gallego Rodríguez, Anna (FGS)

Garrigó Fullola, Montserrat (FGS)

Grillo, Sara (FGS)

Llovet Pellejero, Teresa (FGS)

López-Contreras González, Joaquín (FGS)

Martí Orench, Neus (FGS)

Miro Cardona, Elisenda (FGS)

Muñoz Batet, Carmen (FGS)

Pérez Mir, Mónica (F. Puigvert)

Piriz Marabaján, Marta Sonsoles (FGS)

Pomar Solchaga, Virginia (FGS)

Rivera Martínez, María Alba (FGS)

Roch Villaverde, Nerea (FGS)

Rombauts, Alexander (FGS)

Rubio Bueno, Marc (FGS)

Sánchez Reus, Fernando (FGS)

Serra Cabañas, Nuria (F. Puigvert)

Research technicians

Artesero Sosa, Iris (IR)

Español Fran, Montserrat (FGS)

Gómez Martínez, Laura (FGS)



DESCRIPTION

This group include physicians, microbiologists, nurses, technicians and students. Research focuses on Clinical Microbiology (CM), Infectious Diseases (ID) and Kidney Transplant (KT).

The CM projects focus on molecular epidemiology of drug resistance mechanisms, tuberculosis, Leishmaniasis, Chagas disease, immune responses to infections such as CMV and COVID-19, and microbiome studies.

The ID research covers antibiotic policies, multidrug-resistant bacteria, infections associated with foreign bodies, diabetic foot diseases, and tuberculosis.

The KT unit examines biomarkers and, microbiome in kidney transplant patients.

MAIN LINES OF RESEARCH

- Clinical Microbiology
 - Detection and characterisation of different antidrug mechanisms of resistance (Miro Cardona, Elisenda; Rivera Martínez, Maria Alba; Rubio Bueno, Marc; Navarro Risueño, Ferran).
 - Epidemiology of tuberculosis and mechanisms of anti-tuberculosis resistance. (Garrigo Fullola, Montserrat).
 - Molecular diagnosis in infectious diseases and taxonomy. (Navarro Risueño, Ferran; Miro Cardona, Elisenda).
 - Microbiome description in clinical samples (Navarro Risueño, Ferran; Miro Cardona, Elisenda; Rubio Bueno, Marc).

- Leishmaniosis (epidemiology, characterization and diagnosis) and Chagas (diagnosis and congenital infection) (Muñoz Batet, Carmen; Llovet Pellejero, Teresa).
- Medical care projects (Sánchez Reus, Fernando).
- Early bloodstream infection detection by NGS of cfDNA (Rivera Martínez, Maria Alba; Navarro Risueño, Ferran; Rubío Bueno, Marc).
- Infectious Diseases
 - Restricted-use policies for antimicrobial agents and suitable use of antimicrobial agents. (Navarro Risueño, Ferran).
 - Study of antimicrobial multiresistant microorganism infections requiring patient isolation. (Navarro Risueño, Ferran).
 - Study of foreign bodies infections as joint prostheses, catheters, cardiac prostheses and pacemakers. (De Benito Hernández, Maria Natividad; Grillo, Sara; Pomar Solchaga, Virginia).
 - Tuberculosis infectious diseases (Pomar Solchaga, Virginia).
 - Impact of New EUCAST Definitions for Antimicrobial Susceptibility Categories with a Bundle to Mitigate Adverse Effects (Escola Verge, Laura).
 - Impact of infective endocarditis on frailty and quality of life among the elderly population (Escola Verge, Laura).
- Kidney Transplant Unit
 - Description of the faecal microbiome in kidney transplant patients and recurrent urinary tract infections (Pérez Mir, Monica; Miro Cardona, Elisenda).
- Data Management and Analysis: With the incorporation of advanced techniques such as massive sequencing, we have the challenge of applying the most innovative tools in bioinformatics analysis, as well as organising and analysing big data. One of the objectives of various projects is to describe different pipelines.
- Sample Quality and Handling: Maintaining sample integrity and minimising contamination during collection, processing, and storage is vital across all research areas. Developing standardised protocols and ensuring reproducibility are key challenges.
- Interdisciplinary Collaboration: As research becomes increasingly multidisciplinary, fostering effective collaboration among experts from diverse fields poses a challenge. Overcoming communication barriers and integrating knowledge from different disciplines are essential for holistic research outcomes.
- Addressing Antimicrobial Resistance: Understanding and combating antimicrobial resistance remain critical challenges in Clinical Microbiology and Infectious Diseases research. Developing novel strategies to tackle resistant pathogens while preserving the efficacy of antibiotics is imperative.
- Integration into Healthcare Systems: Successfully integrating research findings and innovative technologies into existing healthcare systems presents logistical and structural challenges.

SCIENTIFIC CHALLENGES

- Technique Standardisation: Each research area, including Clinical Microbiology, Kidney Transplant, and Infectious Diseases, requires standardised techniques. Ensuring consistency in methodologies across diverse disciplines poses a significant challenge.

ACTIVE & AWARDED GRANTS

- Rivera Martínez, Maria Alba & Navarro Risueño, Ferran. Diagnóstico etiológico de la infección del torrente sanguíneo en pacientes adultos con sepsis mediante secuenciación masiva. PI22/00280. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2025. 87.120,00 €

DOCTORAL THESES DEFENDED

- Berengua Pereira, Carla. Aportación del cultivo virológico en la interpretación de las pruebas

moleculares en dos modelos de infección respiratoria: Citomegalovirus y SARS-CoV-2. 26/02/2024. Universitat Autònoma de Barcelona. Supervisors: Marcos Maeso, Maria Àngeles; Martíno Bofarull, Rodrigo; Navarro Risueño, Ferran. <https://hdl.handle.net/10803/691629>

- Martín Arnau, Ana Belén. Utilidad y ventajas de los catéteres centrales de inserción periférica respecto al -catéter venoso central no tunelizado. 20/03/2024. Universitat Autònoma de Barcelona. Supervisors: González López, José Antonio; Pomar Solchaga, Virginia; Moral Duarte, Antonio. <https://hdl.handle.net/10803/691671>.

SCIENTIFIC PRODUCTION

- Abras A, Ballart C, Fernández A, Llovet T, Gállego M, Muñoz C. Assessment of Alinity s Chagas® as a Primary Diagnostic Test for Chronic Chagas Disease in a Non-Endemic Area of Europe (Barcelona, Spain). *Life-Basel*. 2024; 14(10):1278. DOI:10.3390/life14101278. PMID:39459578. IF:3,200 (Q1/3D). Document type: Article.
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Multi-organ Damage and Rheumatology

Group leader

Corominas Macias, Héctor (FGS)

Researchers

Arroyo Díaz, Juan Antonio (FGS)

Barcelo Trias, Montserrat (FGS)

Casademont Pou, Jordi (FGS)

Castellvi Barranco, Ivan (FGS)

Codes Méndez, Helena (FGS)

Díaz Torne, César (FGS)

García Alija, Asier (FGS)

Hernández De Sosa, Nerea (FGS)

Laiz Alonso, Ana Maria (FGS)

Magallares López, Berta Paula (FGS)

Malouf Sierra, Jorge (FGS)

Moya Alvarado, Patricia (FGS)

Sainz Comas, Luís (FGS)

Santos Gutiérrez, Álvaro (FGS)

Tandaipan Jaime, José Luis (FGS)

Torres Bonafonte, Olga (FGS)

Research technicians

Bernardez Moreno, Julia (IR)

Dutren Tella, Adriána (IR)

Ros Abarca, Sandra (IR)

Sihuro Cervantes, Margarita (IR)



MAIN LINES OF RESEARCH

Bone Metabolism and Osteoporosis

- Analysis of genetic influence on osteoporosis by means of aggregation studies in families of three or more generations with a minimum of 15 members.
- Bone structure study with quantitative CT of hip and spine, analysing the contribution of trabecular and cortical components using HRCT.
- Description of fat values and percentages in a normal population (in collaboration with the HIV Unit and CETIR Medical Group).
- Description of bone structure in patients with a history of acromegaly assessed by DXA and HRQCT.

Hypertension and Vascular Risk

- Hypertension and quality of life.
- Refractory hypertension.
- Use of alirocumab in hypercholesterolaemia.

Clinical Management, Internal Medicine and Geriatrics

- Healthcare quality indexes (mortality, readmissions, etc.).
- Perioperative medicine, including orthogeriatrics.
- Geriatric evaluation before cardiac and vascular invasive procedures.
- Central Sensitisation Syndromes.

Rheumatology and Rheumatoid Arthritis

- Immunological basis and pathogenic studies of rheumatoid arthritis and other inflammatory conditions.

- Pharmacogenetic studies of disease-modifying and immunomodulatory drugs in autoimmune and inflammatory diseases.
- JAK-STAT pathway in autoimmune processes, mainly focused on rheumatoid arthritis.

Systemic Sclerosis

- Capillaroscopy patterns and correlation with auto-antibodies and pulmonary function tests.
- Study of capillaroscopy patterns in diffuse connective tissue diseases: QuantiCAP study.

Gout

- Epidemiology of hyperuricaemia and gout.
- Association of Parkinson's and clinical gout and arthritis

Sjögren Syndrome, SLE and others

- Study of the pattern of interstitial lung disease in primary Sjögren's syndrome

SCIENTIFIC CHALLENGES

To establish stable work relations between the HSCSP Bone Metabolism and Genomics of Complex Diseases Groups and the Bone Metabolism Unit of Hospital del Mar Medical Research Institute and the Faculty of Biology of the University of Barcelona.

To strengthen ties between the HSCSP Rheumatology and Immunology departments regarding the study of immunological diseases.

DOCTORAL THESES DEFENDED

- Bianchi, María Marta. Características diferenciales de la neumonía organizada asociada o no a enfermedades autoinmunes sistémicas. 08/11/2024. Universitat Autònoma de Barcelona. Supervisors: Castellvi Barranco, Ivan; Castillo Villegas, Diego; Casademont Pou, Jordi. <https://hdl.handle.net/10803/693036>
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Chronic Respiratory Diseases

Group leader

Plaza Moral, Vicente (FGS)

Researchers

Aguilera Molina, Marta (FGS)
Alonso León, Ana María (FGS)
Antón Albisu, Pedro Antonio (FGS)
Blanco Bejar, Marta (FGS)
Castillo Villegas, Diego (FGS)
Crespo Lessmann, Astrid (FGS)
De La Rosa Carrillo, David (FGS)
Fortuna Gutiérrez, Ana (FGS)
Francesqui Candela, Joel Rodrigo (FGS)
Giménez Palleiro, Ana María (FGS)
Gutiérrez Pereyra, Fernando (FGS)
Gutiérrez Rouco, Marta (FGS)
Iglesias Aranda, Alicia (FGS)
Martín Gutiérrez, Maria Isabel (FGS)
Mayos Pérez, Mercedes (FGS)
Najas Sales, Víctor (FGS)
Pajares Ruiz, Virginia (FGS)
Palones Femenia, Esther (FGS)
Paz Del Río, Luis Daniel (FGS)
Peiró Fábregas, Meritxell (FGS)
Peñacoba Toribio, Patricia (FGS)
Podzamczar Valls, Inés (FGS)
Puy Rion, Maria Carme (FGS)
Rafecas Codern, Albert (FGS)
Ramos Barbon, David (FGS)
Rodríguez García, Concepción (FGS)
Ruiz Díaz, Maria Luisa (FGS)
Santaolalla Tragant, Àngels (FGS)
Segura Medina, Macarena (FGS)
Serra Mitjà, Pere (FGS)
Solanes García, Ingrid (FGS)
Soto Retes, Lorena Concepción (FGS)
Suárez Correa, Beatriz (FGS)
Torrego Fernández, Alfonso (FGS)
Trujillo Reyes, Juan Carlos (FGS)

Research technicians

Gaya Mestre, Inmaculada (FGS)
Mateus Medina, Eder Fredy (IR)
Panadero Paz, Carolina (IR)
Vélez Segovia, Eduardo Antonio (IR)



DESCRIPTION

The Research Group on Chronic Respiratory Diseases (GREC) of the Department of Pulmonology at the Hospital Universitario de la Santa Creu i Sant Pau (HSCSP) has been a pioneer and is currently one of the leaders in pulmonary research. It combines clinical and translational research on chronic obstructive pulmonary disease (COPD)-Respiratory Insufficiency, Asthma, and obstructive sleep apnea-hypopnea syndrome (OSAHS). It hosts a basic science laboratory specialised in respiratory disease animal models, and cell & molecular biology.

MAIN LINES OF RESEARCH

Asthma: Asthma exacerbations; Severe asthma; Good clinical practice guidelines for asthma; Bronchial inflammation; Experimental asthma and pathogenic mechanisms; Multicentre biobank specialising in bronchial biopsies for research into asthma; Bronchial thermoplasty; Clinical trials.

COPD and Respiratory Failure: Non-invasive mechanical ventilation; Respiratory rehabilitation; Pathophysiology; Exacerbation.

Obstructive Sleep Apnoea (OSA): Physiology and clinical, diagnostic and treatment consequences of sleep disorders; Obesity-hypoventilation syndrome; Analysis of airway inflammation in patients with OSA.

SCIENTIFIC CHALLENGES

Consolidate a leading clinical trial unit in respiratory diseases. Capture pre-clinical development contracts from the pharmaceutical and biotech industry, using the capabilities of our basic research lab and experimental animal models. Recruit research trainees seeking a doctoral degree. Support the development of multidisciplinary research networks, such as the Barcelona Respiratory Network and the Programme for Integrated Research on Asthma of the Spanish Society of Pneumology and Thoracic Surgery (SEPAR), and collaborate with or become involved in existing networks, such as CIBER-Respiratory Disorders. Achieve and transfer pharmaceutical discovery in the core research line of the basic science lab.

ACTIVE & AWARDED GRANTS

- Peñacobo Toribio, Patricia. Utilidad de la telemonitorización en el proceso de adaptación a la ventilación mecánica domiciliaria. SEPAR 2023. Sociedad Española de Pneumología y Cirugía Torácica. Duration: 2022-2024. 16.740,00 €

DOCTORAL THESES DEFENDED

- Bianchi, María Marta. Características diferenciales de la neumonía organizada asociada o no a enfermedades autoinmunes sistémicas. 08/11/2024. Universitat Autònoma de Barcelona. Supervisors: Castellvi Barranco, Ivan; Castillo Villegas, Diego; Casademont Pou, Jordi. <https://hdl.handle.net/10803/693036>.
- Puy Rion, Maria Carme. Adaptació a la ventilació mecànica domiciliària (VMD): procediment i factors associats a la resposta al tractament. 18/10/2024. Universitat Autònoma de Barcelona. Supervisors: Antón Albisu, Pedro Antonio; Plaza Moral, Vicente. <https://hdl.handle.net/10803/692922>.

SCIENTIFIC PRODUCTION

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REMAS GRP. Spanish Consensus on Remission in Asthma (REMAS). ARCHIVOS DE BRONCONEUMOLOGIA. 2024; 60(8). DOI:10.1016/j.arbres.2024.04.002. PMID:38697903. IF:8,700 (Q1/1D). Document type: Article.

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 - Palones E, Plaza V, González L, Segarra A, Querol L, Bertoletti F, Rodríguez MJ, Gallano P, Crespo A. Chronic Cough and Cerebellar Ataxia With Neuropathy and Bilateral Vestibular Areflexia Syndrome (CANVAS): Screening for Mutations in Replication Factor C Subunit 1 (RFC1). ARCHIVOS DE BRONCONEUMOLOGIA. 2024; 60(8). DOI:10.1016/j.arbres.2024.04.028. PMID:38755058. IF:8,700 (Q1/1D). Document type: Article.
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 - Valverde M, Sánchez P, Betancor D, Barroso B, Rodrigo JM, Mahillo I, Arismendi E, Bobolea I, Cádaba B, Cruz MJ, Del Pozo V, Domínguez J, González FJ, Olaguibel JM, Luna JA, Martínez C, Mullol J, Muñoz X, Peleteiro L, Picado C, Plaza V, Quirce S, Rial MJ, Soto L, Valero A, Sastre J. Comparison of Long-term Response and Remission to Omalizumab and Anti-IL-5/IL-5R Using Different Criteria in a Real-life Cohort of Severe Asthma Patients. ARCHIVOS DE BRONCONEUMOLOGIA. 2024; 60(1). DOI:10.1016/j.arbres.2023.11.011. PMID:38042707. IF:8,700 (Q1/1D). Document type: Article

Regenerative Medicine and Tissue Bioengineering

Group leader

Castells Sala, Cristina (BST)

Researchers

Baptista Piteira, Ana Rita (BST)

Fariñas Barbera, Óscar (BST)

García Subirats, David (BST)

Martínez Conesa, Eva María (BST)

Rodríguez Martínez, José Ignacio (BST)

Ruiz Ponsell, Laia (BST)

Savio López, Andrés (BST)

Tabera Fernández, Jaime (BST)



DESCRIPTION

BTB research lines can be divided into five blocks: amniotic membrane bank, cardiovascular bank, skin bank, ocular bank, and musculoskeletal bank. At the same time, these lines can be divided into three different sections: (1) new preservation techniques, (2) new processing technologies, and (3) therapeutic innovations.

Over the last few years, part of the effort has been invested in developing techniques to improve the methods and preservation times of processed tissues, making them available for clinical practice. Moreover, new processing methodologies such as decellularisation have been addressed.

MAIN LINES OF RESEARCH

- Tissue obtaining, clinical application, ethics and regulation. (Fariñas Barbera, Oscar; Savio López, Andrés).
- Preservation of living tissue. (Castells Sala, Cristina).
- Tissue decellularisation. (Castells Sala, Cristina).
- Medical products of advanced therapies through the recellularisation of decellularised tissues. (Castells Sala, Cristina).
- SoHo bioinks for 3D printing. (Fariñas Barbera, Oscar).
- Processing and product improvement. (Castells Sala, Cristina).
- Technical innovation for tissue processing. (Tabera Fernández, Jaime).

- Extension of clinical indications of the grafts. (Fariñas Barbera, Oscar).
- Cellular therapy for eye diseases. (Castells Sala, Cristina).

SCIENTIFIC CHALLENGES

- Improvement and optimisations of the process related to the donor and tissue processing in clean rooms
- Advances in the development of criteria, regulation and ethics for donors and tissues.
- Technical excellence related to the processing of cells, tissues and advanced therapy medical products (ATMP).
- Development of new approaches and medical products for advanced therapies in regenerative medicine.

ACTIVE & AWARDED GRANTS

- Castells Sala, Cristina. Lesiones graves de nervio periférico: desarrollo de aloinjertos descelularizados de gran calibre y recelularización con células mesenquimales. PI24/01715. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 252.500,00 €
- Castells Sala, Cristina. Nuevo injerto humano vascular descelularizado y re-endotelizado producido mediante ingeniería de tejidos para su uso en derivación de arteria coronaria. VASCRAFT. CPP2021-008438. Agencia Estatal de Investigación. Duration: 2022-2025. 588.460,40 € (BST)
- Fariñas Barbera, Oscar. Desarrollo de un protocolo de producción de nervio descelularizado de gran calibre para su uso clínico en regeneración de nervios. SLT036/24/000013. Departament de Salut Generalitat de Catalunya. Duration: 2025-2026. 190.574,73 €
- Fariñas Barbera, Oscar. 3DCartibone: Desarrollo de biotintas formuladas con sustancias de origen humano para su uso en bioimpresión-3D osteocondral. CPP2023-010646. Agencia Estatal de Investigación. Duration: 2024-2027. 1.317.968,47 € (BST)

SCIENTIFIC PRODUCTION

- López P, Martínez J, Castells C, López L, Ruiz L, Fariñas O, Vilarrodona A. Pericardium decellularization in a one-day, two-step protocol. MOLECULAR AND CELLULAR BIOCHEMISTRY. 2024; DOI:10.1007/s11010-024-05086-x. PMID:39251464. IF:3,500 (Q3/6D). Document type: Article.
- Vila M, Xiberta P, Ruiz M, Bermudo R, Leivas D, Fariñas O, Vilarrodona A, Boada I. BeST-Graft viewer, a new system to improve the bone allograft-recipient matching process. Comput Biol Med. 2024; 176:108553. DOI:10.1016/j.compbio.2024.108553. PMID:38723397. IF:7,000 (Q1/1D). Document type: Article.

Nephrology

Group leader

Guirado Perich, Lluís (F. Puigvert)

Researchers

Alba Cantero, Xènia (F. Puigvert)
Ars Criach, Elisabet (F. Puigvert)
Ballart Roig, Judith (F. Puigvert)
Canal Girol, Cristina (F. Puigvert)
Coll Piera, Elisabet (F. Puigvert)
Díaz Encarnacion, Maria Montserrat (F. Puigvert)
Díaz Gómez, Joan Manel (F. Puigvert)
Fernández de la Llama, Patricia (F. Puigvert)
Furlano, Mònica Maria (F. Puigvert)
Lloret Cora, Maria Jesús (F. Puigvert)
Marco Rusiñol, Helena (F. Puigvert)
Mateu Escudero, Sílvia (F. Puigvert)
Pybus Oliveras, Marc (F. Puigvert)
Torra Balcells, Roser (F. Puigvert)
Vilardell Vila, Jordi (F. Puigvert)

Research technicians

Bardaji De Quixano, Beatriz (F. Puigvert)
Dominguez Guasch, Anna (IR)
García Manau, Pablo (IR)
Pilco Teran, Melissa Lorena (IR)
Sanmiguel Amigó, Luz (F. Puigvert)
Silva Torres, Irene (F. Puigvert)
Tinoco Aranda, Adrià Patricia (IR)



DESCRIPTION

The Kidney Diseases Research Group is dedicated to advancing understanding and improving outcomes across a broad spectrum of kidney disorders, with a strong focus on inherited kidney diseases. Key projects explore autosomal dominant polycystic kidney disease from a gender and reproductive perspective, improve genetic diagnostics using advanced genomic tools, and develop predictive models for Autosomal Dominant Alport Syndrome. Innovative approaches, including artificial intelligence and natural language processing, aim to revolutionise diagnostic precision and patient identification through deep phenotyping and electronic health record analysis.

Beyond inherited conditions, the group investigates glomerulopathies, such as IgA nephropathy and thrombotic microangiopathy, as well as the renal implications of inflammatory bowel disease. In chronic kidney disease (CKD), research encompasses bone health, dialysis-related genetic damage, and the role of the gut microbiota. The group also delves into the mechanisms of inflammation-induced fibrosis and transplant-related complications, including graft inflammation, fibrosis pathways, and EPLETS in kidney transplantation.

Uniting clinical, molecular, and computational approaches, this multidisciplinary team is at the forefront of kidney research, aiming to enhance diagnosis, treatment, and long-term management for diverse patient populations.

MAIN LINES OF RESEARCH

- Inherited Kidney Diseases:
 - The FEMALE PKD project focuses on a comprehensive approach to autosomal dominant polycystic kidney disease from a gender perspective, with a primary emphasis on reproductive and hormonal aspects, assessing the impact on hepatic and renal factors in women. (Furlano, Monica Maria).
 - To improve the genetic diagnostic yield of patients with suspected monogenic nephropathy, with previous negative genetic tests (gene panel/exome/MUC1), incorporating new genomic techniques that can contribute to identifying the etiological diagnosis of their kidney disease. (Ars Criach, Elisabet).
 - A cohort of individuals with Autosomal Dominant Alport Syndrome (ADAS) is being studied to identify genetic and epigenetic determinants of phenotypic variability, as well as transcriptomic profiling for characterisation of associated molecular signatures. Clinical data are being integrated to develop a predictive tool for assessing the risk of progression to advanced chronic kidney disease in ADAS patients. (Pilco Teran, Melissa Lorena; Torra Balcells, Roser; Furlano, Monica Maria; Ars Criach, Elisabet).
 - Inherited kidney diseases remain underdiagnosed, despite being the most common cause of early-onset chronic kidney disease (CKD), partly due to the challenges posed by clinical diagnosis given their heterogeneity. The use of artificial intelligence to develop clinical diagnostic tools represents a paradigm shift. Currently, clinical diagnostic tools for rare diseases (none of which are specifically designed for inherited kidney diseases) are based on ontologies. Still they have not been widely implemented due to their limited precision in describing these particular conditions. Within the framework of this project, an extensive curation of terms using HPO (Human Phenotype Ontology) annotations has been conducted, resulting in a precise description of these diseases in the context of deep phenotyping. The quality of this data will enable the development of clinical diagnostic tools, enriched not only with this curated information but also with real patient data using machine learning techniques. (Torra Balcells, Roser).
- Identification of undiagnosed patients with inherited kidney disease by using natural language processing to extract data from electronic health records. (Torra Balcells, Roser).
- Glomerulopathies:
 - Study of the role of crescents in IgA nephropathy. Characteristics, prognosis, and treatment optimisation. (Marco Rusiñol, Helena)
 - Study of kidney diseases in patients with inflammatory bowel disease. Investigating possible association and prognosis. (Marco Rusiñol, Helena).
 - Clinical and histological patterns of renal thrombotic microangiopathy (TMA). TMA is a renal histological lesion caused by endothelial injury, usually associated with microangiopathic haemolysis; however, in some cases it may be limited to the kidney, requiring renal biopsy (RB) for diagnosis. Current knowledge of its histopathology is insufficient to understand its etiopathogenesis and thus to guide its treatment. We aim to describe the clinical and histological presentation of renal TMA in order to observe whether there are differences between patients with and without peripheral haemolysis, as well as between the different etiologies or triggers of TMA. This information would improve the diagnostic and etiological approach to renal TMA and guide its management.
- Chronic Kidney disease: Patients with chronic kidney disease (CKD) have a higher risk of fractures compared to the general population. Bone strength is determined not only by quantity (measured by DXA) but also by bone quality. Impact microindentation (IMI) is a technique that globally measures bone strength. This project investigates the behaviour of bone strength, as measured by

IMI, in different CKD scenarios: in prevalent hemodialysis patients, peritoneal dialysis patients, and newly transplanted patients. We study the relationship between IMI and other aspects of the bone phenotype (biomarkers, DXA, TBS, 3D-DXA), as well as its evolution over time. (Lloret Cora, Maria Jesús).

- Cardiovascular risk: This line investigates how positional (e.g., standing vs. lying down) and temporal (day-night) variability in blood pressure affects target organ damage in elderly patients with hypertension. The study aims to identify patterns of blood pressure fluctuation that may contribute to cardiovascular, renal, or cerebrovascular complications. Preliminary results suggest that greater variability in blood pressure—especially exaggerated nocturnal dips or postural changes—is significantly associated with increased markers of organ damage, including left ventricular hypertrophy, microalbuminuria, and white matter lesions on brain imaging. These findings underscore the importance of monitoring blood pressure dynamics beyond static measurements and support personalized approaches in managing hypertension in older adults. (Fernández De La Llama, Patricia).
- Dialysis: Evaluation of genetic damage in CKD and hemodialysis patients, and search for solutions (supplementation with antioxidants, switch to another hemodialysis technique, elimination of bisphenol A) and starting a new line about Genetic damage and gut microbiota in hemodialysis patients. (Coll Pera, Elisabet).
- Inflammation and fibrosis: The primary objective of this topic is to study inflammation-induced fibrosis. The focus is on the infiltration of M2 macrophages in renal tissue and their relationship with fibrosis and progression to chronic kidney disease. This study has produced several articles on cadaveric versus living donor transplantation and, more recently, the role of macrophages in the difference in prognosis between ANCA MPO vs. PR3 vasculitis (in preparation). (Díaz Encarnación, Maria Montserrat; Bardaji De Quixano, Beatriz).
- Transplantation: Advances in molecular HLA typing have made it possible to quantify

mismatches at the epitope level, revealing that eplet incompatibility, particularly at HLA-DR/DQ loci, may play a critical role in graft outcomes and the development of donor-specific antibodies in kidney transplant recipients. Our research focuses on the impact of HLA class II eplet mismatches (HLA-DR/DQ) on kidney transplant outcomes, particularly their association with tacrolimus levels, graft survival, and acute rejection. (Guirado Perich, Lluís).

SCIENTIFIC CHALLENGES

- General: Navigating ethical approvals and compliance with research regulations (IRB), too much paperwork, lack of help, lack of blueprints. Lack of good and available statistical support.
- Dialysis:
 - Evaluation of mortality in patients with malnutrition in Hemodialysis.
 - Evaluation of low acute phase angle as a marker of increased mortality in hemodialysis patients
- Genetic kidney diseases:
 - Setting up a targeted RNA sequencing approach using a comprehensive renal gene panel to enrich RNA obtained from blood samples with transcripts involved in kidney diseases.
 - Procurement of a multicentric cohort of pregnant women with ADPKD
 - Validation of the curation of HPO terms for inherited kidney diseases by European expert centres. Seek funding for developing an ML tool.

ACTIVE & AWARDED GRANTS

- Ars Criach, Elisabet. Heterogeneidad clínica, genética y alélica de las enfermedades renales hereditarias de debut temprano: nuevas causas moleculares de anomalías congénitas del riñón y el tracto urinario. PI19/01633. Instituto de Salud Carlos III (ISCIII). Duration: 2020-2024. 93.170,00 €

- Ars Criach, Elisabet. Estudio genómico y transcriptómico de pacientes con nefropatía no filiada con sospecha de causa monogénica. PI23/00426. Instituto de Salud Carlos III (ISCIII). Duration: 2024-2026. 102.500,00 €
- Díaz Encarnacion, Maria Montserrat. Papel de la vía del succinato en la inflamación de los riñones procedentes de donantes cadáver. FMM 2019. Fundación Mutua Madrileña. Duration: 2019-2024. 99.997,00 €
- Fernández De La Llama, Patricia. Primary care interventions to prevent maternal and child chronic diseases of perinatal and developmental origin. RD21/0012/0019. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 124.080,00 €
- Furlano, Monica Maria. FEMALE PKD: abordando la poliquistosis renal autosómica dominante desde una perspectiva de género. PI24/00823. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 138.750,00 €
- Lloret Cora, Maria Jesús. Estudio del comportamiento de biomarcadores de recambio óseo durante el primer año post-trasplante renal. BECA FEIOMM 2022 INVESTIGACIÓN CLÍNICA. Sociedad Española de Investigación Ósea y Metabolismo Mineral. Duration: 2022-2022. 7.000,00 € (F. Puigvert)
- Torra Balcells, Roser. Utilisation of artificial intelligence and systems biology for diagnosis and personalised risk assessment of inherited kidney diseases, with a focus on Alport syndrome. MARATO 202036-30. Fundació La Marató de TV3. Duration: 2021-2024. 112.500,00 €
- Torra Balcells, Roser. Búsqueda de enfermedades renales hereditarias no sospechadas: una aguja en un pajar. PI22/00361. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2025. 123.420,00 €
- Torra Balcells, Roser. Inflamación e inmunopatología de órganos y sistemas. RD21/0005/0006-1. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 105.765,00 €
- Torra Balcells, Roser. RICORS2040-Renal. RD24/0004/0002. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 171.699,00 €
- Torra Balcells, Roser. Contratos para la

intensificación de la actividad investigadora en el Sistema Nacional de Salud 2024. INT24/00049. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2026. 60.000,00 €

DOCTORAL THESES DEFENDED

- Ruiz García, César Emilio. Efecto de los bisfenoles sobre el daño genómico en pacientes con Enfermedad Renal Crónica en Hemodiálisis. 20/09/2024. Universitat Autònoma de Barcelona. Supervisors: Coll Piera, Elisabet; Pastor Benito, Susana; Torra Balcells, Roser. <https://hdl.handle.net/10803/693008>
- Salas Gama, Karla. Toma de decisiones compartida y proceso de selección de la modalidad de diálisis en pacientes con enfermedad renal crónica avanzada. 19/09/2024. Universitat Autònoma de Barcelona. Supervisors: Bolibar Ribas, Ignasi; Díaz Gómez, Joan Manel. <https://hdl.handle.net/10803/692760>.

SCIENTIFIC PRODUCTION

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Women and Perinatal Health

Group leader

Llurba Olivé, Elisa (FGS)

Researchers

Alejos Abad, Obdulia (FGS)

Cruz Lemini, Mónica Cristina (FGS)

Delgado Morell, Aina (FGS)

Domínguez Gallardo, Carla (FGS)

Gaggiotti Marre, Sofia (F. Puigvert)

Garrido Giménez, Carmen (FGS)

Llavore Fábregas, Maria (FGS)

Medina Mallen, María Del Carmen (FGS)

Melnychuk Mykhaylevska, Taisiia (FGS)

Mercadé Carranza, Clara (FGS)

Mora Hervas, Irene (FGS)

Murcia Oliveras, María Teresa (IR)

Nan, Madalina Nicoleta (FGS)

Parra Roca, Juan (FGS)

Pero García, Marta (FGS)

Platero Diago, Judit (FGS)

Polo Ramos, Ana Maria (F. Puigvert)

Ramos de Luís, Anna (FGS)

Saiz Eslava, Maria Jesús (FGS)

Sánchez García, Olga (IR)

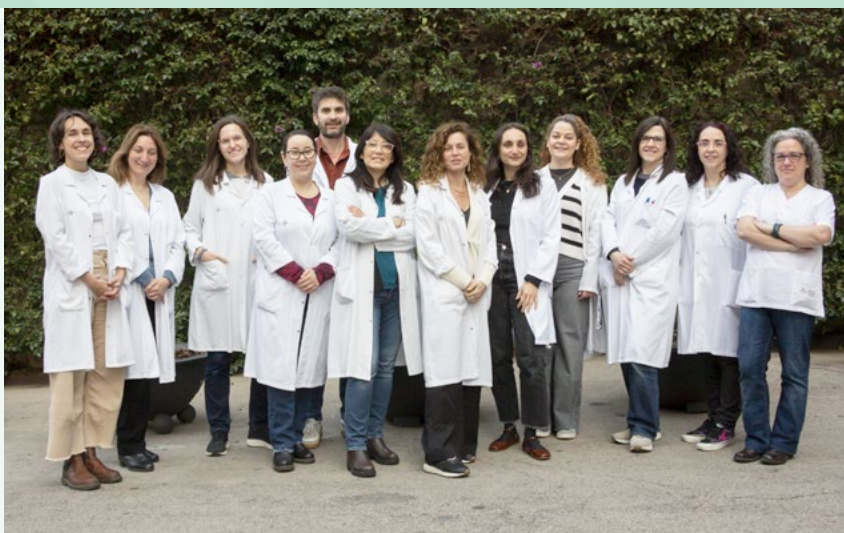
Trilla Sola, Cristina (FGS)

Ullmo, Johana (FGS)

Research technicians

Costa Sánchez, Noah (IR)

García Ruiz, Zoraida (IR)



DESCRIPTION

The Women and Perinatal Health Research Group focuses on the study of diseases resulting from placental insufficiency, including preeclampsia and growth restriction, as well as maternal cardiovascular risk later in life, alterations in the fetal heart, and neurodevelopment. The group is the coordinator of the national network RICORS-SAMID entitled “Spanish Network in Maternal, Neonatal, Child and Developmental Health Research” (RD24/0013/0001, ISCIII), following the previous RICORS-SAMID (RD21/0012/0001, ISCIII). It was recognized as a consolidated group by the Agència de Gestió d’Ajuts Universitaris i de Recerca, AGAUR Generalitat de Catalunya (2021 SGR 01002).

MAIN LINES OF RESEARCH

- Prediction and prevention of complications arising from placental insufficiency, intrauterine growth restriction/preeclampsia (IUGR/PE). (Llurba Olive, Elisa; Garrido Giménez, Carmen)
- Placental insufficiency and maternal cardiovascular risk later in life. (Llurba Olive, Elisa).
- Development of predictive methods based on the Integration of prenatal and postnatal factors for the detection of abnormal neurodevelopment in congenital heart disease. (Llurba Olive, Elisa).
- Toxics and air pollution effects on pregnancy and fetal programming. (Llurba Olive, Elisa; Garrido Giménez, Carmen; Cruz Lemini, Monica Cristina).

- Management of pelvic floor dysfunction: chronic pelvic pain, urinary incontinence and pelvic organ prolapse. (Mora Hervas, Irene).
- Maternal and fetal cardiovascular programming in assisted reproduction treatments (ART). (Llurba Olive, Elisa; Polo Ramos, Ana Maria).
- Cardiovascular Health and ART outcomes. (Llurba Olive, Elisa; Cruz Lemini, Monica Cristina; Polo Ramos, Ana Maria).
- COVID-19 and gestation. (Medina Mallen, María Del Carmen).
- Innovative methods in the delivery of care. (Cruz Lemini, Monica Cristina; Medina Mallen, María Del Carmen).

SCIENTIFIC CHALLENGES

- To study new placental biomarkers for the diagnosis and prognosis of preeclampsia (PE) and intrauterine growth restriction (IUGR), aiming to generate future hypotheses on prevention targets and therapeutic interventions for these diseases.
- To determine the utility of new placental biomarkers (sFlt-1/PIGF ratio) in the diagnosis and prognosis of preeclampsia (PE) with the aim of changing existing healthcare policies and thus improving maternal and neonatal health.
- To study new maternal cardiovascular risk biomarkers after experiencing placental insufficiency and explore preventive strategies to identify which mothers are at risk of long-term cardiovascular diseases.
- To study the role of placental insufficiency and hypoxia in congenital heart diseases with the aim of increasing our understanding of the relationship between hypoxia-dependent placental morphogenesis, placental function, and effects on fetal oxygen metabolism.
- To identify new biomarkers detectable during fetal and neonatal stages that help predict postnatal neurological risk in congenital heart diseases.
- To evaluate the impact of maternal exposure to environmental factors on gestation, placental complications, and fetal neurodevelopment with the aim of generating evidence to support the regulation and implementation of necessary interventions by health authorities.
- To evaluate the impact of SARS-CoV-2 infection on gestation and the neonate.
- To conduct clinical research focused on improving obstetric care by implementing innovative solutions in the labour and postpartum process.

ACTIVE & AWARDED GRANTS

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- Cruz Lemini, Monica Cristina & Polo Ramos, Ana Maria. Impacto del ejercicio y la dieta mediterranea vs aspirina en la tasa de nacimientos vivos y programacion cardiovascular en la fertilizacion in vitro. PI20/01504. Instituto de Salud Carlos III (ISCIII). Duration: 2021-2025. 183.920,00 €
- Cruz Lemini, Monica Cristina & Medina Mallen, María Del Carmen. Inducción cervical con balón ambulatorio vs hospitalario para mejoría en la experiencia del parto (ORBITED): ensayo clínico abierto aleatorizado. PI24/00404. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 102.500,00 €
- Llurba Olive, Elisa. Remodelado y disfunción cardíaca en pacientes con preeclampsia regulado por el ambiente anti-angiogénico: estudio clínico y experimental. PI19/00702. Instituto de Salud Carlos III (ISCIII). Duration: 2020-2024. 146.410,00 €
- Llurba Olive, Elisa. Primary care interventions to prevent maternal and child chronic diseases of perinatal and developmental origin. RD21/0012/0001. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 245.080,00 €
- Llurba Olive, Elisa. GRUP DE RECERCA EN MEDICINA PERINATAL I DE LA DONA. 2022 INV-1 00048. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). Duration: 2022-2024. 66.217,84 €
- Llurba Olive, Elisa. Evaluación del riesgo cardiovascular en mujeres jóvenes después de embarazo con o sin complicaciones

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- Llurba Olive, Elisa. Pérdidas reproductivas precoces: del malestar físico y emocional invisible al posible duelo personal, familiar y social. CC21-0185. Convocatoria Conecta: de la investigación a la práctica social 2022. Fundació La Caixa. Duration: 2023-2025. 7.150,00 €
 - Llurba Olive, Elisa. Spanish network in maternal, neonatal, child and developmental health research (RICORS- SAMID). RD24/0013/0001. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 383.570,00 €
 - Llurba Olive, Elisa. Investigación y desarrollo de una nueva terapia para el tratamiento de la endometriosis (EP4Endo). CPP2023-010439. Ministerio de Ciencia, Innovación y Universidades. Duration: 2024-2027. 321.600,00 €
 - Mora Hervas, Irene. Estudio multicéntrico sobre fijación a músculo elevador del ano en la colposacropexia laparoscópica (Estudio Multicéntrico FIMEA). PI21/00852. Instituto de Salud Carlos III (ISCIII). Duration: 2022-2024. 30.250,00 €
 - Murcia Oliveras, Maria Teresa. Contratos Río Hortega 2023. CM23/00270. Instituto de Salud Carlos III (ISCIII). Duration: 2024-2026. 65.000,00 €
 - Trilla Sola, Cristina & Polo Ramos, Ana Maria. Evaluación integral de la pérdida gestacional en el primer trimestre: analizando su impacto y vías biológicas para desarrollar estrategias de manejo de atención personalizadas. (estudio FIRST-CARE). PI24/01735. Instituto de Salud Carlos III (ISCIII). Duration: 2025-2027. 152.500,00 €

DOCTORAL THESES DEFENDED

- Domínguez Gallardo, Carla. Speckle-tracking como herramienta en la evaluación funcional del corazón fetal, cambios fisiológicos durante la gestación y respuesta de la deformación miocárdica fetal ante la presencia de insuficiencia placentaria.

12/06/2024. Universitat Autònoma de Barcelona. Supervisors: Llurba Olive, Elisa; Cruz Lemini, Monica Cristina. <https://hdl.handle.net/10803/692019>

- Giler Cantos, Otto Eddy. Análisis epidemiológico sobre el virus del papiloma humano (vph) asociado a lesiones preinvasivas y cáncer de cérvix en la población femenina del Ecuador. 10/10/2024. Universitat Autònoma de Barcelona. Supervisors: Gil Moreno, Antonio; Llurba Olive, Elisa. <https://hdl.handle.net/10803/692866>
- Rovira Negre, Ramon. Metodología y herramientas para el aprendizaje de las habilidades quirúrgicas asociadas a la cirugía mínimamente invasiva. 20/11/2024. Universitat Autònoma de Barcelona. Supervisors: Llurba Olive, Elisa; Cassadó Garriga, Jordi. <https://hdl.handle.net/10803/693147>
- Vega Puyal, Laia. Factores postnatales y perquirúrgicos predictivos de alteraciones en el neurodesarrollo temprano en cardiopatía congénita. 10/12/2024. Universitat Autònoma de Barcelona. Supervisors: Llurba Olive, Elisa; Ruiz Campillo, Cèsar W.; Sánchez de Toledo Sancho, Joan. <https://hdl.handle.net/10803/693245>.

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Advanced Medical Imaging, Artificial Intelligence, and Imaging-Guided Therapy

Group leader

Munuera Del Cerro, Josep Lluís (FGS)

Researchers

Alfonso Cerdan, Sheila (FGS)

Aubanell Creus, Antón (FGS)

Castells Buchle, Sara (FGS)

Codo Tarraubella, Xènia (FGS)

Dinia, Lavinia (FGS)

Giménez Nadal, Anna (FGS)

Gómez Chiari, Marta Cecilia (FGS)

Granell Moreno, Esther (FGS)

Guerrero Vara, Ruben (FGS)

Hernández Giraldo, Cristian David (FGS)

Hernández Jover, Diana (FGS)

Lozano Martínez, Gloria Andrea (FGS)

Lushchenkova Rochniak, Oksana (FGS)

Méndez Escalante, Jorge Eliecer (FGS)

Menso, María Magdalena (FGS)

Oliva Ibarz, Javier (FGS)

Otero Ruiz, Jorge Enrique (FGS)

Pernas Canadell, Juan Carlos (FGS)

Ríos Vives, Miguel Ángel (FGS)

Sánchez Fernández, Juan José (FGS)

Tecame, Mario (FGS)

Valverde Lavirgen, Sandra (FGS)

Villalba Auñon, Jorge (FGS)



DESCRIPTION

Our group addresses different aspects of vascular biology, thrombosis and myocardial pathophysiology aimed at studying the mechanisms underlying the onset, progression and complications of cardiovascular diseases (CVDs) with high morbidity and mortality, such as atherosclerosis, aortic aneurysms, cardiac hypertrophy and myocardial infarction. Our ultimate goal is to develop tools for early diagnosis and new therapeutic strategies for these diseases.

MAIN LINES OF RESEARCH

- Artificial Intelligence.
- Quantitative Medical Imaging Advances and Radiomics.
- Innovative Imaging Technologies.
- Image-Guided Therapy 3D Imaging and Surgical Planning.
- Design and Testing of Medical Devices

SCIENTIFIC CHALLENGES

- Increasing knowledge in the implementation of digital technologies in healthcare through the design and testing of tools supporting clinical and radiological decision-making, based on Artificial Intelligence and Robotics.
- Promoting the development and use of advanced biomarkers in medical imaging,

including new acquisition methods, techniques, or procedures, especially quantitative and omics biomarkers.

- Encouraging the use of advanced imaging technologies and 3D printing for the enhancement of educational resources and clinical-surgical planning.
- Enhancing participation in national and international research networks focused on diagnostic imaging, as well as fostering collaboration in multidisciplinary research teams.

SCIENTIFIC PRODUCTION

- Adell N, Valls A, Malet A, García A, Gómez M, Valls A, Krauel L, Rubio J. Analysis of the implementation of a circuit for intra-operative superposition and comparison of the surgical outcomes using ICBCCT in maxillofacial surgery. *International Journal of Computer Assisted Radiology and Surgery*. 2024; 19(12). DOI:10.1007/s11548-024-03196-x. PMID:38829569. IF:2,300 (Q2/3D). Document type: Article.
- Anta JA, Moreno J, López JG, Ríos MA, Munuera J, Rodríguez J. Artificial intelligence for detection and characterisation of focal hepatic lesions: a review. *Abdominal Radiology*. 2024; DOI:10.1007/s00261-024-04597-x. PMID:39369107. IF:2,300 (Q2/5D). Document type: Review.
- Arnau A, Espelt AM, Auñon JV, Sánchez S. Percutaneous Transhepatic Cholangioscopy in the Management of Hepatolithiasis. *CIRUGIA ESPANOLA*. 2024; 102(11). DOI:10.1016/j.ciresp.2024.06.009. IF:1,300 (Q3/7D). Document type: Article.
- Bendszus M, Laghi A, Munuera J, Tanenbaum LN, Taouli B, Thoeny HC. MRI Gadolinium-Based Contrast Media: Meeting Radiological, Clinical, and Environmental Needs. *JOURNAL OF MAGNETIC RESONANCE IMAGING*. 2024; 60(5). DOI:10.1002/jmri.29181. PMID:38226697. IF:3,300 (Q1/3D). Document type: Review.
- Cox ST, Patterson W, Duggleby R, Jones O, Madrigal JA, Querol S, Salvador FR, Mata MJH, Volt F, Gluckman E, Szydlo R, Danby RD, Hernández D. Impact of donor NKG2D and MICA gene polymorphism on clinical outcomes of adult and paediatric allogeneic cord blood transplantation for malignant diseases. *EUROPEAN JOURNAL OF HAEMATOLOGY*. 2024; 113(1). DOI:10.1111/ejh.14202. PMID:38511389. IF:2,300 (Q2/5D). Document type: Article.
- Valls A, García RI, Bellmunt A, Eguiraun H, Jauregui I, del Amo C, Adell N, Krauel L, Munuera J. Point-of-care additive manufacturing: state of the art and adoption in Spanish hospitals during pre to post COVID-19 era. *3d Printing In Medicine*. 2024; 10(1):43. DOI:10.1186/s41205-024-00244-9. PMID:39729163. Document type: Article.
- Valls A, Tejo A, Adell N, Lustig P, Fenollosa F, Buj I, Rubio J, Munuera J, Krauel L. Advanced Strategies for the Fabrication of Multi-Material Anatomical Models of Complex Pediatric Oncologic Cases. *Bioengineering-Basel*. 2024; 11(1):31. DOI:10.3390/bioengineering11010031. PMID:38247908. IF:3,800 (Q2/4D). Document type: Article.

Intensive Medicine

Group leader

Subirà Cuyàs, Carles (FGS)

Morán Chorro, Indalecio (until 31/07/2024)

Researchers

Álvarez Viloria, Andrea Valeska (FGS)

Baldira Martínez De Irujo, Jaume (FGS)

Bellés Casas, Ariadna (FGS)

Betbese Roig, Antoni Jorge (FGS)

Cordón Abalde, Alejandra (FGS)

Díaz Tormo, Carmen (FGS)

Flores Orella, Matías Nicolas (FGS)

García Nogales, Xaime (FGS)

Gomila Sintés, Carme (FGS)

Izura Gómez, Marta (FGS)

Mas Serra, Arantxa (FGS)

Morán Chorro, Indalecio (FGS)

Nievas, María Verónica (FGS)

Rodríguez Farré, Núria (FGS)

Santos Rodríguez, José Alberto (FGS)

Suárez Montero, Juan Carlos (FGS)

Torrens Sonet, Maria (FGS)

Vera Artazcoz, Paula (FGS)

Zapata Fenor, Luis (FGS)

Research technicians

Serrano García, María Ángeles (FGS)



DESCRIPTION

Our research group in Critical Care Medicine focuses on clinical and physiological studies related to respiratory failure, ventilatory support, invasive and non-invasive hemodynamic monitoring, including ultrasound, sepsis, and acute kidney injury biomarkers, as well as the management of critically ill oncologic and hematologic patients.

In 2024, we participated in healthcare innovation programs including Innopau and HealthTech.

MAIN LINES OF RESEARCH

- **Respiratory Failure and Ventilatory Support:** Consolidated research line focused on non-invasive monitoring of respiratory patterns, optimal PEEP titration, and weaning from mechanical ventilation. (Mas Serra, Arantxa; Moran Chorro, Indalecio; Subira Cuyas, Carles; Rodríguez Farré, Nuria).
- **Invasive and Non-Invasive Hemodynamic Monitoring:** Established national research network mainly focused on ultrasound-based monitoring. (Zapata Fenor, Luis).
- **Sepsis and Acute Kidney Injury Biomarkers:** Collaborative work in national and international trials focused on sepsis management and biomarker evaluation. (Betbese Roig, Antoni Jorge; Baldira Martínez De Irujo, Jaume; Vera Artazcoz, Paula).
- **Critically Ill Oncohematologic Patients:** An emerging research line within the group, with both in-hospital and national collaborations. (Gomila Sintés, Carme; Nievas, Maria Veronica).

SCIENTIFIC CHALLENGES

- Our main challenge for 2025 is to secure competitive research funding. We have applied for two major grants: the "Proyectos de I+D+I en Salud 2025" from the Instituto de Salud Carlos III and a call from Fundació La Marató de TV3. We also anticipate the publication of results from the largest randomised clinical trial to date on weaning from mechanical ventilation, led by our principal investigator, Carles Subirà. Strengthening our collaborations and consolidating emerging research lines are also key objectives for this year.
- Throughout 2025, we aim to develop novel healthcare innovation tools in connection with the HealthTech and Innopau programs, leveraging the experience and collaborations established in 2024.

ACTIVE & AWARDED GRANTS

- Mas Serra, Arantxa. Monitorització del patró respiratori dels pacients amb pneumònia greu per COVID-19 mitjançant un nou dispositiu no invasiu. MARATO 202122-30. Fundació La Marató de TV3. Duration: 2024-2024. 41.242,79 €
- Torrens Sonet, Maria. Cuantificación de la congestión sistémica mediante ultrasonografía como predictor del fracaso del weaning de la ventilación mecánica. BECASEMICYUC2024/001. Sociedad Española de Medicina Intensiva, Crítica y Unidades Coronarias (SEMICYC). Duration: 2024-2027. 10.000,00 €

DOCTORAL THESES DEFENDED

- Baldira Martínez de Irujo, Jaume. Medicina de precisió en la sèpsia: ús de biomarcadors. 30/10/2024. Universitat Autònoma de Barcelona. Supervisors: Ferrer Roca, Ricard; Ruiz Rodríguez, Juan Carlos; Fonollosa Pla, Vicente. <https://hdl.handle.net/10803/692811>.

SCIENTIFIC PRODUCTION

- Angeles D, Izura M, Barguilla A, Sierra A, Moran I. Lance-Adams Syndrome in the Intensive Care Unit: A Case Report. CUREUS JOURNAL OF MEDICAL SCIENCE. 2024; 16(4):e58241. DOI:10.7759/cureus.58241. PMID:38745818. Document type: Article.
- Angeles D, Morán I, Morales L, Bjørn Ibsen: What Made Intensive Care So Critical?. CUREUS JOURNAL OF MEDICAL SCIENCE. 2024; 16(8):e67281. DOI:10.7759/cureus.67281. PMID:39301333. Document type: Review.
- Ferrer R, Castro P, Lorenzo C, Monclou J, Marcos P, Ochagavía A, Ruíz JC, Trenado J, Villavicencio C, Yébenes JC, Zapata L, trabajo sepsis SOCMIC GRP. Ten take-home messages on vasopressin use in critically ill patients. Medicina Intensiva. 2024; 48(12). DOI:10.1016/j.medin.2024.07.008. PMID:39438184. IF:2,700 (Q2/5D). Document type: Article.
- Gras L, Plaza A, Zarate B, Vera P, Torres OH, Bastida C, Soy D, Ruiz J. Risk Factors Associated with Antibiotic Exposure Variability in Critically Ill Patients: A Systematic Review. Antibiotics-Basel. 2024; 13(9):801. DOI:10.3390/antibiotics13090801. PMID:39334976. IF:4,300 (Q1/2D). Document type: Review.
- Gutiérrez VF, Fenor LZ, Ortiz AB, Mier MG, Calvo AO. Right ventricular dysfunction in the critically ill. Echocardiographic evaluation. Medicina Intensiva. 2024; 48(9). DOI:10.1016/j.medin.2024.05.008. PMID:39079775. IF:2,700 (Q2/5D). Document type: Article.
- Koyner JL, Arndt C, de Irujo JBM, Coelho S, de la Peña MGM, di L, Joannidis M, Jorge P, Koch C, Lobaz S, Meyer A, Ostermann M, Pertica N, Prowle JR, Silversides J, Zarbock A, Echeverri J, Harenski K, Forni LG. Assessing the role of Chemokine (C-C motif) ligand 14 in AKI: a European consensus meeting. RENAL FAILURE. 2024; 46(1):2345747. DOI:10.1080/0886022X.2024.2345747. PMID:38666354. IF:3,000 (Q1/3D). Document type: Article.

- Luján M, Gómez CC, Peñuelas O, Ferrando C, Heili SB, Perales JMC, Mas A, Catalán JS, Mediano O, Roca O, Fernández JG, Varela AG, Montes GS, Cervera GR, Hernández G, Millán T, Monreal MF, Santaolalla CE. Multidisciplinary Consensus on the Management of Non-Invasive Respiratory Support in the COVID-19 Patient. ARCHIVOS DE BRONCONEUMOLOGIA. 2024; 60(5). DOI:10.1016/j.arbres.2024.02.017. PMID:38521646. IF:8,700 (Q1/1D). Document type: Article.
- Ochagavía A, Palomo N, Fraile V, Zapata L. Hemodynamic monitoring and echocardiographic evaluation in cardiogenic shock. Medicina Intensiva. 2024; 48(10). DOI:10.1016/j.medin.2024.05.011. PMID:39097480. IF:2,700 (Q2/5D). Document type: Article.
- Parrilla FJ, Roche F, Italiano S, Parrilla A, Morán I, Mancebo J, Maraffi T. Time course of electrical activity of the diaphragm (EAdi) in the peri extubation period and its role as predictor of extubation failure in difficult to wean patients. CRITICAL CARE. 2024; 28(1):308. DOI:10.1186/s13054-024-05092-x. PMID:39289731. IF:8,800 (Q1/1D). Document type: Article.
- Pérez A, Acevedo M, Padilla M, Gómez A, Zapata L, Barber M, Martínez A, Calleja V, Rivero MC, Fernández E, Velasco J, Flores EM, Quindos B, Rodríguez ST, Virgos B, Nebra AC, Robles JC, Moya J, Trenado J, García N, Vallejo A, Herrero E, García A, Rodríguez ML, García F, Lara R, Lage L, Gil FJ, Guerrero FJ, Meilan A, Del Prado N, Fernández C, Coll E, Dominguez B. Assessing Outcomes of Patients Subject to Intensive Care to Facilitate Organ Donation: A Spanish Multicenter Prospective Study. TRANSPLANT INTERNATIONAL. 2024; 37:12791. DOI:10.3389/ti.2024.12791. PMID:38681973. IF:2,700 (Q1/2D). Document type: Article.
- Subirà C, Rognoni G, Baquerizo H, García C, Cabanes S, de la Torre M, Quevedo B, Pedros C, Tizon AI, Murillo N, Parro L, Eiras F, Rialp G, Altaba S, González A, Pacheco AF, Bayoumi P, Gómez N, Vallverdu I, Higon A, Navarro MD, Falcon A, Keough E, Arizo D, Martínez JF, Duran N, Rodríguez R, Popovicu MR, Guerrero I, Concha P, Barral P, Batlle M, Cano S, García S, Andorra X, Tua Y, Arnau A, Fernández R. Effect of lung volume preservation during spontaneous breathing trial on successful extubation in patients receiving mechanical ventilation: protocol for a multicenter clinical trial. Trials. 2024; 25(1):481. DOI:10.1186/s13063-024-08297-1. PMID:39014430. IF:2,000 (Q3/7D). Document type: Article.
- Zapata L, Gómez R, Llanos C, Duerto J, Martín L. Cardiogenic shock as a health issue: Physiology, classification, and detection. Medicina Intensiva. 2024; 48(5). DOI:10.1016/j.medin.2023.12.012. PMID:38458914. IF:2,700 (Q2/5D). Document type: Article.

5.1.6 Associated Groups

Emerging Processes in Prevalent Diseases

Puig Campmany, Mireia

Radiophysics and Radioprotection

Carrasco De Fez, Pablo

Paediatrics

Moliner Calderón, Elisenda

Ophthalmology

Del Campo Carrasco, Zoraida

Nuclear Medicine

Flotats Giralt, Albert

Pharmacy

Feliu Ribera, Anna

Dermatology

Puig Sanz, Luís

Anaesthesiology

Paniagua Iglesias, Pilar

Plastic Surgery

Masia Ayala, Jaume

Palliative Care

Pascual López, Antonio

Andrology

Ruiz Castañé, Eduard

Urology

Palou Redorta, Juan

Reproductive Health

Calaf Alsina, Joaquim

Radiation Oncology

Sancho Pardo, Gemma

Locomotor System

Crusi Sererols, Xavier (until July 2024)

Lamas Gómez, Claudia Maria (from July 2024)

Pain and Neurosciences

Revuelta Rizo, Miren Eli (until April 2024)

Genové Cortada, Maria Mercè (from April 2024)

Nursing Care

Mas Dalmau, Gemma

Cardiac Surgery

Ginel Iglesias, Antonino

HIV and AIDS

Domingo Pedrol, Pere

General and Digestive Surgery (New group from November 2024)

Moral Duarte, Antonio

Digital Health (New group from November 2024)

Gomis Pastor, Mar

Emerging Processes in Prevalent Diseases

Group leader

Puig Campmany, Mireia (FGS)

Researchers

Agra Montava, Iván (FGS)
 Albuixech Ginesta, Mireia (FGS)
 Alquezar Arbe, Aitor (FGS)
 Álvarez Albarran, Maria Teresa (FGS)
 Arenos Sambro, Roser (FGS)
 Barcons Pujol, Miquel (FGS)
 Blázquez Andion, Marta (FGS)
 Borja Cano, María (FGS)
 Borrego Yanes, Isel (FGS)
 Caballero Flores, Francisco (FGS)
 Calvet Pujol, Adrià (FGS)
 Castella Rovira, Marta (FGS)
 Castellero Díaz, Lluís Enric (FGS)
 Cercas Lobo, Sílvia (FGS)
 Ceresuela Lobera, Andrés (FGS)
 Dávalos Benites, Lucio Jair (FGS)
 Díez Díez, Veronica (FGS)
 Docio Alfaya, Marta (FGS)
 Doi Grande, Adriána Laura (FGS)
 Donniacono, Domenico (FGS)
 Escribano Lázaro, Alicia (FGS)
 Fernández, Gastón (FGS)
 Fernández Castaño, Irene (FGS)
 Fernández Gonzalez, Diego (FGS)
 Garrido Quintero, Maria Andrea (FGS)
 Gil Olivas, Eva (FGS)
 Gomez Robles, Joaquín José (FGS)
 Gonzalez Díez, Ane (FGS)
 Guardiola Tey, José Maria (FGS)
 Hernandez Ontiveros, Héctor (FGS)
 Herrera Mateo, Sergio Antonio (FGS)
 Higa Sansone, Jorge Leopoldo (FGS)
 Jodar Manzanera, Victoria (FGS)
 Jordan Lucas, Sara (FGS)
 Lazzari, Roberto (FGS)
 Leal Cebrecos, Jesús (FGS)
 Lopez Ortega, Laura (FGS)
 Lozano Polo, Laura (FGS)
 Mateo Roca, Míriam (FGS)
 Mauri Plana, Albert (FGS)
 Moliné Pareja, Antoni (FGS)
 Montiel Dacosta, Josep Antoni (FGS)
 Moragues Escalona, Laura (FGS)
 Motos Bescos, Meritxell (FGS)
 Palacio Alvare, Pablo (FGS)
 Pérez Baena, Sergio (FGS)
 Pérez Mendez, Maria Carmenza (FGS)
 Piera Salmeron, Aina (FGS)
 Ponte Márquez, Paola Helena (FGS)
 Ris Romeu, Josep (FGS)
 Rodríguez Armas, María (FGS)
 Romero Carrete, Carlos José (FGS)
 Rossi, Amelia (FGS)
 Santalo Bel, Miguel (FGS)
 Sanz López, Natalia (FGS)
 Seres Roig, Montserrat (FGS)
 Serrano Garcia-Calvo, Alicia (FGS)
 Serrano Herran, Marta (FGS)
 Sizova, Marina (FGS)
 Torres Tornos, Andreu (FGS)
 Trejo Gutiérrez, Olga María (FGS)
 Villarejo Jiménez, Ana (FGS)
 Villate Robles, Luisa Fernanda (FGS)



DESCRIPTION

Our group mainly studies urgent and emerging processes in prevalent diseases, with special interest in demographic aspects (gender perspective, older adults). It is an eminently clinical research, based on our own and multicenter projects. The interest is the knowledge of the diseases, their diagnosis and treatment, taking into account the particularities, and the organisational aspects of the emergency departments. In short, to promote quality, safe and efficient care in the emergency department.

MAIN LINES OF RESEARCH

- Clinical Organization and Management (Puig Campmany, Mireia; Ris Romeu, Josep; Mateo Roca, Miriam)
- Patient safety and emergency department quality. (Álvarez Albarran, Maria Teresa)
- Teaching (Montiel Dacosta, Josep Antoni; Higa Sansone, Jorge Leopoldo)
- Echography (Lazzari, Roberto)
- Organ Donation and Coordination (Caballero Flores, Francisco)
- Frailty and elderly (Blázquez Andion, Marta)
- Processes. Infection (Mauri Plana, Albert; Álvarez Albarran, Maria Teresa)
- Processes. Travel disease (Gil Olivas, Eva)
- Processes. Sexually transmitted diseases (Seres Roig, Montserrat)
- Processes. Sepsis (Moline Pareja, Antoni; Piera Salmeron, Aina)
- Processes. Respiratory System Disorders and Acute Respiratory Failure (Moline Pareja, Antoni)

- Processes. Thromboembolic disease (Lozano Polo, Laura)
- Processes. Cardiovascular System (Santalo Bel, Miguel)
- Processes. Acute coronary syndrome (Lazzari, Roberto)
- Processes. Ultrasensitive markers in acute coronary syndrome (Alquezar Arbe, Aitor)
- Processes. Cardiovascular Risk (Ponte Márquez, Paola Helena)
- Processes. Cardiac failure (Herrera Mateo, Sergio Antonio; Alquezar Arbe, Aitor)
- Processes. Arrhythmias (Trejo Gutierrez, Olga Maria; Hernandez Ontiveros, Hector)
- Processes. Diabetes care (Agra Montava, Ivan)
- Processes. Toxicology (Higa Sansone, Jorge Leopoldo; Hernandez Ontiveros, Hector)
- Processes. Psychiatry (Ponte Márquez, Paola Helena; Castella Rovira, Marta)
- Processes. Ultrasound in emergency patient (Lazzari, Roberto; Pérez Baena, Sergio)
- Castella Rovira, Marta. Anàlisi de la responsabilitat professional mèdica a l'atenció urgent a Catalunya entre els anys 2000 i 2019. 04/07/2024. Universitat Autònoma de Barcelona. Supervisors: Arimany-Manso, Josep; Puig Campmany, Mireia; Martín Fumadó, Carles; Bulbena Vilarrasa, Antonio. <https://hdl.handle.net/10803/692117>
- Gil Olivas, Eva. Incidencia de malaria y factores de riesgo asociados a cambios socioeconómicos en Cubal, zona mesoendémica estable de malaria en Angola. 26/11/2024. Universitat Autònoma de Barcelona. Supervisors: Molina Romero, Israel; Falco Ferrer, Vicenç. <https://hdl.handle.net/10803/693084>.

SCIENTIFIC CHALLENGES

- Emergency and Urgent Care Management, new organizational models.
- Aging population, frailty and emergency care.
- Medication-related health problems.
- Heart failure, new therapeutic scenarios, prevention and home-care Infection, diagnosis and control.
- Urgent processes from a gender perspective.
- Urgent processes with age perspective.

DOCTORAL THESES DEFENDED

- Blázquez Andion, Marta. Mejora del proceso "Atención Urgente del paciente anciano" en un servicio de urgencias hospitalario: cambio de paradigma e impacto en los resultados. 13/06/2024. Universitat Autònoma de Barcelona. Supervisors: Puig Campmany, Mireia; Montiel Dacosta, Josep Antoni; Casademont Pou, Jordi. <https://hdl.handle.net/10803/691995>

SCIENTIFIC PRODUCTION

- Aguirre NL, Gutiérrez SG, Miro O, Aguiló S, Jacob J, Alquézar A, Burillo G, Fernández C, Llorens P, Alanso CR, Lopez IT, Cañete M, Asensio PR, Díaz BP, Pizarro TP, Navarro RJD, Viola NP, Hernández L, Soler AC, Fernández ES, Serrano J, Ezponda P, Lorenzo AM, Liarte J, Ramón SS, Aranda AR, Martín FJ, del Castillo JG, SIESTA N. Older Adult Patients in the Emergency Department: Which Patients should be Selected for a Different Approach?. *Annals Of Geriatric Medicine And Research*. 2024; 28(1). DOI:10.4235/agmr.23.0121. PMID:37963716. Document type: Article.
- Alonso CF, Ferrer M, García EJ, Mir SA, Jiménez S, Jacob J, Salmerón PP, Gil A, Llorens P, Burillo G, Alquezar A, Baena SB, Cardona MF, González RH, Martín MM, Parra AB, El Farh I, Borrego BV, Motto EQ, Larrañaga AA, Ferrer ES, Cho J, Bañeres BG, Martín SG, Sindín GS, Zapico AP, Lorenzo IC, Tey JMG, Llauger L, del Castillo JG, Miro O. Impact of dementia on 30-, 180-, and 365-day mortality during the first pandemic wave in older adults seen in spanish emergency departments diagnosed with or without COVID-19. *AGING & MENTAL HEALTH*. 2024; 28(8). DOI:10.1080/13607863.2024.2337144. PMID:38597417. IF:2,800 (Q2/3D). Document type: Article.

- Alonso CF, Ferrer MF, Llorens P, Burillo G, Alquezar A, Jacob J, Montero FJ, Aguiló S, Cunado VA, Al Arud LA, Sánchez CE, Ferret E, Cho J, Martínez M, Martín SG, Sindin GS, Zapico AP, Rivas MCP, Grande A, Llauger L, Valles CR, Quero LM, Gonzalez RJ, Ruescas E, Salgado FF, Gallardo RR, Gomez M, Barco MM, del Castillo JG, Miro O. Impact of First Wave of COVID-19 Pandemic on Mortality at Emergency Department in Older Patients with COVID and Non-COVID Diagnoses. *GERONTOLOGY*. 2024; 70(4). DOI:10.1159/000535913. PMID:38160663. IF:3,100 (Q3/6D). Document type: Article.
- Cuerpo S, Aguiló S, Alquézar A, Fernández C, Burillo G, Jacob J, Montero FJ, García EJ, Piñera P, Blázquez BE, de la Iglesia CG, Quesada SF, Vaswani A, Rodríguez M, Aragüés PL, Díaz MLP, González F, Alcaraz AP, Collado JM, Torres GJ, Fuentes L, Martos RM, López AR, Hernández RJG, García JP, Trian EM, del Castillo JG, Miró O, SIESTA N. Tachypnea in response to hypoxemia decreases with age in older patients. *Geriatrics & Gerontology International*. 2024; 24(11). DOI:10.1111/ggi.14965. PMID:39380254. IF:2,400 (Q2/4D). Document type: Article.
- Cuerpo S, Aguiló S, Poblete MF, Burillo G, Alquézar A, Jacob J, Fernández C, Llorens P, Montero FJ, Iglesias C, Quero E, Escudero C, Poch EA, Hong JU, Casado B, Gayoso S, Sánchez G, Fernández ME, Puiggali M, Trejo O, Llauger L, Garrido L, Calle S, Molina L, Martínez M, Gómez G, Del Valle PR, López ML, Rull P, del Castillo JG, Miró O, Spanish Investigators Emergency Situations TEam S. Epidemiological and clinical management aspects of pneumonias diagnosed in the emergency department in elderly patients in Spain: results of the EDEN-29 Study. *ENFERMEDADES INFECCIOSAS Y MICROBIOLOGIA CLINICA*. 2024; 42(8). DOI:10.1016/j.eimc.2023.10.015. PMID:38395666. IF:2,600 (Q3/6D). Document type: Article.
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Radiophysics and Radioprotection

Group leader

Carrasco De Fez, Pablo (FGS)

Researchers

Anson Marcos, Cristina (FGS)

Barceló Pagès, Marta (FGS)

Domínguez Perea, Alejandro (FGS)

Gallego Franco, Pedro (FGS)

Jornet Sala, Núria (FGS)

Pérez-Alija Fernández, Jaime (FGS)

Riu Molinero, Víctor (FGS)

Roda Garcia, Javier (FGS)

Ruiz Martínez, Agustín (FGS)

Tejedor Aguilar, Natalia (FGS)

Vivancos Bargallo, Helena (FGS)

Research technicians

Espinosa López, Nuria (FGS)

Pallerol Pinzano, Rosa María (FGS)



DESCRIPTION

The Radiation Physics and Radiation Protection research group conducts applied research in three fields of ionising radiation application in medicine: radiation therapy, nuclear medicine, and radiology. This research is intended to solve gaps in knowledge in the safe application of radiation in medicine due to new technology, new techniques, new procedures or the application of new legislation.

MAIN LINES OF RESEARCH

- Artificial Intelligence applied to radiotherapy DVH prediction and radiotherapy treatment plan optimization. (Gallego Franco, Pedro; Pérez-Alija Fernández, Jaime; Tejedor Aguilar, Natalia).
- Clinical Audits in Radiotherapy. Line shared with the Radiation Oncology department. (Jornet Sala, Nuria).
- Standardization in Nuclear Medicine. (Ruiz Martínez, Agustín; Barcelo Pages, Marta).
- Diagnostic Reference Levels (DRL) by means of a radiation dose management solution. (Barcelo Pages, Marta; Ruiz Martínez, Agustín).
- Biological Dosimetry. (Carrasco De Fez, Pablo; Pérez-Alija Fernández, Jaime).
- Clinical transmission EPID-based in vivo dosimetry. At present, we have an agreement with Sun Nuclear Co. to clinically implement and suggest improvements on the

SunCHECK® quality assurance platform in radiotherapy, which includes treatment unit quality assurance and patient-related quality assurance, including PerFraction® software, used for in vivo dosimetry with the electronic portal device of linear accelerators. (Anson Marcos, Cristina; Jornet Sala, Nuria).

- Tejedor Aguilar, Natalia. Desarrollo y evaluación de modelos de inteligencia artificial para predicción de dosis y generación automática de planes clínicos para tratamientos de mama con IMRT. SEFM 2023. Duration: 2023-2025. 2.000,00 €

SCIENTIFIC CHALLENGES

- To make radiotherapy treatment planning less person-dependent, to decrease variability and optimise treatment plans.
- To define a strategy to perform clinical audits in radiotherapy at a regional level that could be escalated to the national and international levels.
- To set up clinical audits in radiotherapy in Catalonia.
- To standardise quantitatively image acquisition in PET and SPECT imaging.
- To get all imaging modalities integrated in the dose management system provided by the Catalan government, and to derive DRLs values for all the equipment at HSCSP.
- To manage DRLs and compare them against regional, national and international values.
- To update the dose-biological effect calibration curve, relating chromosomal aberrations to radiation absorbed dose, based on modern automatic systems.
- To derive an easy test to classify irradiated individuals from a potential accident into those that would require exceptional follow-up and treatment, and those that were exposed to non-critical doses.
- To derive clinically relevant tolerance actions for EPID-based in vivo dosimetry on each anatomical treatment site in radiation therapy.
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- ACTIVE & AWARDED GRANTS
- Jornet Sala, Nuria & Sancho Pardo; Gemma. Catalan Clinical Audit network for Quality Improvement in RT [CAT-ClinART]. EU4H Action Grants 2023. UE. Duration: 2023-2027. 374.999,92 € (FGS)

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Paediatrics

Group leader

Moliner Calderon, Elisenda (FGS)

Researchers

Álvarez Pérez, Roser (FGS)

Armendariz Lacasa, Laura (FGS)

Badell Serra, Isabel (UAB)

Barceló Carceller, Irene (FGS)

Becerra Hervás, Judit (FGS)

Bianchi, Federicha (FGS)

Brio Sanagustín, Sónia (FGS)

Carreras González, Gemma (FGS)

Casas Resa, Judit (FGS)

Castillo Gómez, Fátima (FGS)

Coca Fernández, Elisabet (FGS)

Escribano Sanz, Pablo (FGS)

Esmel Vilomara, Roger (FGS)

Fraga Rodríguez, Gloria M. (FGS)

García Borau, María José (FGS)

García del Cerro, Gemma (FGS)

González Rioja, Xoan (FGS)

Josa Eritja, María (FGS)

López Torija, Ivan (FGS)

López Bernal, Ester (FGS)

Porcar Farran, Daniel (FGS)

Salazar Quiroz, Juan José (FGS)

Sensarrich Roset, Mireia (FGS)

Thio Casals, Júlia (FGS)

Tirado Capistros, Mireia (FGS)

Torrent Español, Montserrat (FGS)

Valle T-Figueras, José María (FGS)



DESCRIPTION

The Paediatric Research Group is an expanding team of researchers made up of paediatricians who, alongside their clinical work in the hospital, are deeply committed to advancing paediatric research to improve the care and treatment of the children we serve. Aware of the limitations posed by the relatively small population in our area of influence, we strongly recognize the value of collaborating with other centers to enhance the quality and impact of paediatric research.

Our objective is to build a cohesive and inclusive network that unites all paediatric healthcare professionals in our region with a shared interest in research. This includes paediatricians working in both hospital and primary care settings, with the aim of fostering community-based studies that address major paediatric health challenges.

MAIN LINES OF RESEARCH

- Pediatric Bone Marrow Transplantation. National Reference Center (CSUR). (Moliner Calderón, Elisenda).
- Hereditary Erythropathology. National Reference Center (CSUR). (Torrent Español, Montserrat).
- Fanconi Anemia and Other Hereditary Anemias. (Torrent Español, Montserrat).
- Pediatric Sarcomas. National Reference Center (CSUR). (Torrent Español, Montserrat).
- Reference Center for the Treatment of Bladder Exstrophy in the Neonatal Period. CSUR F. Puigvert – H. Sant Pau. Pau. (Moliner Calderón, Elisenda).

- Neonatal Infectious Diseases. (Moliner Calderón, Elisenda).
- Neonatal Resuscitation and Hypoxic-Ischemic Encephalopathy. (Moliner Calderón, Elisenda; García Borau, María Jose).
- Ultrasound in Critically Ill Neonates. (Salazar Quiroz, Juan José; Becerra Hervás, Judit).
- Neonatal Pharmacology. (García Borau, María Jose).
- Hereditary Renal Diseases. (Fraga Rodriguez, Gloria M).
- Genetic Disorders with Cardiac Expression. (Esmel Vilomara, Roger).
- Effect of Exercise on Cardiac Remodelling in Children Undergoing Chemotherapy. (Álvarez Pérez, Roser).
- Respiratory disorders in children. (García del Cerro, Gemma).

ACTIVE & AWARDED GRANTS

- Armendariz Lacasa, Laura. Caracterización de las poblaciones de eosinófilos en pacientes pediátricos con asma eosinofílica; evaluación de la expresión de marcadores de activación mediante citometría de flujo. SENP 2023. Sociedad Española de Neumología Pediátrica. Duration: 2024-2026. 5.000,00 €

DOCTORAL THESES DEFENDED

- Armendariz-Lacasa L: Caracterización de las poblaciones de eosinófilos en pacientes pediátricos con asma eosinofílica: evaluación de la expresión de marcadores de activación mediante citometría de flujo (Juny 2022-In progres). Autonomus University of Barcelona. Thesis director Dr. Sònia Brió, Dr. Eder Mateus Medina, Dr. Vicente Plaza.
- Esmel-Vilomara R: Miocarditis aguda en edat pediàtrica: del diagnòstic a la genètica (inici Novembre 2022-in progres). Autonomus University of Barcelona. Thesis director Dr Ferran Gran. Dr. Rosés Noguer and Dr. S. Melendo Pérez.

SCIENTIFIC PRODUCTION

- Benítez Carabante MI, Bueno D, Alonso García L, López Torija I, Marsal J, Fernández Navarro JM, Uria Oficialdegui ML, Panesso M, Molina B, Beléndez Bieler C, Palomo P, Pérez Martínez A, Díaz-de-Heredia C. Use of Eculizumab in Pediatric Patients with High-Risk Transplantation-Associated Thrombotic Microangiopathy: Outcomes and Risk Factors Associated with Response and Survival. A Retrospective Study on Behalf of the Spanish Group for Hematopoietic Transplantation and Cellular Therapy (GETH-TC). *Transplant Cell Ther.* 2024; 30(6):601.e1-601.e13. DOI:10.1016/j.jtct.2024.03.019. PMID:38521410. IF:3,600 (Q1/3D). Document type: Article.
- Català L, Casas J, Yeh S, Josa M, Tirado M, Moliner E, Carreras G. Unusual congenital goiter due to maternal Hashimoto thyroiditis: a case report. *Frontiers in Pediatrics.* 2024; 12:1348431. DOI:10.3389/fped.2024.1348431. PMID:38840805. IF:2,100 (Q2/4D). Document type: Article.
- de Aledo JMG, Argudo A, Beneitez D, Collado A, Castro FA, Roig S, Andrés A, Ruiz A, Pedrals G, Medina D, Nadal G, Espigares M, Coll MT, Algar M, Torrent M, Leoz P, Rodríguez A, García M, Solà E, García A, Prats B, López RM, Paredes AJ, García SP, Delgado G, Blanco A, Tazón B, de Heredia CD, Mañu MD, Marin JL, García J, Velasco P. Newborn Screening for Sickle Cell Disease in Catalonia between 2015 and 2022-Epidemiology and Impact on Clinical Events. *International Journal Of Neonatal Screening.* 2024; 10(4):69. DOI:10.3390/ijns10040069. PMID:39449357. Document type: Article.
- Esmel R, Miguel LDD, Artigas A, Turón E, Cuscó I, Díaz A, Panadés LPD, Rocamora R, Boronat S. Cardiovascular abnormalities in patients with SHANK3 pathogenic variants: Beyond neurodevelopmental disorders and epilepsy. *European Journal of Medical Genetics.* 2024; 71:104965. DOI:10.1016/j.ejmg.2024.104965. PMID:39094681. IF:1,600 (Q3/8D). Document type: Article.

- Esmel R, Rianza L, Costa L, Sabaté A, Gran F. Asymmetric Myocardial Involvement as an Early Indicator of Cardiac Dysfunction in Pediatric Dystrophinopathies: A Study on Cardiac Magnetic Resonance (CMR) Parametric Mappings. PEDIATRIC CARDIOLOGY. 2024; DOI:10.1007/s00246-024-03488-8. PMID:38687374. IF:1,500 (Q2/5D). Document type: Article.
- Esmel-Vilomara R, Gran F. Estratègies contemporànies en el diagnòstic i maneig de la miocarditis aguda en edat pediàtrica. *Pediatr Cat.* 2024; 84(3):109-121. Document type: Article.
- Fraga G, Herreros MA, Pybus M, Aza M, Pilco M, Furlano M, García MJ, Torra R, Ars E. A Mild Presentation of X-Linked Hypophosphatemia Caused by a Non-Canonical Splice Site Variant in the *PHEX* Gene. *Genes.* 2024; 15(6):679. DOI:10.3390/genes15060679. PMID:38927615. IF:2,800 (Q2/5D). Document type: Article.
- García VM, Claverie F, Moraleda T, Perdomo A, Fraga GM, Luis MI, Ramos E, RenalTube GRP. Renal diseases that course with hypomagnesemia. Comments on a new hereditary hypomagnesemic tubulopathy. *NEFROLOGIA.* 2024; 44(1). DOI:10.1016/j.nefro.2023.02.008. IF:2,000 (Q2/5D). Document type: Review.
- Moliner E, Rabella N, Turón E, Ginovart G, Figueras J. Relevance of enteroviruses in neonatal meningitis. *Enfermedades Infecciosas Y Microbiología Clínica (english Ed.).* 2024; 42(1). DOI:10.1016/j.eimce.2022.12.012. PMID:36624031. Document type: Article.
- Sardà H, Colom C, Benítez S, Carreras G, Amigó J, Miñambres I, Viladés D, Blanco F, Sánchez JL, Pérez A. PCSK9 plasma concentration is associated with epicardial adipose tissue volume and metabolic control in patients with type 1 diabetes. *Scientific Reports.* 2024; 14(1):7195. DOI:10.1038/s41598-024-57708-5. PMID:38532033. IF:3,800 (Q1/2D). Document type: Article.
- Schesquini KRP, Rodríguez GMF, Castellanos JCB, Martínez L, Guerrero SB, Rodrigo C, Badell I. Celiac disease diagnosis: transglutaminase, duodenal biopsy and genetic tests correlations. *Frontiers in Pediatrics.* 2024; 12:1330511. DOI:10.3389/fped.2024.1330511. PMID:39268360. IF:2,100 (Q2/4D). Document type: Article.

Ophthalmology

Group leader

Del Campo Carrasco, Zoraida (FGS)

Researchers

Castillo Campillo, Lorena (FGS)

Castro Seco, Roberto (FGS)

Crespi Vilimelis, Jaume (FGS)

Díaz Cascajosa, Jesús (FGS)

García Pares, Eva (FGS)

Gil Arnal, Julián Miguel Angel (FGS)

Gómez Gutiérrez, Cecilia (FGS)

Gómez Prieto, María José (FGS)

Lázaro Rodríguez, Víctor (FGS)

Liscombe Sepulveda, John Paul (FGS)

Loscos Gimenez, Irene Victoria (FGS)

Luna Marine, Maria Sabina (FGS)

Molina Montero, José Alberto (FGS)

Oliva Sierra, Ruth (FGS)

Perich González, Sandra (FGS)

Piquer Pérez, Maria Pilar (FGS)

Rego Lorca, Daniela (FGS)

Rodríguez Vidal, Cristina (FGS)

Rosello Silvestre, Noemí (FGS)

Sabater Cruz, Noelia (FGS)

Salvador Miras, Ignacio (FGS)

Tellez Vazquez, Jesús Maria (FGS)

Vela Segarra, José Ignacio (FGS)

Research technicians

Benitez Reina, Pilar (IR)

Maymo Catala, Laura (IR)



DESCRIPTION

The research we conduct is primarily clinical and applied. It includes case studies, literature reviews, longitudinal studies, clinical trials, and evaluations of new technologies and treatments. We also collaborate with other clinical teams to investigate the potential ophthalmological toxicity of the drugs under study. Additionally, our research encompasses basic studies on biomarkers and disease mechanisms, as well as innovation in devices and therapies. In summary, we combine clinical, experimental, and technological innovation research to improve the diagnosis and treatment of eye diseases.

MAIN LINES OF RESEARCH

- Use of machine learning and artificial intelligence algorithms in various chronic ocular diseases: glaucoma, AMD. (Díaz Cascajosa, Jesús).
- Glaucoma and drainage device surgery (MIGS – Minimally Invasive Glaucoma Surgery). (Tellez Vazquez, Jesús Maria).
- Glaucoma: clinical presentation and surgical indications in a tertiary care center within our healthcare environment. (Loscos Gimenez, Irene Victoria).
- Idebenone therapy for Leber hereditary optic neuropathy. (Castillo Campillo, Lorena).
- Extended depth of focus intraocular lens. (Lázaro Rodríguez, Víctor; Gil Arnal, Julián Miguel Angel).

- Evaluation of Immunoglobulins in the Tear Film of Patients with Atopic Dermatitis Undergoing Dupilumab Treatment. (Sabater Cruz, Noelia; Del Campo Carrasco, Zoraida).
- Evaluation of Intravitreal Treatments in Age-Related Macular Degeneration (AMD). (Salvador Miras, Ignacio).
- Evaluation of Intravitreal Treatments in Diabetic Macular Edema. (Vela Segarra, José Ignacio; Crespi Vilimelis, Jaume; Díaz Cascajosa, Jesús).
- Strabology, surgical management. (Rosello Silvestre, Noemí; Luna Marine, Maria Sabina).
- Alternative Treatment to Surgery for Blepharoptosis. (Castro Seco, Roberto; Liscombe Sepulveda, John Paul).
- Luna S., Galan A., Conversa S, Roselló N. Parálisis del VI nervio craneal bilateral crónica. *Acta Estrabológica* 2024; 53(2):57-67. Document type: Article.
- Oliver D, van der Veen RLP, Ros E, Segura G, Alonso T, Herranz A, Matas J, Seco RC, Arcediano MA, Zapata MA, Oliveres J. Periorbital necrotizing fasciitis: clinical perspectives on nine cases. *EUROPEAN JOURNAL OF CLINICAL MICROBIOLOGY & INFECTIOUS DISEASES*. 2024; 43(10). DOI:10.1007/s10096-024-04908-6. PMID:39085512. IF:3,700 (Q2/3D). Document type: Article.
- Rojo M, Martínez JM, Albis O, Yañez G, Maroto R, Tellez J, Menoyo R. Preserflo™ MicroShunt implantation combined with Ologen™ in primary and secondary glaucoma patients in a clinical setting. *INDIAN JOURNAL OF OPHTHALMOLOGY*. 2024; 72(3). DOI:10.4103/IJO.IJO_1502_23. PMID:38153975. IF:2,100 (Q2/4D). Document type: Article.

SCIENTIFIC CHALLENGES

- The scientific challenges in the areas of research you mentioned are vast and multifaceted, focusing on technological advancements, therapeutic efficacy, and the optimisation of treatments for a variety of ocular conditions.

SCIENTIFIC PRODUCTION

- Batista CSP, Loscos-Giménez I, Gámez M, Altaba R, de Miniac D, Martí N, Bassaganyas F, Juanes E, Rivera A, Navarro F. Comparing the in vitro efficacy of chlorhexidine and povidone-iodine in the prevention of post-surgical endophthalmitis. *J Ophthalmic Inflamm Infect*. 2024; 14(1):20. DOI:10.1186/s12348-024-00404-2.. PMID:38782819. IF:2,900 (Q1/3D). Document type: Article.
- Karam, Emely Z; Rosello, Noemí. Estrabismo de origen neurológico o no: Un recorrido a través de la diplopía. *Acta Estrabológica* 2024; 53(1):2-11. Document type: Article.
- Loscos-Giménez I, Rego-Lorca D, Bassaganyas-Vilarrasa F, Crespi-Vilimelis J, Díaz-Cascajosa J, Segarra JIV. New prefilled syringe aflibercept design. A cause of symptomatic IOP spike after aflibercept PFS? *Rom J Ophthalmol*. 2024; 68(3):219-224. DOI:10.22336/rjo.2024.41. PMID:39464766. Document type: Article.

Nuclear Medicine

Group leader

Flotats Giralt, Albert (FGS)

Researchers

Asadurova, Stela Svetlozarova (FGS)

Calls Calahorro, Marc (FGS)

Camacho Martí, M. Del Valle (FGS)

Castejon Echevarne, Simóna (FGS)

Delisau Gil, Yaiza (FGS)

Duch Renom, Joan (FGS)

Fernández León, Alejandro (FGS)

Guzmán Prudencio, Gabriela (FGS)

Serrallonga Rovira, Berta (FGS)

Soldevila Lozano, Cristina (FGS)

Stefaneli Mormandi, Patricia (FGS)

Torres Quintana, Maria Paula (FGS)

Velasco Nuño, Mónica (FGS)



DESCRIPTION

Current research encompasses molecular imaging in cancer as well as neurodegenerative and cardiovascular diseases, leveraging advancements in radiomics and artificial intelligence. Additionally, it includes the application of radioligand therapy in cancer treatment. Fundamentally, our research utilises SPECT-CT, PET-CT, and radiolabeled tracers to characterise pathophysiological processes and enhance disease diagnosis, staging, prognostication, and therapy.

MAIN LINES OF RESEARCH

- Molecular Imaging in Cancer (Camacho Martí, M. Del Valle; Fernández León, Alejandro)
- Brain Imaging in Neurodegenerative Disorders (Camacho Martí, M. Del Valle)
- Cardiovascular Inflammation: (Fernández León, Alejandro; Velasco Nuño, Monica)
- Cardiac Amyloidosis: (Flotats Giralt, Albert; Velasco Nuño, Monica)
- Artificial Intelligence in Image Reading: (Flotats Giralt, Albert; Velasco Nuño, Monica)

SCIENTIFIC CHALLENGES

- Innovative Technologies in Diagnosis and Therapy.
- Molecular Imaging of Diseases.
- Integration of Artificial Intelligence Tools in Research and Clinical Practice.

ACTIVE & AWARDED GRANTS

- Camacho Martí, M. Del Valle. Estudio pseudoexperimental sobre el efecto de la inflamación asociada a la obesidad sobre el sistema nervioso central y la enfermedad de Alzheimer. PI19/01512. Instituto de Salud Carlos III (ISCIII). Duration: 2020-2024. 232.320,00 €
- Fernández León, Alejandro. Impacto de la Inflamación en la Progresión de la Aterosclerosis Carotidea y el Riesgo de Ictus (estudio INCREASE). PI22/01659. Duration: 2023-2025. 141.570,00 €
- Flotats Giralt, Albert & Carrio Gasset, Ignasi. Erasmus+ cooperation for multidisciplinary training in radioligand therapies for healthcare professionals. Erasmus+. Unión Europea. Duration: 2022-2024. 36.170,00 €

DOCTORAL THESES DEFENDED

- López Mora, Diego Alfonso. Estudio comparativo de la tomografía por emisión de positrones/tomografía computarizada digital respecto a la tomografía por emisión de positrones/tomografía computarizada analógica en pacientes oncológicos y no oncológicos. 23/04/2024. Universitat Autònoma de Barcelona. Supervisors: Fernández León, Alejandro; Camacho Martí, M. del Valle; Alijotas Reig, Jaume. <https://hdl.handle.net/10803/691719>.

SCIENTIFIC PRODUCTION

- Holgado A, León X, Llansana A, Valero C, Casasayas M, Fernández A, Quer M. Warthin's Tumour as a Parotid Gland Incidentaloma Identified by PET-CT Scan in a Large Series of Cases. *Indian Journal of Otolaryngology and Head & Neck Surgery*. 2024; 76(4). DOI:10.1007/s12070-024-04592-0. PMID:39130264. IF:0,054 (Q4/10D). Document type: Article.
- Morcillo AO, Zsadanyi SE, Arriola JE, Carmona M, Montal V, Pegueroles J, Aranha MR, Vaque L, Padilla C, Benejam B, Videla L, Barroeta I, Fernández S, Altuna M, Gimenez S, Gonzalez S, Bargallo N, Ribas L, Arranz J, Torres S, Iulita MF,

- Belbin O, Camacho V, Alcolea D, Lleó A, Fortea J, Bejanin A. Characterization of white matter hyperintensities in Down syndrome. *Alzheimers & Dementia*. 2024; 20(9). DOI:10.1002/alz.14146. PMID:39087352. IF:13,000 (Q1/1D). Document type: Article.
- Pané A, Videla L, Calvet A, Viaplana J, Vaqué L, Ibarzabal A, Rozalem M, Pegueroles J, Moize V, Vidal J, Ortega E, Barroeta I, Camacho V, Chiva G, Fortea J, Jiménez A. Hypothalamic Inflammation Improves Through Bariatric Surgery, and Hypothalamic Volume Predicts Short-Term Weight Loss Response in Adults With or Without Type 2 Diabetes. *DIABETES CARE*. 2024; 47(7). DOI:10.2337/dc23-2213. PMID:38713908. IF:14,800 (Q1/1D). Document type: Article.
- Pardessus Otero A, Rafecas-Codern A, Porcel JM, Serra-Mitjà P, Ferreiro L, Botana-Rial M, Ramos-Hernández C, Brenes JM, Canales L, Camacho V, Romero-Romero B, Trujillo JC, Martínez E, Cases E, Barba A, Majem M, Güell E, Pajares V. Malignant Pleural Effusion: A Multidisciplinary Approach. *Open Respiratory Archives*. 2024; 6(4):100349. DOI:10.1016/j.opresp.2024.100349. PMID:39091982. Document type: Article.
- Stockbauer A, Beyer L, Huber M, Kreuzer A, Palleis C, Katzdobler S, Rauchmann BS, Morbelli S, Chincarini A, Bruffaerts R, Vandenberghe R, Kramberger MG, Trost M, Garibotto V, Nicastro N, Lathuilière A, Lemstra AW, van Berckel BNM, Pilotto A, Padovani A, Ochoa-Figueroa MA, Davidsson A, Camacho V, Peira E, Bauckneht M, Pardini M, Sambuceti G, Aarsland D, Nobili F, Gross M, Vöglein J, Perneczky R, Pogarell O, Buerger K, Franzmeier N, Danek A, Levin J, Höglinger GU, Bartenstein P, Cumming P, Rominger A, Brendel M. Metabolic network alterations as a supportive biomarker in dementia with Lewy bodies with preserved dopamine transmission. *Eur J Nucl Med Mol Imaging*. 2024; 51(4):1023-1034. DOI:10.1007/s00259-023-06493-w. PMID:37971501. IF:8,600 (Q1/1D). Document type: Article.

Pharmacy

Group leader

Feliu Ribera, Anna (FGS)

Researchers

Amorós Reboredo, Patricia (FGS)
Cardenete Ornaque, Juana (FGS)
De Dios Lopez, Anna (FGS)
De Pourcq, Jan Thomas (FGS)
Edo Peñarrocha, Josep (FGS)
Fernández De Gamarra Martínez, Edurne (FGS)
Gamez Lechuga, María (FGS)
Garin Escriva, Noe (FGS)
Gasó Gago, Ingrid (FGS)
Gomis Pastor, Mar (FGS)
Juanes Borrego, Ana María (FGS)
Marcos Fendian, Angel (FGS)
Masip Torne, Montserrat (FGS)
Medina Catalan, David (FGS)
Moreno Martínez, Maria Estela (FGS)
Pagès Puigdemont, Neus (FGS)
Pelegrín Cruz, Rebeca (FGS)
Plaza Díaz, Adrián (FGS)
Riba Sole, Mireia (FGS)
Rodríguez Murphy, Esther (FGS)
Rovira Medina, Teresa (FGS)
Ruiz Ramos, Jesús (FGS)
Vallez Valero, Lucía (FGS)
Vila Gallego, Clara (FGS)
Villamarin Vallejo, Laura (FGS)
Zarate Tamames, Borja (FGS)

Research technicians

Berga Garrote, Núria (IR)
Borrazas Oliveira, María Belén (FGS)
Fuset Gonzalez, Marina (IR)
Gavilan Rubio, Martina (IR)
González Moraga, Marta (IR)
Gras Martín, Laura (IR)
Jorba Cortada, Celia (IR)
Juanes Borrego, Maria Elena (IR)
Nuibó Gibert, Estel (IR)
Rey Vecino, Pau (FGS)
Rodríguez-Arias Pal, Ainhoa (IR)
Zafri Kasas, Nabila (IR)



DESCRIPTION

Our research group aims to investigate and improve the use of medications and optimise patient outcomes through research and evidence-based practice.

MAIN LINES OF RESEARCH

- Observatory of medicines and therapeutic innovation (Feliu Ribera, Anna)
- Emergencies, critical care and gender research (Ruiz Ramos, Jesús)
- respiratory care, environmental sustainability, clinical epidemiology and public health (Garin Escriva, Noe)
- Ambulatory care and telemedicine (Pages Puigdemont, Neus)
- Pharmacokinetics, pharmacogenetics and compounding (Feliu Ribera, Anna)

SCIENTIFIC CHALLENGES

- Evaluate the impact of various pharmaceutical care programmes on the effectiveness and safety of pharmacological treatments, including personalised medicine (clinical pharmacokinetics and pharmacogenetics), health education, medication reconciliation, and the identification and prevention of drug-related health problems.
- Use of clinical epidemiology to gain evidence in patient care: association between risk factors and health outcomes, study of

drug interactions, medication adherence, assessment of regular clinical practice.

- Actively participate in independent clinical trials conducted at Sant Pau.
- mHealth, eHealth, artificial intelligence, big data, and innovative procedures.

DOCTORAL THESES DEFENDED

- Cossio, Yolima. Aporte de los sistemas de información en la modernización de los cuadros de mando para la gestión. 13/05/2024. Universitat de Barcelona. Supervisors: Garin Escrivá, Noé; Velasco Muñoz, César; Trilla García, Antoni. <https://hdl.handle.net/2445/214750>.

SCIENTIFIC PRODUCTION

- Abraldes MJ, Calvo P, Lechuga MG, Merino M, Lorenzo TM, Maravilla P, Jiménez BG, Ruiz JM. Burden of Disease Study of Patients with Neovascular Age-Related Macular Degeneration in Spain. *Ophthalmology and Therapy*. 2024; 13(7). DOI:10.1007/s40123-024-00960-9. PMID:38771461. IF:2,600 (Q2/3D). Document type: Article.
- Batista CSP, Loscos-Giménez I, Gámez M, Altaba R, de Miniac D, Martí N, Bassaganyas F, Juanes E, Rivera A, Navarro F. Comparing the in vitro efficacy of chlorhexidine and povidone-iodine in the prevention of post-surgical endophthalmitis. *J Ophthalmic Inflamm Infect*. 2024; 14(1):20. DOI:10.1186/s12348-024-00404-2. PMID:38782819. IF:2,900 (Q1/3D). Document type: Article.
- Collado R, Gomis M, Rodríguez M, Parro A, Linares A, Gutiérrez E, González E, Fernández A, Domínguez M, Arrondo A, Morillo R. Guide for the efficient and safe delivery of Telepharmacy. *Health Policy and Technology*. 2024; 13(4):100899. DOI:10.1016/j.hlpt.2024.100899. IF:3,400 (Q1/2D). Document type: Article.
- Colominas E, De Antonio M, Masip M, Conde MTM, Cardona G, Restituto DF, Comas D, Roch MA, Lopez B, Torres FI, Retamero A, Knobel H, Luque S. Complementary and alternative medicine in HIV care: frequency of consumption, risks and interactions with antiretroviral therapy. *EUROPEAN JOURNAL OF HOSPITAL PHARMACY*. 2024; DOI:10.1136/ejhpharm-2024-004118. PMID:38802166. IF:1,600 (Q3/8D). Document type: Article.
- Cossio-Gil Y, Pérez-Sádaba FJ, Ribera J, Giménez E, Marte L, Ramos R, Aurin E, Peterlunger M, Steinbrink J, Bottinelli EAM, Nelson N, Seveke L, Garin N, Velasco C. Identifying potential predictable indicators for the management of tertiary hospitals. *Int J Health Plann Manage*. 2024; 39(2):278-292. DOI:10.1002/hpm.3710. PMID:37910590. IF:1,900 (Q3/6D). Document type: Article.
- de Dios A, Pages N, Ojeda S, Riera P, Pelegrin R, Morollon N, Belvis R, Real J, Masip M. Persistence, effectiveness, and tolerability of anti-calcitonin gene-related peptide monoclonal antibodies in patients with chronic migraine. *HEADACHE*. 2024; DOI:10.1111/head.14827. PMID:39268992. IF:5,400 (Q1/2D). Document type: Article.
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Dermatology

Group leader

Puig Sanz, Lluís (FGS)

Researchers

Altemir Vidal, Arcadi (FGS)

Garces Gatnau, Joan Ramón (FGS)

Garcia Muret, M. Pilar (FGS)

Iznardo Ruiz, Helena (FGS)

López Ferrer, Anna (FGS)

López Sánchez, Cristina (FGS)

Morales Munera, Caridad Elena (FGS)

Roe Crespo, Esther (FGS)

Ruiz Salas, Verónica (FGS)

Rusiñol Batlle, Lluís (FGS)

Serra Baldrich, Esther (FGS)

Spertino, Jorge Luis (FGS)

Vilarrasa Rull, Eva (FGS)

Yelamos Pena, Oriol (FGS)

Research technicians

Bravo Gonzalez, Marina (IR)

Díaz-Salazar Monreal, Maria (IR)

Flores Climente, Víctor Adrián (IR)

Fuentes García, Rubén (IR)

Gely Vila, Cristina (IR)

Morilla Pérez, Nerea (IR)



DESCRIPTION

Clinical trials and translational research (in collaboration with the Inflammatory Diseases Translational Medicine Research Group) on inflammatory-mediated dermatoses, including psoriasis, atopic dermatitis, hidradenitis suppurativa, urticaria, vitiligo, and alopecia areata. Epidemiology, genetics, AI-assisted imaging, and treatment of different types of skin cancers and their precursors (melanoma, basal cell carcinoma, squamous cell carcinoma, actinic keratoses). Epidemiological research on Cutaneous Lymphoma.

MAIN LINES OF RESEARCH

- Psoriasis. (Lopez Ferrer, Anna).
- Hidradenitis. (Vilarrasa Rull, Eva).
- Atopic dermatitis and urticària. (Serra Baldrich, Esther).
- Skin Cancer (MM and NMSC). (Yelamos Pena, Oriol).
- Cutaneous Lymphoma. (Garcia Muret, M. Pilar).

SCIENTIFIC CHALLENGES

- Translation of scientific results into clinical practice. External validation of AI studies.

SCIENTIFIC PRODUCTION

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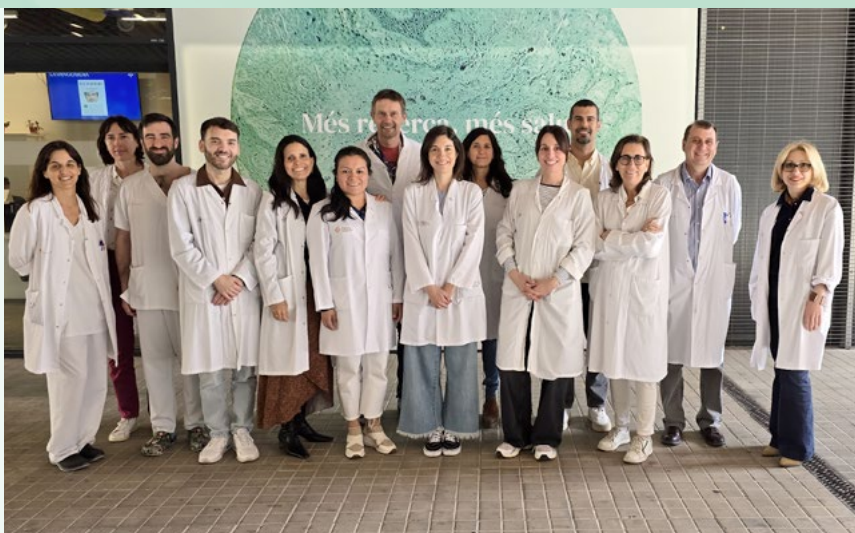
Anaesthesiology

Group leader

Paniagua Iglesias, Pilar (FGS)

Researchers

Argilaga Nogues, Marta (FGS)
Azparren Cabezón, Gonzalo (FGS)
Bainac Albadalejo, Albert Lluís (FGS)
Barbero Espinosa, Sílvia (FGS)
Batalla Gonzalez, Astrid Maria (FGS)
Bericat Melero, Paula (FGS)
Bueno Izquierdo, Ana (FGS)
Cegarra Sanmartin, Virginia (FGS)
Cueva Castro, Luisa Fernanda (FGS)
De La Torre Weinreiter, Mariano Raul (FGS)
Felipe Correoso, Maria Mar (FGS)
Fonseca Pinto, Teresa (FGS)
Font Gual, Adrià (FGS)
Garcia Álvarez, Maria Mercedes (FGS)
García Rodríguez, Alejandro (FGS)
Gil Sánchez, José María (FGS)
Gine Serven, Marta (FGS)
Gomez Caro, Ana Maria (FGS)
Gonzalez Fernández, Joaquín (FGS)
García Tomàs, Roger (FGS)
Guadalupe Fernández, Nerea (FGS)
Guitérrez Marqués, Alejandro (FGS)
Hermenegildo Chávez, Gisela Myrella (FGS)
Herranz Pérez, Gracia (FGS)
Hinojal Blanco, Ignacio (FGS)
India Aldana, Inmaculada (FGS)
Koller, Tobias Bernhard (FGS)
Maestre Hittinger, Maria Luz (FGS)
Martín Navarro, Manuel (FGS)
Martínez Garcia, Clara (FGS)
Merten, Alfredo R. (FGS)
Millán Moreno, Irina (FGS)
Miralles Bagan, Jordi (FGS)
Moreno Bueno, Marisa (FGS)
Nuñez Sacristán, Sergio (FGS)
Paniagua Iglesias, Pilar (FGS)
Pardo Pinzón, Laura Andrea (FGS)
Parrilla Quiles, Laura (FGS)
Paz Martín, Adrián (FGS)
Pérez Garcia, Sergio (FGS)
Rivilla Lizano, M. Teresa (FGS)
Rodríguez Prieto, Mireia (FGS)
Sabaté Tenas, Sergi (FGS)
Sneyers Closa, Marijke (FGS)
Solans Duran, José Ramón (FGS)
Toral Fernández, Diego (FGS)
Villamizar Avendaño, Angelica (FGS)



DESCRIPTION

The anesthesiology research team at the “Hospital de la Santa Creu i Sant Pau (HSCSP)” in Barcelona has extensive experience in both clinical and research fields.

About research activities, Dr. Pilar Paniagua and her colleagues are actively involved in an internationally recognised line of research in the field of Perioperative Medicine: (Integrated medical care provided to patients before, during, and after surgery). It focuses on risk assessment, clinical optimisation, and complication prevention to improve surgical outcomes and recovery.

This research line is coordinated by the Population Health Research Institute (PHRI) at McMaster University (Canada). It promotes collaborative projects aimed at optimising diagnosis, risk prediction, prevention, and/or treatment strategies in high-risk surgical patients.

Within this framework, HSCSP has participated in several major projects, some of which have received competitive funding and been published in high-impact journals.

This research activity reflects the team’s commitment to improving outcomes in surgical patients through both international collaboration and locally driven innovation.

MAIN LINES OF RESEARCH

- ASPIRE: Detection of postoperative atrial fibrillation and evaluation of the need for anticoagulation (Investigators: Villamizar, Martín, Giné).

- DELPO: Identification of postoperative delirium and its association with postoperative complications (Investigators: Giné, Martín, Paz, Mur; REA Group).
- INVIBLADE: Comparison of different laryngoscope blades for postoperative intubation using video laryngoscopy (Investigators: Giné, G. Bartolo, Nuñez; REA + UCIPO Groups).
- VASOPRESS: Use of vasopressin during intra- and postoperative periods in patients with shock (Investigators: Giné, M. Castela, Cegarra; REA + UCIPO Groups).
- FENICE II (Pending IRB approval): Fluid therapy in critically ill postoperative patients (Investigators: Gutierrez, Giné; REA Group).
- NUTSARC: Malnutrition and its relationship with postoperative complications in patients undergoing surgery for retroperitoneal sarcoma (Investigators: Giné, Gutierrez).
- NUTOVA: Malnutrition and postoperative complications in patients undergoing surgery for advanced ovarian cancer (Investigator: Giné).
- Detect-POAF (Pending IRB approval): Detection of postoperative atrial fibrillation using a wearable monitoring device (Investigators: M. Castela, Martín, Gutierrez).
- EUpreCHO (Pending IRB approval). European study on perioperative management and outcome following perioperative transthoracic echocardiography in noncardiac surgery patients.
- FGTW: Fibrinogen substitution in cardiac surgery
- TRICS IV: Transfusion trigger in cardiac surgery
- MONACOD: Direct oral anticoagulation in non-cardiac surgery
- FvW in MAD: Von Willebrand factor in mechanical-assisted devices.
- End Growth study: Endovascular treatment in intracerebral bleeding.
- SAVE study: Sevoflurane vs propofol in patients with acute ischemic stroke.
- The field of anesthesiology is currently undergoing significant transformation, driven by advances in technology, increasing patient complexity, and a growing emphasis on perioperative outcomes. As such, anaesthesia departments face a range of evolving scientific challenges that necessitate robust clinical research, innovation, and interdisciplinary collaboration. The following are key areas where current and future scientific efforts are particularly relevant:
 - Personalised Anaesthesia and Precision Medicine
 - Postoperative Delirium and Cognitive Dysfunction
 - Advanced Hemodynamic Monitoring and Management
 - Perioperative Pain Management and Opioid-Sparing Strategies
 - Influence of Anaesthetic Techniques on Oncologic Outcomes
 - Artificial Intelligence and Clinical Decision Support
 - Anaesthesia Delivery in Non-Operating Room Environments
 - Environmental Sustainability in Anaesthetic Practice
 - Patient Safety and Quality Improvement
 - Simulation-Based Education and Competency Assessment.

SCIENTIFIC CHALLENGES

ACTIVE & AWARDED GRANTS

- Martínez Gonzalez, José. El enzima lisil oxidasa (LOX) en la aterosclerosis y la calcificación: estudio en un modelo de aterosclerosis experimental y en válvulas aórticas humanas calcificadas. Fundación Española de Arteriosclerosis (FEA)- Sociedad Española de Arteriosclerosis (SEA). Duration: 2022-2025. 15.000,00 €

DOCTORAL THESES DEFENDED

- Mases Fernández, Anna. Validació dels predictors de risc de complicacions cardiovasculars majors perioperatòries.

- Predicció de la lesió miocardiàica aguda perioperatòria. 21/03/2024. Universitat Autònoma de Barcelona. Supervisors: Sabaté Tenas, Sergi; Gallart Gallego, Lluís. <https://hdl.handle.net/10803/691694>
- Moreno Garijo, Jacobo. Correlating three-dimensional left ventricular outflow tract Area with post-myectomy gradients in hypertrophic obstructive cardiomyopathy. 26/06/2024. Universitat Autònoma de Barcelona. Supervisors: Artigas Raventos, Vicens; Maestre Hittinger, Maria Luz. <https://hdl.handle.net/10803/692028>
 - Popova Sherozia, Ekaterine. Evaluación de la lesión miocárdica perioperatoria en cirugía no cardíaca con troponina T cardíaca de alta sensibilidad e imagen cardíaca avanzada. Resultados y coste efectividad de su evaluación sistemática. 14/06/2024. Universitat Autònoma de Barcelona. Supervisors: Paniagua Iglesias, Pilar; Alonso Coello, Pablo Ignacio; Bonfill Cosp, Xavier. <https://hdl.handle.net/10803/692033>
 - Prieto Butillé, Mercè. Estudi fragilitat, anestèsia i complicacions (Estudi FRAC). 05/04/2024. Universitat Autònoma de Barcelona. Supervisors: Gallart Gallego, Lluís; Sabaté Tenas, Sergi. <https://hdl.handle.net/10803/691703>
 - Student survey after ten years of continuous blended teaching of echocardiography. *Revista Espanola De Anestesiologia Y Reanimacion*. 2024; 71(1). DOI:10.1016/j.redare.2023.05.004. PMID:37683971. Document type: Article.
 - Taboada M, Estany A, Fernández J, Vazquez O, Pajares A, Ramasco F, Martínez S, Vallejo I, Pérez A, Rama P, Bermúdez M, Power M, García R, Fernández I, Aguilera JL, Carrió M, Cabadas R, Rubín A, Williams MM, Fernández R, Becerra A, Giné M, García FJ, Iglesias MC, Santamarina RM, Del Valle S, Charco LM, Alonso MC, Rodríguez IM, Varela M, Hermoso JI, Vives M, Cabaleiro T. Hyperangulated versus Macintosh blades for intubation with videolaryngoscopy in ICU: the randomised multicentre INVIBLADE-ICU trial study protocol. *BMJ Open*. 2024; 14(9):e086691. DOI:10.1136/bmjopen-2024-086691. PMID:39237284. IF:2,400 (Q1/3D). Document type: Article.
 - Wang MK, Devereaux PJ, Marcucci M, Lomivorotov V, Sessler DI, Chan MTV, Borges FK, Ofori SN, Paniagua P, Douketis JD, Sigamani A, Parlow JL, Wang CY, Villar JC, Srinathan SK, Szczeklik W, Martínez MJ, Malaga G, Sivakumaran S, McIntyre WF, Funes MVR, Cruz P, Álvarez J, Greiss I, Popova E, Hemels ME, Brandes A, Chow CK, Barnawal SP, Healey JS, Conen D. Temporal Trends in the Management Practices of Clinically Important Perioperative Atrial Fibrillation After Noncardiac Surgery. *Cjc Open*. 2024; 6(11). DOI:10.1016/j.cjco.2024.08.003. PMID:39582707. Document type: Article.

SCIENTIFIC PRODUCTION

- Funcke S, Schmidt G, Bergholz A, Navarro PA, Cabezón GA, Barbero S, Díaz O, Etinger F, García N, Habicher M, Klinkmann G, Koch C, Kröker A, Mencke T, García VM, Zitzmann A, Lezius S, Pepic A, Sessler DI, Sander M, Haas SA, Reuter DA, Saugel B. Cardiac index-guided therapy to maintain optimised postinduction cardiac index in high-risk patients having major open abdominal surgery: the multicentre randomised iPEGASUS trial. *BRITISH JOURNAL OF ANAESTHESIA*. 2024; 133(2). DOI:10.1016/j.bja.2024.03.040. PMID:38797635. IF:9,100 (Q1/1D). Document type: Article.
- Parra VM, Fita G, Azqueta M, González M, Aranda F, Maestre M, Silva J, Hortal J, Morales D, Bórquez E, Adasme F, Real MI, Mercadal J, Zelada P, Riobó G, Galdames K, Domenech RJ.

Plastic Surgery

Group leader

Masia Ayala, Jaume (FGS)

Researchers

Condrea, Sílvia (FGS)

Guerrero Lojano, Andrea Elisabeth (FGS)

Leoveanu, Floriana Irina (FGS)

López Fernández, Susana (FGS)

Lusetti, Irene Laura (FGS)

Olivares Domínguez, Maria De Leyre (FGS)

Pérez Sempere, María (FGS)

Pons Playa, Gemma (FGS)

Vega García, Maria Del Carmen (FGS)

Vela Lasagabaster, Arturo (FGS)

Zamora Alarcon, Paul David (FGS))

Research technicians

Mohedano Puig, Elena (IR)



DESCRIPTION

The research group at the Department of Plastic Surgery, Hospital Sant Pau, focuses on key areas, including lymphedema surgery and disorders of the lymphatic system. The main areas of work include diagnostic methods, indocyanine green and lymphoresonance, surgical techniques for secondary lymphedema treatment, and prevention. Another significant research line is the development of new perforator flaps using imaging techniques, which has led to major scientific advancements in the past 20 years. We have also begun exploring lymphatic brain disease surgery, particularly for Alzheimer's.

The department collaborates with European centers, including Helsinki University Hospital, Ghent University Hospital, and the Gustave Roussy Institute in Paris.

MAIN LINES OF RESEARCH

- PRIMO: Post-Market, Non-Randomized, Multicentre PMCF Study To Monitor The Safety And Performance Of Symani System In Microsurgical Reconstructive Procedures In A Real Life Setting - ID Identifier: NCT04843436 (Masia Ayala, Jaume; Condrea, Sílvia),
- TIDE study: First in Human study of Matisse Tissue Engineering Chamber in adult female after total mastectomy for breast cancer in immediate or delayed 2 stage tissue expander reconstruction or conversion from implant-based to autologous reconstruction. A two

stage single arm non comparative study of safety and performance. (Masia Ayala, Jaume; Lusetti, Irene Laura),

DOCTORAL THESES DEFENDED

- Al-Haddar Al-Sakkaf, Ali Mahdi. Evidence synthesis in the treatment for breast cancer-related Lymphedema. 27/06/2024. Universitat Autònoma de Barcelona. Supervisors: Masia Ayala, Jaume; Bonfill Cosp, Xavier. <https://hdl.handle.net/10803/692016>
- Campos Sánchez, José Luis. Desarrollo y validación del modelo animal experimental cunicula para la investigación del linfedema: técnicas supermicroquirúrgicas y regeneración linfática. 05/12/2024. Universidad de Extremadura. Supervisors: Masiá Ayala, Jaume, Abellán Rubio, Elena, Pons Playá, Gemma. <http://hdl.handle.net/10662/22661>
- Casanovas Álvarez, Anabel. Programa de rehabilitación para minimizar las disfunciones musculoesqueléticas propias de la cirugía y tratamiento neoadyuvante en mujeres diagnosticadas de cáncer de mama. 17/10/2024. Universitat Internacional de Catalunya. Supervisors: Masiá Ayala, Jaume; Sebio Garcia, Raquel; Bagur Calafat, Caridad. <http://hdl.handle.net/10803/693649>

SCIENTIFIC PRODUCTION

- Alarcón PZ, Torrano L, Ibarra A, Garrido MF, Playa GP, Masia J. Prophylactic lymphedema surgery in lower limb soft tissue sarcomas: A clinical paradigm in a promising field. *Journal of Plastic Reconstructive and Aesthetic Surgery*. 2024; 88DOI:10.1016/j.bjps.2023.11.0361748-6815. PMID:38113721. IF:2,000 (Q2/4D). Document type: Article.
- Campos J, Pons G, Al AM, Lusetti I, Pires L, Vela F, Ramos E, Crisóstomo V, Sánchez F, Abellán E, Masiá J. Lymphatic Regeneration after Popliteal Lymph Node Excision and Implantation of Aligned Nanofibrillar Collagen Scaffolds: An Experimental Rabbit Model. *Journal of Functional Biomaterials*. 2024; 15(8):235. DOI:10.3390/jfb15080235. PMID:39194673. IF:5,000 (Q1/3D). Document type: Article.
- Campos J, Suominen S, Pons G, Al AM, Lusetti I, Sirota M, Vela F, Pires L, Sánchez F, Abellán E, Masiá J. Lymphatic Patterns in the Superficial Circumflex Iliac Artery Perforator Flap. *JOURNAL OF RECONSTRUCTIVE MICROSURGERY*. 2024; DOI:10.1055/a-2340-9629. PMID:38848754. IF:2,200 (Q2/4D). Document type: Article.
- Campos JL, Pires L, Vela FJ, Pons G, A, Sánchez FM, Abellán E, Masiá J. Lymphaticovenous anastomosis in rabbits: A novel live experimental animal model for supermicrosurgical training. *Journal of Plastic Reconstructive and Aesthetic Surgery*. 2024; 93DOI:10.1016/j.bjps.2024.04.023. PMID:38754281. IF:2,000 (Q2/4D). Document type: Article.
- Casanovas A, Estanyol B, Ciendones M, Padròs J, Cuartero J, Barnadas A, García B, González R, Sebio R, Masiá J. Effectiveness of an Exercise and Educational-Based Prehabilitation Program in Patients With Breast Cancer Receiving Neoadjuvant Chemotherapy (PREOptimize) on Functional Outcomes: A Randomized Controlled Trial. *PHYSICAL THERAPY*. 2024; 104(12):pzae151. DOI:10.1093/ptj/pzae151. PMID:39423256. IF:3,500 (Q1/1D). Document type: Article.
- Casanovas A, Sebio R, Masiá J, Mateo E. Experiences of Patients with Breast Cancer Participating in a Prehabilitation Program: A Qualitative Study. *Journal of Clinical Medicine*. 2024; 13(13):3732. DOI:10.3390/jcm13133732. PMID:38999298. IF:3,000 (Q1/2D). Document type: Article.
- Cheng MH, Chang DW, Masia J. Introduction of the 10th World Symposium for Lymphedema Surgery. *JOURNAL OF SURGICAL ONCOLOGY*. 2024; DOI:10.1002/jso.27919. PMID:39387585. IF:2,000 (Q2/4D). Document type: Article.
- Devoogdt N, De Vrieze T, Heroes AK, Bechter B, Fieuws S, Godderis L, Segers K, Maleux G, Deltombe T, Fripiat J, Servaes M, Berners A, Fosseprez P, Krug B, Kayser F, Falticeanu A, Randon C, Monten C, Van

- K, De Pypere B, Degraeve L, Decorte T, De Schryver M, Van V, Devos D, Suominen S, Ayala JM, Pons G, Fourneau I, Thomis S. SurLym trial: study protocol for a multicentre pragmatic randomised controlled trial on the added value of reconstructive lymphatic surgery to decongestive lymphatic therapy for the treatment of lymphoedema. *BMJ Open*. 2024; 14(5):e078114. DOI:10.1136/bmjopen-2023-078114. PMID:38729754. IF:2,400 (Q1/3D). Document type: Article.
- Gilardino MS, Vela A. The GLAND-IQ Technique for Surgical Correction of Moderate to Severe Gynecomastia. *Plastic And Reconstructive Surgery-Global Open*. 2024; 12(6):e5869. DOI:10.1097/GOX.0000000000005869. PMID:38841522. Document type: Article.
 - León X, López S, Pérez M, Valero C, Holgado A, Quer M, Vega C. Results of surgical treatment of lymph node metastases in patients with cutaneous squamous cell carcinoma of the head and neck. *Acta Otorrinolaringologica Espanola*. 2024; 75(3). DOI:10.1016/j.otorri.2023.07.007. PMID:38224869. Document type: Article.
 - Pomata CD, Pons G, Masia J. Barcelona lymphedema algorithm for surgical treatment (BLAST). *Annals Of Breast Surgery*. 2024; 8:7. DOI:10.21037/abs-22-10. Document type: Review.
 - Pons G, Sisternas L, Masia J. Immediate Partial Breast and Nipple-Areola Complex Reconstruction Using a Superficial Circumflex Iliac Artery Perforator Flap. *Archives Of Plastic Surgery-Aps*. 2024; 51(02). DOI:10.1055/a-2223-5325. PMID:38596154. Document type: Article.

Palliative Care

Group leader

Pascual López, Antonio (FGS)

Researchers

Güell Pérez, Ernest (FGS)

Martínez Peralta, Susana (FGS)

Navarri Sese, Laia (FGS)

Prada Jaimez, Maria Luisa (FGS)

Research technicians

Collette, Nadia (IR)



DESCRIPTION

An interdisciplinary team carried out clinical research in an acute palliative care hospital unit.

MAIN LINES OF RESEARCH

- Art therapy at the end of life. (Collette, Nadia).
- Prevention and management of professional stress through art therapy. (Collette, Nadia).
- Electronic patient-reported outcome measures (PROMs). (Martínez Peralta, Susana).
- Training in palliative care: training needs, and outcomes. (Pascual Lopez, Antonio).

SCIENTIFIC PRODUCTION

- Salamanca E, Palacios ZR, Cañada JE, Moure Z, Pérez M, Calvo J, Martínez L, Cantón R, Carrascoso GR, Pitart C, Navarro F, Bou G, Mulet X, González JJ, Sivianes F, Delgado M, Pascual A, Oteo J, Rodríguez J, GEMARA GEIRAS SEIMC REIPI CARB ES 19GRP. Epidemiological and clinical characterisation of community, healthcare-associated and nosocomial colonisation and infection due to carbapenemase-producing *Klebsiella pneumoniae* and *Escherichia coli* in Spain. INFECTION. 2024; DOI:10.1007/s15010-024-02267-0. PMID:38703288. IF:5,400 (Q1/2D). Document type: Article.

Andrology

Group leader

Ruiz Castañé, Eduard (F. Puigvert)

Researchers

De Rocco Ponce, Maurizio (F. Puigvert)
Gonzalez Fernández, Mónica (F. Puigvert)
Krausz, Csilla Gabriella (F. Puigvert)
Maestre Lorén, Francesc (F. Puigvert)
Martínez Pasarell, Olga (F. Puigvert)
Sánchez Curbelo, Josvany (F. Puigvert)
Sarquella Geli, Joaquim (F. Puigvert)
Vives Suñe, Álvaro (F. Puigvert)

Research technicians

Spinelli, Matilde (F. Puigvert)



DESCRIPTION

The Group focuses on different fields, the most important of which are: a) diagnosis and treatment of male/female sexual dysfunction (erectile dysfunction, premature ejaculation, Peyronie disease, hypoactive sexual desire), b) diagnosis and treatment of male infertility (genetics of male infertility and reproductive genomics, oncofertility), c) sexual transmitted infections, and d) endocrinological impairments related to male infertility and sexual dysfunctions (hypogonadism, hyperprolactinemia, and obesity). This activity is oriented to improve medical and surgical approaches for each issue.

MAIN LINES OF RESEARCH

- Genetics applied to male infertility. (Krausz, Csilla Gabriella).
- Male fertility preservation in oncological patients. (Krausz, Csilla Gabriella).
- Optimisation of preimplantation genetics diagnosis and in vitro fertilization techniques. (Martínez Pasarell, Olga).
- New surgical procedures, drugs and medical devices applied to diagnosis, prevention and treatment of andrological diseases and conditions (male sexual dysfunction, hypogonadism, Peyronie disease, premature ejaculation, sexually transmitted diseases). (Ruiz Castañé, Eduard).
- Sexually transmitted diseases and public health. (Vives Suñe, Alvaro).

- Quality of life and integral sexual approach: gender and psychological aspects. (Maestre Loren, Francesc).

SCIENTIFIC CHALLENGES

- To improve our knowledge and thereby enhance healthcare for patients, we seek to continue active projects, develop new lines of investigation, increase the number of international publications, train professionals, and improve collaboration with hospital and university groups both within and outside the IIB Sant Pau.
- To promote awareness and divulge sexuality as a health topic and as a central aspect of global health and quality of life, inclusive of chronic and ill patients, to professionals who require a broad and multidisciplinary approach to their patients.
- To work up the relationship with patient associations and progressively incorporate them as a work team to develop responsible research with relevant results with social impact.

ACTIVE & AWARDED GRANTS

- Bassas Arnau, Lluís. Impact of COVID-19 on male reproductive health. 202128-31. Fundació La Marató de TV3. Duration: 2021-2024. 50.000,00 €
- Krausz, Csilla Gabriella. Caracterización genómica de la azoospermia debido a sólo células de Sertoli: desarrollo de un panel de genes con valor diagnóstico y pronóstico pre-biopsia testicular. PI23/00425. Instituto de Salud Carlos III (ISCIII). Duration: 2023-2026. 102.500,00€
- Krausz, Csilla Gabriella. Análisis del exoma en pacientes azoospermicos con bloqueo de la espermatogénesis: desarrollo de un panel genómico con valor diagnóstico y pronóstico pre-biopsia testicular. PI20/01562. Competitive project, Instituto de Salud Carlos III (ISCIII). 2020. Duration: 2021-2024, 97.889,00 €

DOCTORAL THESES DEFENDED

- Maestre Loren, Francesc. Regulació afectiva del malestar en la disfunció sexual: Aferrament, psicopatologia, disfunció erètil i qualitat de la relació de parella. 28/06/2024. Universitat Ramon Llull. Supervisors: Ignasi Cifre, Josep Castillo.

SCIENTIFIC PRODUCTION

- Cocci A, Pezzoli M, Lo Re M, Ralph D, Christopher N, Osmonov D, Bettocchi C, Djinojic R, Antonini G, Levine L, Salamanca J, Otero JR, Egidio P, Iribarren IM, Hatzichristodoulou G, Perito P, Antoine F, Park HJ, Rolle L, Kadioglu A, Ruíz E, Van K, Valenzuela RJ, Wilson SK, Tomada N, Capece M, Falcone M. The efficacy of penile duplex ultrasound in erectile dysfunction management decision-making: facing the opinion leader. *Journal of Men's Health*. 2024; 20(6). DOI:10.22514/jomh.2024.084. IF:0,600 (Q4/10D). Document type: Article.
- Cosentino M, Di M, Boeri L, Ferraioli G, Lucignani G, Ricapito A, Gadda F, Iafrate M, Mancini M, Dal F, Ruiz E, Bettocchi C, Montanari E, Sofikitis N. Conservative treatment of Peyronie's disease: a guide. *WORLD JOURNAL OF UROLOGY*. 2024; 42(1):317. DOI:10.1007/s00345-024-04975-6. PMID:38740620. IF:2,800 (Q2/3D). Document type: Article.
- De Rocco Ponce M, Quintian Schwieters CF, Meziere J, Sánchez Curbelo JR, Abad Carratalá G, Troka E, Bassas Arnau L, Ruiz Castañé E, Martínez Barcina MJ, Rajmil O. A Study of the Relationship Between Objective Tests to Diagnose Erectile Dysfunction and Markers of Cardiovascular Disease. *Journal of Clinical Medicine*. 2024; 13(21):6321. DOI:10.3390/jcm13216321. PMID:39518460. IF:3,000 (Q1/2D). Document type: Article.
- Farnetani G, Vannucci M, Fino MG, Cioppi F, Rosta V, Palma M, Tamburrino L, Vinci S, Casamonti E, Degl'Innocenti S, Spinelli M, Abrardo C, Marchiani S, Lotti F, Muratori M, Riera A, Krausz C. Severe sperm DNA

- fragmentation may persist for up to 3 years after cytotoxic therapy in patients affected by Hodgkin lymphoma and non-Hodgkin lymphoma. HUMAN REPRODUCTION. 2024; 39(3). DOI:10.1093/humrep/dead269. PMID:38177083. IF:6,000 (Q1/1D). Document type: Article.
- Ferre A, Castells M, Sánchez JF, López O, de Rocco M, Bassas L, Vigués F, Sumoy L, Larriba S. Semen sEV tRF-Based Models Increase Non-Invasive Prediction Accuracy of Clinically Significant Prostate Cancer among Patients with Moderately Altered PSA Levels. INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES. 2024; 25(18):10122. DOI:10.3390/ijms251810122. PMID:39337607. IF:4,900 (Q1/3D). Document type: Article.
 - Jacques-Aviñó C, Alarcón Guitiérrez M, Barbera MJ, Fuertes I, Martín-Ezquerria G, Lopez-Contreras J, Vives Á, Rodríguez R, Ros M, Rius C, de Olalla PG. Epidemiological Characteristics and Factors Associated with Repeat Sexually Transmitted Infections in Barcelona, Spain Over a Decade. Arch Sex Behav. 2024; 53(2):735-744. DOI:10.1007/s10508-023-02711-6. PMID:37875628. IF:2,900 (Q1/1D). Document type: Article.
 - Lillepea K, Juchnewitsch AG, Kasak L, Valkna A, Dutta A, Pomm K, Poolamets O, Nagirnaja L, Tamp E, Mahyari E, Vihljajev V, Tjagur S, Papadimitriou S, Riera A, Versbraegen N, Farnetani G, Castillo H, Sutt M, Kubarsepp V, Tennisberg S, Korrovits P, Krausz C, Aston KI, Lenaerts T, Conrad DF, Punab M, Laan M. Toward clinical exomes in diagnostics and management of male infertility. AMERICAN JOURNAL OF HUMAN GENETICS. 2024; 111(5). DOI:10.1016/j.ajhg.2024.03.013. PMID:38614076. IF:8,100 (Q1/1D). Document type: Article.
 - Stallmeyer B, Bühlmann C, Stakaitis R, Dicke AK, Ghieh F, Meier L, Zoch A, MacLeod DM, Steingröver J, Okutman Ö, Fietz D, Pilatz A, Riera A, Xavier MJ, Ruckert C, Di S, Neuhaus N, Gurbuz AS, Salvarci A, Le N, Mceleny K, Friedrich C, van der Heijden G, Wyrwoll MJ, Kliesch S, Veltman JA, Krausz C, Viville S, Conrad DF, O'Carroll D, Tüttelmann F. Inherited defects of piRNA biogenesis cause transposon de-repression, impaired spermatogenesis, and human male infertility. Nature Communications. 2024; 15(1):6637. DOI:10.1038/s41467-024-50930-9. PMID:39122675. IF:14,700 (Q1/1D). Document type: Article.

Urology

Group leader

Palou Redorta, Juan (F. Puigvert)

Researchers

Algaba Arrea, Fernando (F. Puigvert)

Angerri Feu, Oriol (F. Puigvert)

Breda, Alberto (F. Puigvert)

Bujons Tur, Ana (F. Puigvert)

Emiliani Sanz, Esteban (F. Puigvert)

Errando Smet, Carlos (F. Puigvert)

Gallioli, Andrea (F. Puigvert)

Ponce de León Roca, Javier (F. Puigvert)

Rodríguez Faba, Óscar (F. Puigvert)

Sanguedolce, Francesco (F. Puigvert)



DESCRIPTION

The investigation urology group is dedicated to advancing our knowledge of urological diseases and disorders, with a focus on urological malignancies, functional urology, stone disease, pediatric urology, renal transplant, and reconstructive surgery. Our team of expert clinicians collaborates to conduct innovative studies and clinical trials to improve patient outcomes and develop new treatments. The majority of research topics are clinical, with a special interest in technological advancements, rare urological diseases and biomarkers.

MAIN LINES OF RESEARCH

The Urology Clinical and Basic Research group has been an associated group of IIB Santpau since its inception.

The group conducts clinical translational research in the field of urinary tract diseases along different lines from urological cancer, functional urology, stone disease, paediatric urology, renal transplant and reconstructive surgery.

Existing lines of research are:

In the area of urological cancer, Dr. Breda is leading several projects mainly related to liquid biopsy in urothelial and prostate cancers, focal treatment of prostate cancer, methodology in enhancing lymph nodes in prostate and upper urinary tract disease, intraoperative detection of tumour grade with confocal endomicroscopy to facilitate clinical decisions and avoid unnecessary procedures, the

role of systemic chemotherapy in upper urinary tract tumours and the role of PET-CT in renal masses and 3D reconstruction in to facilitate complex renal surgeries.

In testis cancer, we are evolving to minimally invasive surgery with robotic retroperitoneal dissection in metastatic disease and improving the diagnosis using the sentinel node technique in penile cancer, and also reconstructive surgery after partial penectomy plus laparoscopic lymphadenectomy of the groin.

Dr. Palou is primarily leading projects in bladder cancer: there is a collaborative translational research line on predictive biomarkers in NMIBC progression with the Inflammatory Group and Malmö University. He is leading several studies with new drugs (durvalumab, sansalimab, vedotin enfortumab, etc). Bladder preservation in high-grade tumours is a difficult decision, and the possibility to detect those who will progress will allow earlier aggressive treatment. Another line of research is the robotic nerve sparing surgery in cystectomy and neobladder reconstruction to preserve sexual function after radical surgery. He is also leading robotic retroperitoneal surgery in testis cancer and reconstructive surgery.

In the paediatric urology unit, led by Dra. Bujons, there are several topics under research related to long-term follow-up in reconstructive surgery, sexual function in neurological diseases and fertility in patients after scrotal surgery (varicocele, orchidopexy). This includes the study of the usefulness of botuline toxine in hyperactive bladder in children, PH urine studies for the risk of infection in urinary tract anomalies, optimisation of irrigation fluids for the prevention of unnoticed perioperative hypothermia in children during RIRS and NLP and the Autologous fat graft with stem cells as a treatment for abdominal wall defects in patients with complex exstrophy epispadias.

In the urolithiasis line chaired by Dr. Angerri, clinical and basic research is performed in the following topics: laser energy devices for stone destruction (holmium, thulium, superthulium) comparative outcomes and settings, collaboration with IIBSantPau General and Digestive Surgery Group for primary hiperparatirodism, treatment and pH urine research for the management of cystinuria. In cystinuria, extensive collaborative research is

being conducted with IDIBELL for its genetic study, and there is active participation in the National Registry for this Rare Disease. New study to use Artificial Intelligence in the recognition of stone composition during endoscopic surgery, using our stone library of more than 50.000 stones analysed through infrared espectrofotometry.

The functional urology Unit by Dr. Errando is evaluating the clinical results of different surgical techniques and devices in incontinence in both sexes such as paraurethral substance injections, laparoscopic colposacropexy technique, long term functional results of botox in males, functional results of the transcavernous artificial urinary sphincter implantation in high risk patients, usefulness of probiotics in the prevention of recurrent urinary tract infections, acidification of urine pH for women with recurrent UTIs. A quality of life research collaboration with the Centre de Fisioteràpia de Barcelona RAP Barcelona (Abomino-Pelvic Reeducation) associated with the UAB Vall d'Hebron, has recently begun to evaluate clinical evaluation tools for patients with low urinary tract dysfunction.

The renal transplantation unit, led by Dr. Breda, is investigating 3D reconstruction models to facilitate renal transplants, aiming for a better preservation of the kidney. The group is establishing the robotic renal transplant all over Europe and undergoing analysis of the urogenital tumours in renal transplant patients to update and change daily practice.

BPH surgery is one of the most common in urology and the group of Dr. Ponce de León is investigating the way to perform surgery with preservation of anterograde ejaculation with different methodologies (TURP, Rezum). The group also studies the use of the Rezum system (intraprostatic vaporisation) in BPH, the quality of life of patients who had undergone urethroplasty due to urethral stenosis, and the use of oral mucosa for urethroplasties. A recent national collaboration for an Urethroplasties Registry has recently begun. In reconstructive urethral surgery and BPH, Dr Ponce de León is leading an international research prospective study on prostate inflammation to validate a clinical nomogram in patients with lower urinary symptoms, as well as a prospective

multicenter study on the effect of buccal mucosa extraction on patients' quality of life.

Dr. Gallioli leads the clinical coordination within the group. Mrs Vanessa Muñoz and nurse Ana Palomino are the coordinators of individual clinical studies and trials. They are key pieces to continue with the ongoing studies of the department.

SCIENTIFIC CHALLENGES

- -To continue the national and international positions that increase the scientific networking of the department.
- -Participate in and evolve in the elaboration of European Guidelines.
- -Continue in basic and clinical research across the different established areas.
- -Continue and improve relations with industry (pharmaceuticals, medical devices industries, and biotechnology companies) to stay at the forefront in the development of new compounds and surgical techniques.

SCIENTIFIC PRODUCTION

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Reproductive Health

Group leader

Calaf Alsina, Joaquim (UAB)

Researchers

Coma Barbara, Marina (FGS)

Estadella Tarriel, Josep Ramon (FGS)

Guinot Gasull, Misericordia (FGS)

Mayordomo Bofill, Isabet (FGS)

Miarons Ferré, Bruna (FGS)

Muro Blanc, Patricia (FGS)

Perelló Capo, Josep (FGS)



DESCRIPTION

Gender health is determined by the hormonal regulation of the reproductive system, which affects any organ with hormonal receptors.

Thus, its disturbances, either by excess, defect or dysregulation, also have systemic effects. The group aims to identify the consequences of these abnormalities and to determine the most effective treatment alternatives.

Moreover, menstruating persons periodically face a bleeding event that is not always healthy and friendly. Consequently, measures to modify its profile towards a milder impact on quality of life are welcome.

Our purpose is also to generate tools to identify abnormal patterns and alternatives to surgery to minimise its impact on health.

MAIN LINES OF RESEARCH

- Identification of menstrual abnormalities in the population.
- Effects of environment on menstrual characteristics.
- The medical approach to organic causes of heavy menstrual bleeding
- Menstrual pattern with the different contraceptive alternatives
- Premature ovarian insufficiency its effects, and prevention
- Validate and disseminate a simple, sensitive and reproducible test to identify heavy menstrual bleeding and its response to treatment.

- Test efficient evidence-based approaches to minimise the effect of adnexectomy in BRCA mutation carriers.
- Identify the best contraceptive alternatives for sufferers of chronic menstrual disturbances.
- Vannuccini S, Petraglia F, Carmona F, Calaf J, Chapron C. The modern management of uterine fibroids-related abnormal uterine bleeding. FERTILITY AND STERILITY. 2024; 122(1). DOI:10.1016/j.fertnstert.2024.04.041. PMID:38723935. IF:6,600 (Q1/1D). Document type: Article.

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Radiation Oncology

Group leader

Sancho Pardo, Gemma (FGS)

Researchers

Balart Serra, Josep (FGS)

Farré Bernado, Núria (FGS)

Isern Verdum, Josep (FGS)

Julià Sanahuja, Joan Carles (FGS)

Majercakova, Katarina (FGS)

Mera Errasti, Maria Arantzazu (FGS)

Montezuma Niño, Laura Constanza (FGS)

Rojas Cordero, Jady Vivian (FGS)

Soto Cambres, Ana María (FGS)

Vila Capel, Antoni (FGS)

Research technicians

Cifuentes Antolinez, Patricia (IR)



DESCRIPTION

We are focused on expanding the use of extreme hypofractionation, both in primary and oligometastatic tumours, investigating whether it increases the efficacy of systemic treatment or whether outcomes are conditioned by older age and patient frailty. We are co-leading a project to develop a methodology for clinical audits in radiation therapy. We collaborate with different groups to identify predictors of response and toxicity to radiotherapy in combination with systemic treatments. We continue with the development of the total body irradiation model with VMAT and SBRT in rats.

MAIN LINES OF RESEARCH

- European project for the development of a predictive model for lung cancer patients, using omics-based variables that integrate established clinical factors with others derived from big data analysis and advanced imaging features, to create digital human avatars. (Farré Bernado, Nuria).
- Clinical Audits in Radiotherapy: Training for Auditors and Auditees. (Sancho Pardo, Gemma).
- Gold nanoparticles to enhance the synergy of radiotherapy and chemotherapy. (Balart Serra, Josep).
- SBRT (stereotactic body RT) in primary tumors (lung, pancreas, prostate) and ablative treatment of metastases in oligometastatic patients, with planning based on metabolic imaging, applying techniques for respiratory

- motion control such as image-guided RT (IGRT) or surface-guided RT (SGRT). (Sancho Pardo, Gemma; Farré Bernado, Nuria; Balart Serra, Josep; Isern Verdum, Josep).
- VMAT-TBI as part of conditioning in haematopoietic progenitor transplantation. (Sancho Pardo, Gemma; Vila Capel, Antoni).
- Predictive factors of response to radiotherapy in head and neck tumours. (Montezuma Niño, Laura Constanza).
- Irradiation of large-volume sarcomas with Lattice technique. (Majercakova, Katarina; Isern Verdum, Josep).
- SBRT (stereotactic body RT) in primary tumors (lung, pancreas, prostate) and ablative treatment of metastases in oligometastatic patients, with planning based on metabolic imaging, applying techniques for respiratory motion control such as image-guided RT (IGRT) or surface-guided RT (SGRT). (Sancho Pardo, Gemma; Farré Bernado, Nuria; Balart Serra, Josep; Isern Verdum, Josep).
- Surface-guided radiotherapy with respiratory motion control techniques in SBRT. (Balart Serra, Josep; Farré Bernado, Nuria).
- Development and training of an auto-segmentation system for the definition of organs at risk and irradiation volumes. (Julia Sanahuja, Joan Carles).
- Impact on clinical outcomes of peer-review sessions incorporated into clinical practice. (Rojas Cordero, Jady Vivian; Sancho Pardo, Gemma).
- Adaptation of radiotherapy schedules in oncogeriatric oncology. (Soto Cambres, Ana Maria; Mera Errasti, Maria Arantzazu; Sancho Pardo, Gemma).
- Total Body Irradiation and SBRT in rats using modern Medical devices. (Balart Serra, Josep; Sancho Pardo, Gemma).

SCIENTIFIC CHALLENGES

- Clinical impact of ablative radiotherapy of oligometastases.
- Use of AI to identify predictors of response and toxicity to radiotherapy in lung and prostate cancer.

- Incorporate Deep-learning autosegmentation in clinical practice.
- Changes in radiotherapy dose and fractionation in elderly patients
- Expansion of the use of the SGRT with respiratory motion control techniques in SBRT and for the intrafraction movement control during VMAT-TBI.
- Use of clinical devices to perform experimental irradiation in rats.
- Use of nanoparticles to enhance the efficacy of radiation therapy.

ACTIVE & AWARDED GRANTS

- Balart Serra, Josep. Nanopartículas de oro 2 en 1 para un aumento sinérgico de la radioterapia y la quimioterapia. AECC 2024. Asociación Española Contra el Cáncer. Duration: 2024-2027. 45.500,00 €
- Farré Bernado, Nuria. CANCER MULTI-OMICS AVATARS FOR INTEGRATED PRECISION MEDICINE. EraPerMed Farré. Unión Europea (GenCat FUNDING - Acciones complementarias). Duration: 2023-2025. 198.202,00 €
- Jornet Sala, Nuria & Sancho Pardo, Gemma. Catalan Clinical Audit network for Quality Improvement in RT [CAT-ClinART]. EU4H Action Grants 2023. UE. Duration: 2023-2027. 374.999,92 € (FGS)

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Locomotor System

Group leader

Lamas Gomez, Claudia Maria (FGS)
Crusi Sererols, Xavier (until 31/07/2024)

Researchers

Aguilera Roig, Xavier (FGS)
Almenara Fernández, Marta (FGS)
Bascuñana Ambrós, Helena (FGS)
Carrera Fernández, Ion (FGS)
Crusi Sererols, Xavier (FGS)
Cuartero Archs, Jordi (FGS)
de Caso Rodríguez, Julio (FGS)
Fa Binefa, Manuel (FGS)
Gelber Ghertner, Pablo Eduard (FGS)
González Osuna, Arantxa (FGS)
González Rodríguez, José Carlos (FGS)
Gràcia Alegria, Isidre (FGS)
Lopez Capdevila, Laia (FGS)
Moya Gomez, Esther (FGS)
Nadal Castells, Maria Josefa (FGS)
Peiró Ibañez, Ana (FGS)
Pérez Romera, Ana Belén (FGS)
Ramírez Bermejo, Eduard (FGS)
Sarasquete Reiriz, Juan (FGS)
Toro Aguilera, Álvaro (FGS)
Trullols Tarrago, Laura (FGS)
Valera Pertegas, Màrius (FGS)
Velázquez Fragoso, Juan José (FGS)



DESCRIPTION

The group's main lines of research focus on studying the pathophysiology, anatomy, and aetiology associated with the various pathologies of skeletal diseases. It focuses on the evaluation and analysis of risk factors in the development of cartilage loss, joint instability, and early osteoarthritis. It also presents findings on the study of drugs that reduce post-surgical bleeding in prosthetic surgery, as well as research on prognostic factors and the evolution of sarcomas.

MAIN LINES OF RESEARCH

- Hand Surgery and Upper Limb. Anatomy and immunohistochemical study of the thumb carpometacarpal joint. Role of nerve endings, Golgi corpuscles and biomarkers in the proprioception, joint stability and development of early osteoarthritis. Analyse biomarkers in inflammatory musculoskeletal diseases in the wrist and hand. Kienböck's disease. Malunion of the distal radius. Reliable and precise techniques assisted by guides and 3D models for surgical planning. Risk factors of heterotopic ossification in the elbow after radial head prosthesis. Factors associated with the development of lunate necrosis, scaphoid non-union and ulnar diaphyseal nonunion. (Lamas Gomez, Claudia Maria)
- Oncological orthopaedics. The adverse effects of metal ion release on oncological patients after megaprosthesis salvage surgery. Chondrosarcomas. Chondroblastomas in children and young adults: Review of 55

cases Joint work with the SJD Barcelona Children's Hospital. How To Create A Custom Mega Hip Cement Spacer For A 2-Stage Mega Hip Prosthesis Revision Surgery After Oncological Limb Salvage Surgery. Primary iliac sarcoma in elderly patients vs. anaplastic T lymphoma with bone involvement. Validation of International functional scales in Spanish (MSTS-EMSOS scale study). Pathologic fractures in osteosarcoma. Treatment of aneurysmal bone cyst by percutaneous injection of demineralized bone matrix and pelvic medullary blood growth factors. Study of clear cell sarcomas in conjunction with pathological anatomy. Identifying Skills That Define Physical Function for Lower-Extremity Amputations. (Gracia Alegria, Isidre).

- Hip. Coxarthrosis in young adults: etiological study and biomechanical factors. Influence of hip anatomy in early development of coxarthrosis. (Valera Pertegas, Marius; Moya Gomez, Esther).
- Knee, ankle and foot. Effect of high pressure washing versus manual washing on cement penetration in total knee prosthesis - randomized clinical trial. Regeneration of cartilage defects using tissue engineering and a matrix seeded with characterized allogeneic chondrocytes. Fresh osteochondral allograft transplantation. CT, MRI and clinical outcome. Propective randomized clinical trial for the surgical treatment of Achilles tendon ruptures: repair with mini-invasive technique versus open tenorrhaphy. Morton's neuroma. Floating toe. (Ramirez Bermejo, Eduard; Lopez Capdevila, Laia).
- Reduction of risk of bleeding and complications after orthopaedic prosthetic surgery. Blood loss control using tranexamic acid in primary prosthetic surgery and knee revision surgery. Use of tranexamic acid in non-cardiac surgery and risk of major bleeding. (Gonzalez Osuna, Arantxa)
- Trauma. Periprosthetic fractures of the femur and tibia. Tibial plateau fracture. Polytrauma. Biomechanical factors. (Carrera Fernández, Ion; De Caso Rodríguez, Julio)

SCIENTIFIC CHALLENGES

- Maintain present scientific networks and establish new multidisciplinary and inter-university collaborations.
- Determine the epidemiological and risk factors associated with bone necrosis, bone nonunion and tumors in the musculoskeletal system.
- Determine the anatomical structures and their roles in the development of joint instability and early osteoarthritis.
- Analyse biomarkers in inflammatory musculoskeletal diseases with prognostic value.

DOCTORAL THESES DEFENDED

- Moya Gómez, Esther. Roturas no reparables del labrum acetabular: comportamiento clínico e histológico de la reconstrucción con aloinjerto. 22/02/2024. Universitat Autònoma de Barcelona. Supervisors: Monllau Garcia, Joan Carles; Natera Cisneros, Luis Gerardo. <http://hdl.handle.net/10803/691590>.

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Pain and Neurosciences

Group leader

Genove Cortada, Maria Mercé (FGS)
Revuelta Rizo, Miren Eli (until 26/04/2024)

Researchers

Díaz Jover, Rubén (FGS)
Ferrandiz Mach, Marta (FGS)
Heredia Carques, Cristina (FGS)
Melo Cruz, Martha Cristina (FGS)
Muñoz Hernandez, Isabel (FGS)
Piñeiro Rebolo, Maria Angeles (FGS)
Revuelta Rizo, Miren Eli (FGS)
Roses Álvarez, Laia (FGS)
Santeulària Vergés, Maria Teresa (FGS)
Sarmiento Luque, Teresa Eugenia (FGS)



DESCRIPTION

Our field of research is fundamentally clinical and primarily focused on potential therapies, both pharmacological and interventional, aimed at improving pain.

In recent years, there has been an increase in the implantation of neurostimulation systems and intrathecal infusion devices. Efforts are underway to improve the safety and clinical efficacy of these analgesic therapies.

We work on the multidimensional nature of pain, exploring how sex and gender, as well as various medical and psychological comorbidities, influence pain perception.

MAIN LINES OF RESEARCH

- Neuromodulation in Catalonia. Creation of a database of patients undergoing neurostimulation and intrathecal drug infusion. (Revuelta Rizo, Miren Eli; Genove Cortada, Maria Mercé; Ferrandiz Mach, Marta; Díaz Jover, Ruben; Sarmiento Luque, Teresa Eugenia; Muñoz Hernandez, Isabel; Roses Álvarez, Laia).
- Identify the best profile of patients (their psychopathological characteristics) before the implementation of neuromodulation techniques. (Sarmiento Luque, Teresa Eugenia; Revuelta Rizo, Miren Eli; Ferrandiz Mach, Marta; Genove Cortada, Maria Mercé; Díaz Jover, Ruben).
- The effect of pulsed radiofrequency on the chronic omalgia pain. (Díaz Jover, Ruben).

- The effect (analgesic and side effects) of spinal Ziconotide in patients with refractory chronic pain. (Ferrandiz Mach, Marta; Genove Cortada, Maria Mercé).
- Factors that can influence postoperative pain. (Santeularia Verges, Maria Teresa; Heredia Carques, Cristina; Muñoz Hernandez, Isabel).
- Treatment Guidelines for Acute intrahospital Pain. (Santeularia Verges, Maria Teresa; Heredia Carques, Cristina; Genove Cortada, Maria Mercé; Muñoz Hernandez, Isabel).
- Characterizing the profile according to gender when patients reach our pain clinic. (Santeularia Verges, Maria Teresa; Melo Cruz, Martha Cristina; Ferrandiz Mach, Marta).
- Development of a new comorbidity index associated with chronic pain. (Santeularia Verges, Maria Teresa).
- New drugs in Neuropathic Pain. Focus on postherpetic neuralgia. (Genove Cortada, Maria Mercé; Melo Cruz, Martha Cristina; Muñoz Hernandez, Isabel; Roses Álvarez, Laia; Díaz Jover, Ruben; Heredia Carques, Cristina; Revuelta Rizo, Miren Eli; Ferrandiz Mach, Marta).
- Quality of care in pain clinics using the iso 9001 – 2015 methodology (international organization for standardization). The audit is carried out every year. (Ferrandiz Mach, Marta).
- Interventional treatments for hypopressive and trigeminal-autonomic headaches. (Melo Cruz, Martha Cristina; Revuelta Rizo, Miren Eli).
- Determine the extent of chronic pain according to the involvement of different brain areas, and if these alterations can improve with the relief of pain.
- Unify and make our databases compatible to create profiles and clusters of patients with chronic pain.
- Improve hospital prescription of postoperative pain analgesic guidelines to preserve patient safety.
- Determine whether the intensity of chronic neuropathic pain assessed by the patient is correlated with the patient's psychopathology, essentially anxiety, depression and catastrophising.
- Determine the profile of patients who would benefit from treatment with major systemic opioids regarding night rest and establish the recommended opioid.
- Establish the recommended opioid dose to start a treatment and how to remove it.

SCIENTIFIC CHALLENGES

- Establish the possible differences in brain area involvement between acute and chronic pain.
- Improve the efficacy and safety of neuromodulation techniques (both electrical and chemical)
- Enhance neuromodulation (electrical and chemical) at the hospital level to be a regional reference centre.

SCIENTIFIC PRODUCTION

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- Labandeyra H, Heredia C, Váldez LF, Prats A, Sala X. Clavipectoral fascia plane block in midshaft clavicle fractures: A cadaveric study. *JOURNAL OF CLINICAL ANESTHESIA*. 2024; 96:111469. DOI:10.1016/j.jclinane.2024.111469. PMID:38678917. IF:5,000 (Q1/1D). Document type: Article.
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Nursing Care

Group leader

Mas Dalmau, Gemma (FGS)

Researchers

Alonso Rodríguez, Lara (FGS)
Aloy Orozco, Àngels (FGS)
Arias Barroso, Pietat (FGS)
Armora Verdu, Miriam (FGS)
Balaguer Sancho, Judith (FGS)
Berga Congost, Gemma (FGS)
Buil Manzanares, Neus (FGS)
Calpe Damians, Neus (FGS)
Campillo Zaragoza, Beatriz (FGS)
Cebrià Morales, Maria Queralt (FGS)
Córdoba Sánchez, David (FGS)
de Andrés Muñoz, Sandra (FGS)
de Francisco Profumo, Seyla (FGS)
Díez García, Cecilia (FGS)
Fernández Sánchez, Susana Pasión (FGS)
Franquet Barnils, Esther (FGS)
García Barrachina, Marina (FGS)
Hernández Martínez-Esparza, Elvira (FGS)
Iserte Rodríguez, Judith (FGS)
Jiménez Valenzuela, Ana (FGS)
Marín Martínez, Ana Maria (FGS)
Márquez López, Adrián (FGS)
Mateos Davila, Almudena (FGS)
Navarro Colom, Marta (FGS)
Ortiz Escoda, Nuria (FGS)
Palomeque Artuñedo, Amaya (FGS)
Parrilla Rios, Ismael (FGS)
Pérez Dueñas, Javier (FGS)
Plans Marcobal, Mireia (FGS)
Pujol Serra, Maria Teresa (FGS)
Ramos Fernández, Adelaida (FGS)
Ricart Basagaña, Maria Teresa (FGS)
Rius Bonet, Ernest (FGS)
Roca Sarsanedas, Jaume (FGS)
Romero Pastor, Mónica (FGS)
Sastre Rus, Meritxell (FGS)
Sist Viaplana, Xenia (FGS)
Torralbas Ortega, Jordi (FGS)
Torres Quintana, Antonio (FGS)
Uрпи Fernández, Ana María (FGS)
Valverde Bernal, Jonatan (FGS)
Vicente Pérez, Sílvia (FGS)
Villalobos Abello, Alba (FGS)

Research technicians

Marín Carrión, Jessica (FGS)



DESCRIPTION

Nursing Care Research focuses on advancing healthcare practices through evidence-based research. We conduct studies to explore various aspects of patient care and health outcomes. By analysing data, we aim to improve nursing practices, enhance patient safety, and contribute to the overall quality of care in the healthcare system. Our work often involves implementing new interventions in clinical settings to benefit patients, their families, and the nursing profession.

MAIN LINES OF RESEARCH

- Quality of care improvement.
- Pain management
- Mental Health and well-being
- Nursing education and training
- Critical care research
- Health Technology
- Evidence-Based Care
- Patient safety

SCIENTIFIC CHALLENGES

- Strengthen implemented research lines and disseminate the results of ongoing projects.
- Explore the impact of nursing care on patients, strategies for improving care, and the application of these results in care models.
- Improve the development and understanding of qualitative research in the context of the health sciences and disseminate qualitative

methods and analyses of text and discourse as tools in health science research.

- Create the synergies necessary to consolidate the group's activities.

ACTIVE & AWARDED GRANTS

- Balaguer Sancho, Judith. Evaluación de un programa de Terapia Asistida con Animales, en personas con enfermedad mental, para la promoción de conductas de salud Mental Positiva. PR-527/2021. Fundació Infermeria i Societat. Duration: 2022-2024. 825,00 €
- Calpe Damians, Neus. Dispositius adhesius enfront dispositius elàstics per a la subjecció de la sonda urinària en el pacient crític. Estudi experimental aleatoritzat. SLT035/24/000015. Departament de Salut Generalitat Catalunya. Duration: 2024-2026. 61.500,00 €

Roldos-Gales A, Guri-López T, Rafart-Aguado S, Ramírez-Ramon A, Llauredó-Serra M. Effectiveness and safety of a simple catheter securement device aimed at preventing catheter-associated urinary tract infection in intensive care unit patients: A randomized controlled trial. *Nurs Crit Care*. 2024; 29(6):1788-1798. DOI:10.1111/nicc.13111. PMID:38955490. IF:3,000 (Q1/1D). Document type: Article.

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DOCTORAL THESES DEFENDED

- Torralbas Ortega, Jordi. Sexoafectividad y trastorno del espectro autista: una perspectiva multifocal descriptiva y compartida entre personas con autismo, sus familias y los profesionales de la salud y de la educación. 12/07/2024. Universitat de Lleida. Supervisors: Roca Llobet, Judith; Blanco Blanco, Joan. <http://hdl.handle.net/10803/692231>.

SCIENTIFIC PRODUCTION

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- Calpe-Damians N, Wennberg-Capellades L, Ventura-Rosado A, Gonzalez-Engroba R, Enríquez-Pérez N, Vicario-Martos C,

Cardiac Surgery

Group leader

Ginel Iglesias, Antonino (FGS)

Researchers

Casellas Casanovas, Sandra (FGS)

Irabien Ortiz, Angela (FGS)

Montiel Serrano, José (FGS)

Roselló Díez, Elena (FGS)

Taurón Ferrer, Manel (FGS)



MAIN LINES OF RESEARCH

- Off-pump coronary artery bypass grafting surgery.
- Mitral repair surgery.
- Aorta pathology: aortic root surgery, aortic arch surgery (hybrid techniques).
- Follow-up of sutureless aortic valve prosthesis: Perceval S.
- Follow-up of surgical checklist implementation.
- Risk scores.
- Cardiac protection: Del Nido cardioplegia.
- Mini-invasive techniques: mini-sternotomy, mini-thoracotomy, MIDCABG surgery.
- Total arterial graft revascularisation.
- New valvular transcatheter prosthesis: TAVI transaxillary approach (Portico), TAVI transapical approach (Accurate).
- Aortic valve repair.

SCIENTIFIC CHALLENGES

- Consolidation as a research group in different cardiac surgery-related fields, specific sutureless valve prosthesis, radial artery in myocardial revascularisation, Different TAVI approaches...
- Participation in the assessment and validation of new products employed in cardiac surgery: haemostatics, sutures...
- Collaboration with different national and international research teams involved in our lines of study: epicardic fat study

(Endocrinology), calcium channels in auricular myocytes (ICCV).

SCIENTIFIC PRODUCTION

- Aceituno C, Revuelta D, Jiménez V, Ginel A, Molina CE, Hove L. Impact of Overnight Storage of Human Atrial Myocytes on Intracellular Calcium Homeostasis and Electrophysiological Utility. *Biomolecules*. 2024; 14(11):1415. DOI:10.3390/biom14111415. PMID:39595591. IF:4,800 (Q1/3D). Document type: Article.
- Ballester C, Alonso J, Taurón M, Rotllán N, Rodríguez C, Martínez J. Lysyl oxidase expression in smooth muscle cells determines the level of intima calcification in hypercholesterolemia-induced atherosclerosis. *Clinica E Investigacion En Arteriosclerosis*. 2024; 36(5). DOI:10.1016/j.arteri.2024.01.003. PMID:38402026. Document type: Article.
- Ballester C, Cañes L, Alonso J, Puertas L, Vázquez P, Taurón M, Roselló E, Marín F, Rodríguez C, Martínez J. Upregulation of NOR-1 in calcified human vascular tissues: impact on osteogenic differentiation and calcification. *Translational Research*. 2024; 264 DOI:10.1016/j.trsl.2023.09.004. PMID:37690706. IF:6,400 (Q1/1D). Document type: Article.
- Moliner C, Calvo M, Solé E, Martín AB, Fluvià P, Sánchez J, Vime J, Vallverdu MF, Ferrer MT, Tobias PE, Mancera JCD, Vilardell P, Vila R, Díez C, Bayés A, Aizpurua DA, Ferreira I, Pérez SM. Revascularization and outcomes in ischaemic left ventricular dysfunction after heart failure admission: The RevascHeart study. *EUROPEAN JOURNAL OF HEART FAILURE*. 2024; DOI:10.1002/ejhf.3463. PMID:39359034. IF:16,900 (Q1/1D). Document type: Article.
- Puig N, Rives J, Gil P, Miñambres I, Ginel A, Tauron M, Bonaterra A, Hernandez M, Pérez A, Sánchez L, Benitez S. Apolipoprotein J protects cardiomyocytes from lipid-mediated inflammation and cytotoxicity induced by the epicardial adipose tissue of diabetic patients. *BIOMEDICINE & PHARMACOTHERAPY*. 2024; 175:116779. DOI:10.1016/j.biopha.2024.116779. PMID:38776681. IF:6,900 (Q1/1D). Document type: Article.
- Soriano M, Sionis A, Rodríguez E, Bonet A, Soto L, Tauron M, Belmar D, Arakama S, Mayol J, Rodríguez L. Amiodarone triggered Kounis syndrome complicated by refractory cardiac arrest rescued with VA-ECMO. *Clinical Case Reports*. 2024; 12(5):e8712. DOI:10.1002/ccr3.8712. PMID:38765612. Document type: Article.

HIV and AIDS

Group leader

Domingo Pedrol, Pere (FGS)

Researchers

Quesada Lopez, Tania Paloma (IR)

Research technicians

Herrera Bachs, Sílvia (IR)

Millán Revilla, Lucía (IR)

Muñoz Rodríguez, Jessica (IR)



MAIN LINES OF RESEARCH

- Medical care projects.
- Study of pathogenic mechanisms altering body fat distribution.
- Study of metabolic disorders associated with antiretroviral treatment.
- Body composition changes.
- New antiretroviral drugs.
- Cardiovascular risk associated with antiretroviral treatment.
- Comorbid conditions associated with HIV-1 infection.
- Pharmacogenetics (toxicokinetics).
- Bacterial meningitis.
- Coronavirus infectious disease-19 and complications thereof.

SCIENTIFIC PRODUCTION

- Berenguer J, Jarrín I, Bellón JM, Díez C, Jiménez MA, López JC, Pinto A, Moreno S, Montes ML, Iribarren JA, Orviz E, Portilla J, Villarroya F, Domingo P, Resino S, CoRIS C. Mitochondrial Haplogroups and Weight Gain After Initiating ART in Patients With HIV. JOURNAL OF INFECTIOUS DISEASES. 2024; 230(2). DOI:10.1093/infdis/jiae168. PMID:38557859. IF:5,000 (Q1/2D). Document type: Article.
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- BIOCHEMICAL PHARMACOLOGY. 2024; 220:116014. DOI:10.1016/j.bcp.2023.116014. PMID:38158020. IF:5,300 (Q1/1D). Document type: Article.
- de Lazzari E, Negredo EB, Domingo P, Tiraboschi JM, Ribera E, Abdulghani N, Alba V, Fernández S, Viladés C, Peraire J, Gatell JM, Blanco JL, Vidal F, Rull A, Martínez E, DOLAM GRP. Multiomics plasma effects of switching from triple antiretroviral regimens to dolutegravir plus lamivudine. JOURNAL OF ANTIMICROBIAL CHEMOTHERAPY. 2024; 79(5). DOI:10.1093/jac/dkae083. PMID:38546974. IF:3,900 (Q1/3D). Document type: Article.
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General and Digestive Surgery

Group leader

Moral Duarte, Antonio (FGS)

Researchers

Ballester Vázquez, Eulàlia (FGS)

Bollo Rodríguez, Jesús Manuel (FGS)

Cambeiro Cabré, Lorena (FGS)

Clos Enríquez, Montserrat (FGS)

D'Ambrosio, Gian Mario (FGS)

Espina Pérez, Beatriz (FGS)

Fernández Ananín, Sonia (FGS)

García Romera, Angel (FGS)

González Lopez, José Antonio (FGS)

Guarner Piquet, Pol (FGS)

Júlia Verdaguer, Elisabet (FGS)

Larrañaga Blanc, Itziar (FGS)

Martín Arnau, Ana Belén (FGS)

Martínez Sánchez, Maria Del Carmen (FGS)

Medrano Caviedes, Rodrigo Gustavo (FGS)

Molera Espelt, Antoni (FGS)

Molina Santos, Víctor (FGS)

Norte Garcia, Andrea (FGS)

Pasalodos Barceló, Ana (FGS)

Pastor Gonzalez, Raquel (FGS)

Pérez Garcia, José Ignacio (FGS)

Pino Pérez, Oriol (FGS)

Rofin Serra, Sílvia (FGS)

Sala Vilaplana, Laia (FGS)

Sánchez Cabús, Santiago (FGS)

Sánchez López, Anna (FGS)

Santanach Soler, Clara (FGS)

Solans Solerdelcoll, Mireia (FGS)

Targarona Soler, Eduardo María (FGS)

Research technicians

Toledo Mendoza, Clara Catalina (IR)



DESCRIPTION

Our group addresses different aspects of vascular biology, thrombosis and myocardial pathophysiology aimed at studying the mechanisms underlying the onset, progression and complications of cardiovascular diseases (CVDs) with high morbidity and mortality, such as atherosclerosis, aortic aneurysms, cardiac hypertrophy and myocardial infarction. Our ultimate goal is to develop tools for early diagnosis and new therapeutic strategies for these diseases.

MAIN LINES OF RESEARCH

- General Surgery Unit
 - Surgery of the thyroid gland. Research on thyroid cancer.
 - Advanced surgery on parathyroid glands (primary and secondary hyperparathyroidism).
 - Adrenal surgery.
 - Surgery for sarcomas: participation in the development and results of surgery for retroperitoneal tumours.
 - Surgery for sarcomas: participation in GIST research through the Spanish Sarcoma Research Group (GEIS) and other entities.
 - Surgery of advanced gynecological tumors.
 - Advanced surgery of the abdominal wall. New techniques for ventral hernia repair.
 - Dr. José A González and Dra. Mireia Solans: lines of research in surgical

techniques and new technologies for the application of local chemotherapy in the retroperitoneum.

- Dr. José A González Dra. Mireia Solans: Research and dissemination of incisional hernia prevention techniques.
- Hepatobiliopancreatic Surgery Unit
 - Pancreatic cancer: Dr. Sánchez Cabús, Dr. García Romera
 - Liver cancer: Dr. Víctor Molina, Dr. Sánchez Cabús
 - Biliary pathology: Dr. Belén Martín, Dr. Sánchez Cabús
- Gastrointestinal Surgery Unit
 - Surgical reinterventions after failed hiatal hernia repair or antireflux surgery (IP: Sónia Fernández Ananín)
 - Obesity in the elderly population (IP: Sónia Fernández Ananín)
 - Consequences of sarcopenia after bariatric surgery (IP: Noelia Pérez)
 - Analysis of cruroplasty closure in paraesophageal hernias (IP: Sónia Fernández Ananín)
 - Laparoscopic approach to gastric non-epithelial tumors: do size and location matter? (IP: Sónia Fernández Ananín)
 - Analysis of the diagnostic process and the treatment of early gastric cancer precocious gástric (IP: Noelia Pérez)
 - Implementation of an App for the control of anterior resection syndrome (IP: Carmen Martínez).
 - Quality of life and functional alterations in rectal cancer (IP: Carmen Martínez).
 - Diagnosis and treatment of anal dysplasia in the immunodeprimal patient (IP: Carmen Martínez).
- Emergency and Critical Care Surgery Unit
 - Safe practices for polytraumatised patients.
 - Safe practices for polytraumatised patients in a Multicentric collaborative database through the Catalan Trauma Database - TraumaCAT.
 - Clinical safety for fragile and elderly

patients in emergency surgery and care through an accredited Geriatric Emergency department by the American College of Physicians at our Hospital.

- Emergency surgical Treatment for aorta-enteric fistulae in collaboration with the Vascular Surgery Department.
- Ambulatory treatment of non-complicated Diverticulitis.
- Open Abdomen and Damage Control Surgery in non-traumatic Patients.
- Good practices in emergency surgery for prevention of burst abdomen and acquired abdominal hernia after surgery.
- Good practices in emergency surgery for small bowel occlusion syndrome.

SCIENTIFIC CHALLENGES

- Breast Surgery
 - Technological innovations in surgery.
 - Possible role of genetic studies in diagnosis and follow-up.
 - Endocrine and Cervical Surgery
 - Technical innovations in surgery.
- Hepatobiliopancreatic Surgery Unit
 - To contribute to the improvement of survival and quality of life of patients affected by pathologies related to the liver, pancreas and bile duct. Promote research and development in diseases in the area, focusing on their surgical treatment, primarily through minimally invasive approaches.
 - Histotripsy in patients with pancreatic cancer (GANNON trial)
- Gastrointestinal Surgery Unit
 - Programa de cirugía experimental y colaborar con un grupo de trabajo del IR.

ACTIVE & AWARDED GRANTS

- Escola Gil, Juan Carlos & Moral Duarte, Antonio. Adiposidad, inflamación y la desregulación del colesterol en el carcinoma de tiroides. Evaluación de estrategias

terapéuticas basadas en la reducción del colesterol y la activación de LXR. PI19/00136. Instituto de Salud Carlos III (ISCIII). Duration: 2020-2024. 111.320,00 €

DOCTORAL THESES DEFENDED

- Martín Arnau, Ana Belén. Utilidad y ventajas de los catéteres centrales de inserción periférica respecto al catéter venoso central no tunelizado. 20/03/2024. Universitat Autònoma de Barcelona. Supervisors: González López, José Antonio; Pomar Solchaga, Virginia; Moral Duarte, Antonio. <https://hdl.handle.net/10803/691671>.

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Hackert T, Lips DJ, D'Hondt M, Coolsen M, Ferrari G, Tingstedt B, Serrablo A, Gaujoux S, Ramera M, Khatkov I, Ausania F, Souche R, Festen S, Berrevoet F, Keck T, Sutcliffe RP, Pando E, de Wilde RF, Aussilhou B, Krohn PS, Edwin B, Sandström P, Gilg S, Seppänen H, Vilhav C, Abu M, Besselink MG, European M. Minimally invasive robot-assisted and laparoscopic distal pancreatectomy in a pan-European registry a retrospective cohort study. *International Journal of Surgery*. 2024; 110(6). DOI:10.1097/JS9.0000000000001315. PMID:38498397. IF:12,500 (Q1/1D). Document type: Article.

Digital Health

Group leader

Gomis Pastor, Mar (FGS)

Researchers

Berdun Peñato, Jesús (FGS)

Borràs Santos, Alicia (FGS)

Fernández-Montells Rama, Beatriz (FGS)

García Moya, Alba (FGS)

Ontiveros Rodríguez, Gerardo Diego (FGS)

Real Gatus, Jordi (FGS)



DESCRIPTION

The constant evolution of the healthcare sector demonstrates that integrating digital technologies in the medical field is essential for improving both the efficiency and quality of healthcare services. Digital technologies—including the use of mobile devices, applications, and telemedicine—have radically transformed the way healthcare professionals interact with patients and manage their clinical practice.

The Digital Health research group aims to establish a robust scientific foundation for the implementation of these technologies and to foster a collaborative innovation ecosystem. By doing so, the impact of innovations on daily clinical practice will be maximised, thereby contributing significantly to the digital transformation of the healthcare system.

MAIN LINES OF RESEARCH

- Validacions de tecnologies digitals en l'àmbit de la salut
- Redefinició de processos i rutes assistencials, en clau digital
- Anàlisi d'eines digitals implementades en la pràctica clínica ("Real World Evidence")
- Salut Digital basada en el Valor
- Interseccionalitat en la salut digital
- Ideació, disseny i/o creació de tecnologies mitjançant mètodes qualitius).

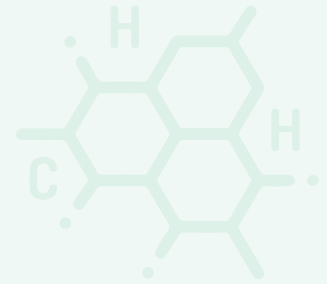
SCIENTIFIC PRODUCTION

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5.2 Transversal programmes

5.2.1 ADVANCED THERAPIES

Immunotherapy, gene and cell therapy, target drug delivery with nanoparticles, synthetic lethality or drug repurposing are examples of research on advanced therapies that can be applied to several oncological, cardiovascular, or neurological diseases among others. Research shows this programme will lead to new treatments and therapeutic strategies to improve patients' lives.



5.2.2 GENOMIC MEDICINE AND RARE DISEASES

Technological and bioinformatics advances in the field of genomics led to a strong impact not only on the diagnosis of rare genetic diseases but also on determining risk factors, prognosis, and treatment of a growing number of highly prevalent pathologies. In this program we face the era of personalized precision medicine and address the challenge of diagnosing genetic disorders sooner and better.



5.2.3 BIOMARKERS, PROGNOSTIC, AND DIAGNOSTIC

Research on disease biomarkers is essential in high-complexity medical care as it allows for adjusting the diagnosis and predicting the prognosis and drug response. Biomarkers are also essential for the proper follow-up of clinical trials with new drugs. The research done in this program will help define what is the best journey for our patients, from diagnosis and clinical follow-up to treatment.



5.2.4 BETTER HEALTH CARE

We are an Institute with healthcare professionals linked to all medical specialties and nursing. The translational research of this program aims to respond to the clinical challenges of patients in the form of healthcare improvements. This is evident in improvements in diagnosis, medical, or surgical procedures or care circuits always focused on the benefit of the patients.



5.2.5 WOMEN'S HEALTH AND GENDER

Biomedical research has demonstrated the importance of sex, gender, and intersectionality in health, well-being and disease progression to the extent that it is now difficult to justify healthcare and research without a gender perspective. In this program we support the integration of a sex/gender perspective into research content to fill existing knowledge gaps, increase the reproducibility of studies by making them bias-free, contribute to minimizing delays in diagnosis and unexpected adverse effects, and increase equity and social justice. In addition, we promote research on women's health and women's diseases to contribute to the impact of our research on personalized medicine.



5.2.6 COVID-19 RESEARCH

The outbreak of the SARS-CoV-2 virus and the consequent pandemic has driven much research projects on COVID-19, including the effects on pregnancy and childbirth, the genetic or individual factors that determine its severity, the physiological mechanisms of infection and immune response, or clinical trials with new drugs. This program adds knowledge for a common goal: understanding to fight the disease.





Core Facilities and Scientific Services

06



Javier Crespo

Coordinator

Functions

- **Facilitate access to high-level techniques and technologies that may not be available to individual groups:**
 - The scientific and technical platforms enable researchers to access advanced technologies and specialised techniques that would otherwise be out of reach for individual research groups due to resource or infrastructure limitations. This fosters collaboration and innovation, as teams can leverage state-of-the-art tools and equipment to improve the quality and scope of their studies.
- **Provide services at a reduced cost and optimise human and material resources:**
 - By centralising services and enabling shared use of equipment, operational costs are reduced, making high-end technologies more accessible to all research groups. Additionally, human and material resources are optimised, avoiding duplication and ensuring efficient use of available assets.
- **Support researchers with optimised workflows and methods:**
 - Researchers are supported in designing more efficient workflows tailored to their specific needs. This includes improving experimental processes, implementing standardised protocols, and advising on the selection of the most suitable research methods, resulting in higher productivity and more accurate outcomes.
- **Offer technical and methodological guidance and support:**
 - Researchers receive technical assistance in implementing their projects, as well as methodological guidance to ensure that the procedures and techniques used are the most appropriate for their research goals. This support can include specialised training, troubleshooting advice, and assistance with interpreting results.



6.1 Genomics and Transcriptomics

Sandra Camino

Coordinator

Staff

Sónia Alcolea

The Genomics and Transcriptomics platform is a core facility dedicated to providing guidance, offering specialised services in genomics and transcriptomics techniques, and making specific equipment available to researchers and the broader scientific community.

The unit offers a quality service guaranteed to meet the ISO 9001:2015 certification standards.

Services

- Quantitation and quality control of nucleic acid samples.
- Sample processing for Single-Cell Analysis (Gene expression, Immune profiling, ATAC-seq, Multiome).
- Sample processing for Microarrays studies (Gene expression and miRNA profiles, Cytogenetics).
- Real-time PCR projects (Gene expression, miRNA detection, allelic discrimination, CNV, absolute quantification).
- Digital PCR (rare or low target detection, mosaicism detection, CNV, allelic discrimination, Absolute quantification).
- Next-Generation Sequencing: Construction of RNA, DNA, and sc-RNA libraries (sequencing is carried out by an external provider).
- Sanger Sequencing: DNA sequencing, mutation

and polymorphism analysis, DNA methylation studies, microorganism identification...

- Fragment analysis: STR profiles (cell line authentication,...), copy number (MLPA), LOH, genotyping studies, microsatellite instability, DNA repeat expansion studies, etc.
- Omics Data analysis.

Equipment

- Chromium X (10x Genomics). Single-Cell Analysis.
- QuantStudio Absolute Q dPCR System (Thermo Fisher Sci.).
- SeqStudio 8 Flex Genetic Analyzer (Thermo Fisher Sci.).
- GeneChip 3000 7G System (Affymetrix/Thermo Fisher Sci.).
- 7900HT SDS Real-Time PCR (Thermo Fisher Sci.).
- Bioanalyzer 2100 (Agilent Technologies).
- Nanodrop 2000 (Thermo Fisher Sci.).



6.2 Flow Citometry

Marta Soler

Coordinator

Staff

Lia Ros

The Flow Cytometry Platform provides users with state-of-the-art equipment for cytometry analysis and cell population sorting.

Services

- Characterisation of cell populations through multicolour immunophenotyping.
- Cell and bacterial viability and proliferation assays.
- Cell cycle and apoptosis assays.
- Gene expression analysis (fluorescent protein detection) and quantification of transfection efficiency.
- Magnetic column-based sample enrichment for the detection of rare populations.
- Isolation of up to 4 cell subpopulations simultaneously (in a biosafety cabinet).
- Automated magnetic separation of cell populations (in a biosafety cabinet).
- Independent and automated dissociation of up to 8 samples simultaneously.
- Tissue and cell dissociation for single-cell or molecular applications.
- 37 °C temperature function for enzymatic digestion incubations.
- Gene expression and immune profiling analysis; simultaneous detection of DNA, RNA, and protein in a single plate.
- Capacity to include up to 50 analytes on the same plate.

Equipment

- MACSQuant 16 (Miltenyi Biotec). Specialized in nanocytometry.
- MACSQuant10 and MACSQuant VYB.
- FACS ARIA in biosafety cabin. Up to 4 population separations.
- AutoMACS Pro (Miltenyi Biotec) in biosafety cabinet. Automated magnetic separation.
- GentleMACS Octo with coolers and heaters.
- MAGPIX (Luminex). Analysis of up to 50 analytes per plaque.
- AutoMACS Pro (Miltenyi Biotec) inside class II biosafety cabinet. Automated magnetic separation.



6.3 Confocal Microscopy

Esther Peña

Coordinator

Staff

Josep Oriol Juan, Mónica Pescador

The Confocal Microscopy Platform is a support platform for biomedical research. Its main function is to provide both the appropriate tools and guidance in experimental design for users.

Services

- Guidance on the preparation and/or approach of studies.
- Training in the use of the instruments.
- Image analysis.
- Conventional fluorescence or brightfield microscopy of live cells, fixed cells, and tissues. Conventional (Nikon, Olympus) and inverted (Zeiss) microscopes.
- Image acquisition with filters for brightfield, phase contrast, polarised light, and differential interference contrast.
- Image acquisition with fluorescent markers: DAPI, GFP, YFP, Texas Red, and far-red.
- Time-lapse fluorescence microscopy with an incubation chamber featuring temperature, CO₂, and humidity control for cell culture experiments (Zeiss).
- High-resolution fluorescence microscopy using confocal microscopy across the visible spectrum (excitation λ : 405, 458, 488, 514, 561, and 633 nm) with a motorised stage. Time-lapse imaging with an incubation chamber with temperature, CO₂, and humidity control for cell culture experiments.

- Histopathological studies of various tissues stained by conventional immunohistochemistry (frozen or paraffin-embedded), including image quantification.
- Organoid studies using fluorescence microscopy.
 - Sample preparation of both live and fixed cells, as well as cryopreserved or paraffin-embedded tissues.
- Supply of reagents and consumables.

Equipment

- Leica SP5 AOBS multispectral confocal microscope with high-resolution tandem scanning and high-speed digitization system, FLIM/FCS modules, and a time-lapse incubation system.
- Leica SP2 AOBS multispectral confocal microscope with high-resolution tandem scanning and high-speed digitization system, and a time-lapse incubation system.
- Zeiss AXIOVERT 200M inverted fluorescence microscope with temperature and CO₂ control, featuring an incubation chamber that enables live-cell imaging in both fluorescence and brightfield. Equipped with fluorescence filters: DAPI, FITC, Rhodamine. Also equipped with polarisers for capturing polarised light images with all objectives.

- Olympus BX51 fluorescence microscope with dual head. Equipped with fluorescence filters: DAPI, FITC, TRITC, TXRED.
- Nikon Eclipse 80i microscope. Equipped with fluorescence filters: FITC, G-1B (546), FITC-CY3.
- Stand for macro photography with a suitable lighting setup.
- LEICA MZ 9.5 stereomicroscope.
- Leica M205 FA fluorescence stereomicroscope. Equipped with fluorescence filters: DAPI, GFP3, DsRED. Includes motorized zoom, filter changer, and fluorescence intensity manager.



6.4 Biobank

Alba Torija

Coordinator

Staff

Adriana Ibáñez, Miquel Lledós,

Noemí Veiret

The IR Sant Pau Biobank is a research support platform dedicated to the management, processing and storage of human biological samples and associated data. Its core mission is to provide well-characterised human biological samples to the scientific community, ensuring full compliance with current ethical, legal, and quality standards, and offering comprehensive scientific, technical, and ethical-legal guidance throughout the entire process. The quality service provided by the Biobank is certified by the ISO 9001:2015 quality system.

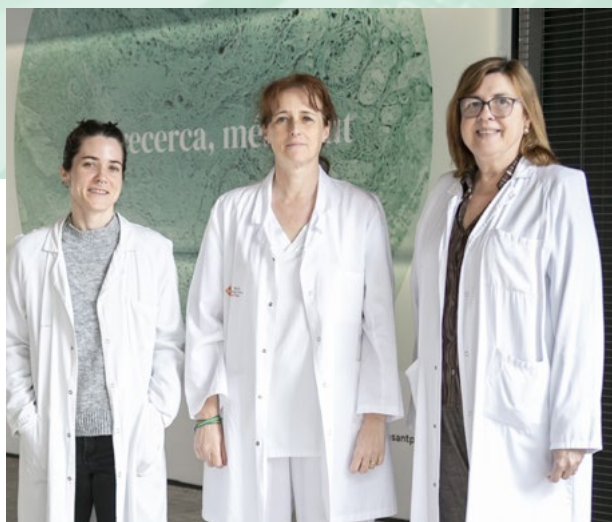
Services

- Management of requests for biological material for research purposes.
- Ethical-legal advice on the creation of new biological sample collections.
- Scientific and technical support for the processing and handling of biological samples.
- Processing of human biological samples, including peripheral blood, bone marrow, urine, frozen tissue, and others.
- Cryopreservation of viable cells
- Conservation and custody of human biological samples, ensuring safe and secure long-term storage.
- Management of sample collections and associated data, ensuring proper organisation and traceability.

- Nucleic acid extraction from different types of biological samples.
- Development of customised protocols for the processing of biological samples upon request.

Equipment

- 15 Ultralow freezers -80°C NUAIRE NU-9668E with double-emergency system alarm. 24h monitoring.
- Liquid nitrogen tank CHART MVE 1211 with automatic filling.
- Vapour nitrogen tank CBS V-5000 EHAB with automatic filling.
- Automated Nucleic Acid Extractor QIACUBE.
- Biological Safety Cabinet IIA NUAIRE.



6.5 Immunohistochemistry

Esther Peña

Coordinator

Staff

Iris Rodríguez, M^a Angeles Velasco

The Immunohistochemistry Platform is a support service for biomedical research, providing processing of biological samples—both from human origin and animal models—for analysis using histological techniques. Services range from sample processing, sectioning, and staining to slide digitisation, histological analysis, and reporting of results.

Services

- Membrane detection techniques such as Western Blot, Southern Blot, and Northern Blot; quantitative immunofluorescence; and histological sectioning.
- Tissue preparation, including decalcification, processing for paraffin and O.C.T. embedding, sectioning of both paraffin/O.C.T. blocks and fresh tissue, and antigen retrieval.
- Automated immunostaining (single and double).
- Routine and special staining protocols: hematoxylin-eosin, Giemsa, Oil Red, trichrome, PAS, Wright's stain, Alcian blue, Safranin, Sirius Red, etc.
- Tissue microarray (TMA) preparation.
- Fluorescent in situ hybridisation (FISH) on tissue samples.
- Slide digitisation under brightfield, fluorescence, and FISH conditions.
- Optimisation of primary antibodies for conventional immunohistochemistry and fluorescence staining.

- Histopathological and morphometric analysis of stained sections using histological and histochemical methods.
- Consulting for research projects, theses, and scientific studies.

Equipment

Tissue processors: SAKURA TISSUE TEK VIP 5 JR and KOS microwave processor.

- Embedding systems: SAKURA TISSUE TEK TEC5 with LEICA ARCADIA C cold plate, LEICA EG1150H and EG1150C (operator-assisted and self-service).
- Sectioning instruments: MICROM HM355S rotary microtome, LEICA JUNG RM2055 microtome, LEICA CM1950 and JUNG CM3050S cryostats, LEICA VT 1000S vibratome; flotation baths (SELECTA TERMOFIN, LEICA HI1210); MEMMERT BE 300 oven.
- Automated stainers: AGILENT Autostainer AS48 and SAKURA TISSUE TEK PRISMA.
- TMA system: GALILEO CK3500 semi-automatic array.
- Digital pathology: Panoramic Scan II and MIDI BF scanners; analysis workstation.
- Safety and ventilation: NUAIRE NU-S813-400E and LABORSYSTEM fume extraction cabinets.
- ODYSSEY M imaging system.



6.6 Proteomics

Maísa García

Coordinator

The Proteomic Unit will work as a link between IR's researchers and the specialised facilities in other institutions, such as the CRG Proteomic Unit.

Services

- Give support in the experimental design. (help in the development of experimental design in project applications; definition of comparison groups required according to the type of proteomic analysis to be performed; advice in protein isolation).
- Perform sample preparation in-house before LC-MS/MS analysis, tailored to the researcher's needs. (Tryptic digestion in solution, in-gel, from FFPE samples, depletion of albumin on demand, possibility to use specific kits for protein digestion).
- Perform analysis and interpretation of the data obtained by LC-MS/MS (MaxQuant, Perseus, Amica, Skyline).
- In silico analysis for result confirmation (Cytoscape, String, Reactome, Webgestalt, etc).

Equipment.

Thermo Scientific™ Orbitrap Eclipse™ Tribrid™ mass spectrometer.



6.7 Radioactivity Unit

Javier Crespo

Coordinator

The Radioactivity Unit provides groups with specialised research laboratories where they can work with radioactive isotopes in liquid form. These areas are fully equipped and adapted for handling radioactive material, with optimal measures in place for the safety and radioprotection of staff and the environment.

Services

- In vitro labelling of proteins, lipoproteins, and liposomes with radioactive isotopes:
 - Radioactive isotopes are incorporated into proteins, lipoproteins, and liposomes for tracking and analysis in biological studies. This facilitates the study of molecular dynamics and interactions in various experimental settings.
- Cellular proliferation and toxicity using radioactive labelling:
 - Radioactive labelling techniques are employed to assess cellular proliferation and the toxicity of various compounds. This enables the study of cell viability and the effects of toxic agents on cell cultures.
- Nucleic acid labelling with radioactive isotopes:
 - This technique involves incorporating radioactive isotopes into nucleic acids (DNA or RNA) for tracking in molecular biology experiments. It is helpful for studying gene expression and the localisation of nucleic acids in cells.
- Immunoassay techniques with radioactive labelling:
 - Specific antibodies labelled with radioactive isotopes are used to detect and quantify proteins or antigens in biological samples. This includes techniques such as radioimmunoassays (RIA) and radioactive immunofluorescence assays.
- Determination of enzymatic activities using radiolabeled substrates:
 - Enzymatic activity is measured by using radiolabeled substrates. This enables the study of the kinetic properties and mechanisms of enzymes involved in various biochemical processes.
- Analysis and separation of radiolabeled molecules:
 - Advanced techniques, such as chromatography and electrophoresis, are used to separate and analyse molecules that have been radiolabeled, enabling the study of molecular interactions and the dynamics of biological processes.
- Cellular cholesterol efflux with radioactive labelling:
 - Study of cholesterol transport and elimination by cells using radioactive labelling. This enables the analysis of how cells manage cholesterol and its relationship to metabolic and cardiovascular diseases.
- In vivo metabolism with radioactive labelling:

- Study of the metabolism of substances in living organisms using radioactive labelling. It helps understand how compounds are distributed, metabolised, and excreted by the body.

Equipment

- Portable radiation and environmental contamination detectors:
 - Specialised devices for detecting ionising radiation and environmental contamination are essential for ensuring safety when handling radioactive materials in the laboratory and during fieldwork.
- 2 chemical safety cabinets for gas extraction:
 - These cabinets provide a controlled environment for working with volatile and hazardous chemicals, efficiently extracting radioactive gases and protecting personnel and the environment.
- 1 vertical laminar air flow cabinet for cell cultures:
 - A sterile cabinet used for working with cell cultures, ensuring a contaminant-free environment and optimal conditions for cell growth in studies involving radioactive labelling.



6.8 Cellular Culture

Estefania Segalés

Coordinator

Staff

Margarita Domingo

Currently, in vitro cell techniques are a fundamental tool for research lines developed by a wide array of scientific groups. The IR Cell Culture Service provides a suitable infrastructure for establishing primary cultures and cell lines at various biosafety levels (BSL1 or BSL2), as well as genetically modified organisms (GMOs), and bacterial cultures in BSL1, all certified to ISO 9001:2015.

Services

- Sterilisation of solid and liquid material .
- Removal and management of waste .
- Periodic detection of Mycoplasma in samples .
- Periodic control of surface contamination .
- Periodic cleaning and decontamination procedures.
- Authorisation of personnel. Access control..
- Users' formation in biocontainment and use of biosafety cabinets.

Equipment

- **General structure and equipment**
 - Several experimental areas across different locations.
 - Total area of approximately 400 m².

- **BSL1 laboratory**
 - Dedicated to bacterial cultures.
 - Equipment: 2 laminar flow cabinets, ovens, spectrophotometer, centrifuge, shakers,...
- **BSL2 laboratories**
 - For eukaryotic cell cultures: Cell lines, primary cell cultures, GMOs.
 - Equipment: 22 biosafety cabinets, 27 CO₂ incubators. Microscopes, thermostatic baths, centrifuges, minicentrifuges, refrigerators, freezers.
 - Additional facilities included:
 - o One room with a cabinet for radioactive procedures.
 - o One room for handling cytostatic products.
 - o One room for nanoparticle procedures.

In this laboratory, we can find:

- General equipment includes biosafety cabinets, CO₂ incubators, and centrifuges in autoservice mode.
- Inverted and fluorescence microscopes with image capture Systems.
- Binocular microscopes with a camera.
- Automated cell counters.
- XCelligence MP for cellular impedance studies.
- Hypoxystations.



6.9 Animal Experimental Service (SEA)

Laura Casaní
Coordinator

Staff

Fanny Cevallos,
Angel Juncosa,
Eleonor Masiá,
Lorena Masiá

Sergi Florit
Senior Technician

The Animal Experimentation Service is the area dedicated to the care and maintenance of laboratory animals, the execution of experimental procedures involving them, and the processing of samples obtained from these animals. The AES holds ISO 9001:2015 certification, ensuring compliance with legal and ethical standards related to the use of animals for experimentation and other scientific purposes. It is officially registered as a breeding, supplying, and user centre for laboratory animals (B9900067 and REGA ES080190036528). It is also authorised to house and work with Genetically Modified Organisms (A/ES/08/21 and A/ES/08/I-14).

Services

- Care and maintenance of laboratory animals (rats, mice, rabbits, sheep, and pigs).
- Maintenance of genetically defined colonies (rats and mice) on request: breeding, weaning, and sexing.
- Daily health and welfare monitoring of housed animals.
- Management of animal health and hygiene, as well as sanitary conditions of facilities and equipment.
- Daily manual and automated recording and monitoring of environmental conditions in the facilities.
- Management of biological waste.
- Housing for rodents under conventional, SPF, and barrier conditions; conventional housing for rabbits, pigs, and sheep.
- Workrooms for rodents and rabbits, laboratories, and four fully equipped operating rooms for large animals.
- Specialised advice and support for researchers in designing, writing, and performing experimental procedures and techniques involving animals.
- Support and execution of imaging techniques using available equipment for laboratory animals (rodents, rabbits, pigs, and sheep): in vivo bioluminescence and fluorescence (IVIS/IVIS CT), ultrasound (transthoracic and transesophageal echocardiography – Philips Affiniti), ultra-high-frequency ultrasound (VevoF2), surgical X-ray C-arms (GE OEC Elite / Philips BV Endura), 3D cardiac mapping (Carto 3D).
- Organisation of practical training courses and events on surgical skills using animal models: microsurgery, implantable device surgery, endoscopic surgical techniques (Covidien), with live animals as well as anatomical specimens and models.

Equipment

- For small animals: bioluminescence and fluorescence (IVIS 200 / IVIS CT), ultra-high-frequency ultrasound (VevoF2), intravital microscope, surgical microscopes (Zeiss), flow measurement equipment and probes, ECG monitor, NIBP systems, mechanical ventilators, anesthesia systems with sevo/isoflurane (Somnoflo).
- For large animals: anesthesia systems with sevo/isoflurane, mechanical ventilators, multiparametric monitors (GE and Mindray), defibrillators, X-ray equipment (Philips BV and General Electric OEC Elite), transthoracic and transesophageal echocardiography equipment (Philips Affiniti), intravascular ultrasound (Siemens Acuson), real-time 3D imaging system (CartoXP), radiofrequency ablation systems, 12-lead ECG, four 4K laparoscopic surgery towers (Covidien).



6.10 General Laboratory Facilities

Maribel Baldellou
Coordinator

The purpose of this core facility is to provide and maintain the basic equipment requirements and fulfil the needs of adapted spaces for the internal use of researchers and their teams.

It comprises approximately 600 square meters and features 300 units of equipment available to all users upon request or reservation.

Services and equipment

- Planning and coordination of preventive maintenance, validations, and control of all the units in IR Sant Pau (common or exclusive to a group or core facility):
 - Gas and biosecurity cabinets.
 - Sterilisation units.
 - Security cabinets.
- Space hampers ion and maintenance for deep freezers and cryopreservation rooms (12), extraordinary hampers at 4°C or at -20°C (8).
- Maintenance and control of general laboratory equipment are available to all internal users:
 - Water treatment equipment: 21 units.
 - Security cabinets: 22 units.
 - Cleaning and sterilization: 11 units.
 - Gas and biosecurity cabinets: 28 units.
- Maintenance and control of basic laboratory instruments available to IR users, grouped as follows:
 - Centrifuges, from desktop to ultracentrifuges.
 - Precision scales.
 - PH-meters.
 - Stoves, thermic baths, thermic blocs.
 - Ultrasound bath.
 - Electrophoresis equipment.
 - Spectrophotometers.
 - Chromatographs.
 - Optic microscopes.
 - Other more specialized equipment.
- It also provides logistic support and problem-resolution advice to researchers and their teams.



6.11 Advanced Therapies Unit

Luciano Rodríguez
Qualified Person

Paola Jara
Manufacturing

Marta Mitjà
Quality Assurance

Laura Escribà
Agostina Robledo
Quality Control

The Advanced Therapies Unit (UTA) at IR Sant Pau is a specialized facility in the development, scale-up and manufacture of Advanced Therapy Medicinal Products (ATMPs) for clinical use.

ATMPs, regarded as highly innovative pharmaceuticals, are derived from genes, cells or tissues and constitute novel therapeutic modalities for the treatment of diseases and conditions that have no alternative treatment options, either due to their absence of development or due to their low incidence, rendering them uninteresting to large industry.

The UTA team possesses considerable expertise in the manufacture of ATMPs and has personnel and facilities that are compliant with Good Manufacturing Practices (GMP). These classified facilities, located at IR Sant Pau, represent a strategic resource for the Hospital Sant Pau campus by enabling the development and manufacture of personalized biological medicines within the hospital for the treatment of its patients.

The main objective of the UTA is the clinical and regulatory development of new drugs with therapeutic impact that can benefit society and the public health system

Functions

- Manufacture of Advanced Therapy Medicinal Products for clinical use in compliance with Good Manufacturing Practices (EudraLex Volume 4. Part IV).

- Escalation and validation of the manufacturing process of clinically relevant investigational products authorization application (from bed to bedside).
- Development and editing of module 3 of the CTD for new products with full regulatory preclinical regulatory approval.
- Contract manufacturing of Advanced Therapy Medicinal Products for authorized clinical trials.
- Production of viral vectors dedicated for Advanced Therapy Medicinal Products manufacturing.

Equipment

- 1x GMP compliant Facility (Grade D and C areas).
- 1x Restricted Access Barrier System (RABS).
- 1x Bio II/A laminar flow hood.
- 4x Airborne Particles Counter.
- 2x CliniMACS Prodigy.
- 2x Microbial Air Sampler.
- 2x Tube Sealer.
- 2x Tube welder.
- 1x Cell Counter.
- 1x MACSQuant Analyzer 10 flow cytometer.
- 1x Refrigerated Centrifuge.
- 1x Inverted Microscope.



Research Support and Management

07



7.1 Clinical Research Area

Rosa M. Antonijoan

Coordinator



7.1.1 Centre for Drug Research (CIM)

Research Staff

Jimena Coimbra, Pol Molina, Montserrat Puntès, Francesca Filippi, Caridad Pontes

Nursing Staff

Maite Garrido, David Martínez, Maribel Martínez, Marta Castillo, Isabel Sánchez, Mireia González

The Centre for Drug Research (CIM) began its activities in 1983, in collaboration with the Clinical Pharmacology Department of the HSCSP and the Pharmacology and Therapeutics Department of the Autonomous University of Barcelona (UAB).

Functions

The CIM conducts clinical trials with drugs and clinical research in two areas:

Research as a business unit

- Phase I clinical trials (of no therapeutic interest for participants) in special populations and healthy volunteers (bioequivalence, tolerability, pharmacokinetics and pharmacodynamics, first administration in humans).
- Collaboration with HSCSP researchers in conducting phase II, III, and IV clinical trials.
- Research in neuropsychopharmacology

Study Coordinator

Montserrat Ruiz, Ángela Fraga

Data Management

M^a Ángeles Funes, Ana Gomis, Esteve Mercader

Administrative Support

Pura Martínez

- Evaluation of the effects of psychotropic drugs and other substances active in the central nervous system on the sleep-wake cycle: Studies of effects during wakefulness (behavioral safety).
- Studies of effects during wakefulness (behavioral safety).
- Studies of effects on sleep quality and architecture.
- Facilities.
- To carry out these functions two different areas are distinguished:
- Care area (4 sections):
 - Admissions, with 24 beds (in four modules) that allow 100% continuous visual control and two beds for polysomnography studies.
 - Outpatient area, with four single rooms equipped for medical, physical, and neuropsychological and psychomotor performance testing.
 - Rest and services area: showers, toilets, kitchen, dining room, leisure room.
 - Restricted area for drug storage and the processing and storage of biological samples.

Data management and processing area:

- Five computerized offices to carry out non-experimental clinical trial activities.
- Monitors' area (1 room).
- Temporary documentation archive (1 room).



7.1.2 AGDAC

Enrique Peña García

Manager

Cintia Abril García

Coordinator

Staff

Elisenda Brunet, Sara Mora

Functions

- Manage and supervise all documentation associated with active clinical trials in the experimental phase and destruction of documentation for terminated clinical trials located in the external archive.
- Store the supplies until the end of the studies, when they are destroyed or recycled.
- Oversee and manage documentation of completed trials for the Centre for Drug Research (CIM).
- Maintain and update the clinical workstation database and manage clinical studies.
- Manage restricted access by clinical trial monitors to the clinical workstation.
- Supervise data processing and management.
- Coordinate researchers and monitors; draw up agendas for meetings and study monitoring.
- Provide logistical support to the cold area and the clinical materials store associated with clinical trials in the experimental phase.
- Ship biological samples to central laboratory services.



7.1.3 Clinical Research and Clinical Trials Unit (UICEC)

Alejandra Espinosa

Coordinator

Rosa M^a Antonijuan

Responsible

Staff

Yaira Mathison, Laura Serra,

Sara de Jesús, Jennifer Delgado,

Irina Parvanyan, M^a Victoria Peretti

Functions

The Central Clinical Research and Clinical Trials Unit (UICEC Sant Pau) provides comprehensive support to researchers in the development of independent research projects (not sponsored by the pharmaceutical industry) on the methodological, regulatory, administrative, economic, and practical aspects, subject to compliance with the ethical, good clinical practice and legislation.

UICEC Sant Pau is part of the Spanish Clinical Research Network (SCReN), a functional organization network to support the conduction of multi-center clinical trials and participates in the SCReN Platform (Spanish Clinical Research Network ISCIII).

Knowledge management

- One-stop information for independent research group projects.
- Comprehensive assessment and project coordination.
- Point of communication between researchers and technical units.
- Pharmacovigilance activities for trials including drugs or medical devices.
- Knowledge management:
 - Study of dimensionality and feasibility of projects.
 - Identification of each project's needs.

- Advice on the preparation of documentation: protocol, annexes, monitoring report, final report.
- Advice on the submission of documentation to Spanish Agency for Medicines and Medical Devices (AEMPS), Clinical Research Ethics Committee (CEIC), Autonomous Communities (CCAA) and other relevant authorities.
- Advice on project registration in public databases.
- Identification of spinoff projects.
- Advice on the presentation of research results.

Methodological and statistical support unit

- Advice on study design.
- Data entry.
- Data processing.
- Development of statistical reports.
- Electronic CRFs validation and management.
- Documentation and reports.

Documentation, archiving, monitoring, and follow-up unit

- Support in document creation: EudraCT form and annexes / application forms / evaluation forms follow form.

- Support in the processing of initial applications, clarifications and amendments: AEMPS, CEIC, other health authorities regarding clinical trials, and other post-authorization studies.
- Comprehensive monitoring of clinical trials and observational studies.
- Management of initial, follow-up and final reports.
- Development and file custody promoter (Master File), file preparation investigator.
- Other communications to CEIC, autonomous communities and competent authorities.

Unit of management and financial management

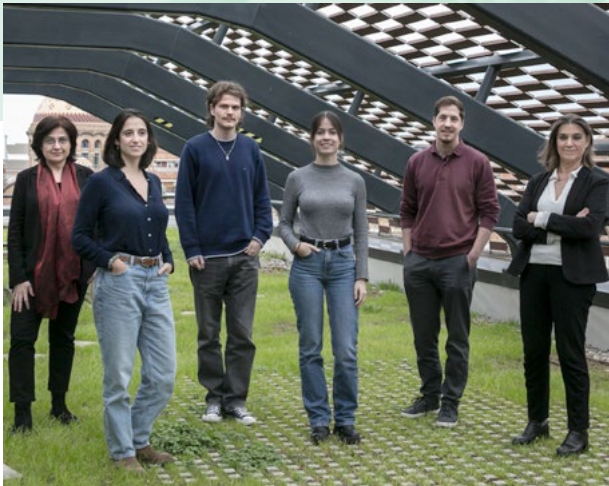
- Management of clinical trials contracts with participating centers.
- Management of collaboration agreements with laboratories / companies for funding.
- Management of clinical trial-related contracts (CRO's, E-CRDs, statistics, etc.). Management of clinical trial-related client and supplier invoices.
- Management of clinical trial insurance policies.
- Preparation of financial reports for the submission of studies to ethics committees.
- Management of payment of fees to the competent authorities.



7.2 Research and Innovation Management Area

Míriam Ors

Coordinator



7.2.1 Technology Transfer and Innovation Unit (UTI)

Míriam Ors

Coordinator

Staff

Jana Iscla, Natalia Ichaso, Alba Arroyes, Eric Armenteros (from April 2024), Pablo Valiente (from September 2024)

Functions

- It aims to create and foster an innovative ecosystem at IR Sant Pau, promoting the development and implementation of novel ideas. One of the key initiatives in this endeavour is the establishment of the INNPAU incubator.
- It works to identify opportunities, evaluates their potential, and enhances their value to ensure their effective transfer to market or implementation in the National Health System. The unit provides support in defining and managing IP and market strategy, taking into account essential factors such as regulatory compliance and stakeholder engagement.
- Offers support in creating spin-offs and fosters entrepreneurship.
- Supports searching for funding for technology development projects and encourages public-private collaboration.
- Promotes the visibility of the IR Sant Pau in the R&D&I national and international ecosystems.



7.2.2 National Projects Unit

Fabiola Fernández

Coordinator

Staff

Eva José, Eva de la Vara, Amanda García
Marta Lorente, Cristina Manjón,
Eva García, Olga Díez, Marta Lorente

Functions

Pre-Award

Research and dissemination of calls for proposals.

- Advise and support researchers for the submission of applications (review of IP, equipment and budget).
- Registration of applications submitted.
- Follow-up of applications submitted up to the resolutions.
- Reports indicators of the activity of the Unit.

Post-Award

- Activation of the aid granted from the moment it is granted until its completion in the management application.
- Economic follow-up (economic-scientific reports, validation spent and advice to the researcher).
- Negotiations with funding agencies: registration and cancellation of equipment, copies of contracts, starting canvassing, and requests for extensions.
- Response to requests from funding agencies.
- Internal and external audits of projects.
- Meetings for project creation and management.
- Interaction with different cross-cutting areas to implement the provisions of the calls for proposal.



7.2.3 International Projects Unit

Noemí Carranza

Coordinator

Staff

Anna Sillero, Regina Rubira,

Declan de la Fuente

Functions

The IPU was established in 2021 to manage competitive international projects, encompassing the creation, application, justification, and monitoring phases.

The objectives of the IPU are the following:

- Enhance the proactive search for opportunities that can evolve into funded proposals.
 - This objective entails contacting other European organisations, identifying potential companies and consortia, securing the necessary resources to implement the project, supporting groups in proposal preparation, facilitating communication, encouraging group participation, and leading some proposals.
- Support in proposal preparation for HE calls.
- Contribution to the internationalisation of the IR Sant Pau to increase its reputation and visibility.
 - This objective implies promoting international collaborations, creating and participating in European and global networks.
- Communication and dissemination of international projects.
 - Strengthen the role of the Communication Unit to increase the dissemination

and communication of results. Include internationalisation in the communication plan, web content, and promotion on social networks.

- Promote a cultural change accompanied by a specific training plan.
 - Train and provide guidance to the institute's research community to participate more actively in the competitive grant environment and European and international networks.
- Provide a good system for data collection and exploitation of indicators, scientific activity and project management.



7.2.4 International Relations Unit

Laia Cendrós

Coordinator

Functions

- Strengthening international strategic alliances.
- Promoting scientific excellence through exchange and collaboration at an international level.
- Enhancing IR Sant Pau's international presence, reputation, and visibility.
- Attracting scientific activity, talent and opportunities to IR Sant Pau.
- Defining and developing the international relations strategy and plan at IR Sant Pau
- Liaising and collaborating with key stakeholders who act as local levers towards internationalisation.
- Identifying and engaging with potential new collaborators and partners.
- Promoting IR Sant Pau's involvement in European and international initiatives, networks and alliances.
- Acting as the IR Sant Pau representative at the international level.
- Collaborating with the admin and support research areas to incorporate the international vision.
- Coordinate working groups, including researchers, administration, and research support staff, for international relations actions.
- Attending global events and meetings to strengthen international relations and to increase the international presence of IR Sant Pau.
- Liaising and receiving international delegations and institutional visits.



7.2.5 Knowledge Management Unit

Montse Campmany

Coordinator

Staff

Cati Pérez, Neus Milán (until March 2024),

Almu Borrego (from April 2024)

Functions

- Manage the R+D+i staff database, particularly the research groups at the IR Sant Pau, ensuring it is updated in the internal management system and on the website, and report any relevant changes to the organisations that require them.
- Keep the Current Research Information System (CRIS) up to date, particularly regarding scientific production, and provide it with visibility through the website and the Portal de la Recerca de Catalunya.
- Actively participate in the preparation of the annual scientific report, collecting and reviewing scientific information in collaboration with the research groups.
- Prepare files and calculate indicators on institutional scientific activity (personnel, funds raised, clinical trials, innovation, and transfer) and submit them to the official bodies that require them.
- Providing support in the periodic institutional accreditation and assessment processes.
- Advise research staff on any aspect related to authorship, institutional affiliation regulations, or the scientific journals in which they wish to publish.
- Provide tools and support to research staff in developing research data management plans, promoting open access to scientific publications, and depositing datasets resulting from research, in accordance with the FAIR principles.
- Promote open science and participate in policy writing and institutional strategy design.



7.2.6 Quality Assurance Unit (QA)

Marta Mitjà

Coordinator

Staff

Arantza Rodríguez Asiain,

María Guadalupe Franco

Functions

- Establish mechanisms to assess Quality and Best Scientific Practices, promoting continuous improvement and excellence goals.
- Assessment for designing and implementation of new Quality / R+D+i standards.
- Follow-up of the Integrated Quality Management System, including the establishment of improvement policies, under the following standards:
- Good Manufacturing Practices of Advanced Therapy Medicinal Products.
 - Good Clinical Practices.
 - ISO 9001, Quality Management System.
 - ISO 65001, R+D+i Management System.
- Perform internal audits (Advanced Therapy Medicinal Production Process / Clinical Trials / Scientific and Technical Services / Suppliers).
- Coordinate, oversee, and follow up on external Inspections (Public Administration, Clinical Trial Promoters, Certification Entities).
- Coordinate the Quality Committees.



7.2.7 Responsible Research and Innovation Unit (RRI)

Maria Rosa Ballester

Coordinator

Functions

- Incorporate RRI principles into the governance of the institution and foster RRI at all stages of any research project.
- Promote and encourage integrity in research through the creation of CIR (Integrity Committee for Research).
- Support to researchers on how to integrate the gender perspective in teams and all phases of the project content.
- Promote, design, or implement specific tools, activities, and methodologies (roundtable and co-creation sessions) to help researchers improve their research proposals that involve society.
- To develop the institution's impact strategy and promote the culture of impact by supporting researchers in the definition of impact narratives in their field of research and contributing to maximise the social impact of the health research carried out at the institution.



7.2.8 Scientific Secretariat

Mª José Bartolomé

Coordinator

Functions

The scientific secretariat is an essential support to the scientific director and a liaison with the scientific community.

This unit responds proactively to needs and advises researchers on internal procedures and policies.

In addition, it assists the Scientific Director in the management and organization of various activities, including:

- Coordination of internal scientific committee.
- Support to the Directors of the Strategic Scientific Areas.
- Providing overall administrative support to strategic institutional projects, such as the Joint Scientific Project, the integration project, etc.
- Participate in evaluations and accreditations.
- Planning and organization of meetings, conferences and initiatives to promote scientific exchange, foster excellence and enhance collaboration between the different research groups and any other actions that scientific direction implementing.



7.3 Administration Management Area

Jaume Bacardit

Managing Director



7.3.1 Finance Unit

Laura San Martín

Coordinator

Accounting, Treasury, and Invoicing

Alfred Sánchez, Ana Badenes, Anna Espallargas, Ester Andrés, Esther Monferrer, Héctor Sánchez, Meritxell Criado, Nuria García, Nuria Vanaclocha, Sandra Parera, Soraya González

Sales

Grace Careaga, Lorena Bustamante, Sara Díaz

Management Control

Laura Pino

Functions

- Carrying out financial and accounting management for the HSCiSP Research Institute: account management, treasury, and tax matters.
- Designing, administering, and controlling budget-related issues.
- Managing and controlling financial and material resources.
- Complying with obligations imposed by official bodies and ensuring compliance with current tax and financial regulations, along with the management policies of the HSCiSP Research Institute.
- Providing support to researchers and research groups in various areas: invoicing, purchasing, project monitoring and control, and general administration.



7.3.2 Legal Advice and Public Procurement Unit

Sílvia Ribas

Coordinator

Staff

Uxue Moreno, Maria Rull,

Berta Colomer

Functions

The Legal Unit of IR Sant Pau is a key area within the Institute, responsible for:

- Ensuring regulatory compliance.
- Providing preventive legal advice across all branches of law.
- Managing public procurement and data protection procedures.
- Offering comprehensive support to all areas of the Institute to ensure activities align with the applicable legal framework and best practices in governance and transparency.

To achieve this, the Legal Unit is structured into three main areas:

- Public Procurement is responsible for:
 - Managing and overseeing public procurement procedures.
 - Ensuring that all awards for construction works, supplies, and services comply with the principles of legality, transparency, and free competition.
 - Ensuring compliance with the provisions of the Public Sector Contracts Act.
- Private Contracting (including commercial law and public-private partnerships), responsible for:
 - Managing agreements and contracts with private entities and public-private partnerships.
 - Overseeing commercial relationships involving the Institute.
 - Protecting the intellectual and industrial property rights of both researchers and the Institute arising from research activities.
 - Providing legal advice on the creation of spin-offs and the protection of trademarks, patents, clinical scales, and other intellectual and industrial property rights.
- Regulatory Compliance and Data Protection
 - Criminal Compliance
 - o Coordinating the functions of the Criminal Compliance Committee to ensure the Institute adheres to applicable laws, regulations, and ethical standards.
 - o Implementing and overseeing internal policies and procedures to prevent illegal, fraudulent, or unethical activities.

- Promoting a culture of integrity and accountability among staff regarding the regulatory framework.
- Data Protection
 - o Managing data protection in accordance with regulations, ensuring proper handling of personal information (e.g., in sample transfer agreements or impact assessments).
 - o Ensuring compliance with specific regulations on biomedical research and data protection.
 - o Supervising the functions of the Data Protection Officer and addressing inquiries and audits related to privacy and information security.



7.3.3 Human Resources Unit

Ruth Acosta

Coordinator

Staff

Gisèle Domenech, Mireia Ventura, Sandra Mansilla (from March 2024), Laura Vera (from February 2024), Mónica Velasco, Lorena Marín (from November 2024), Inés Pérez

Functions

- **Recruitment Area:** This area is responsible for managing the Institution's recruitment processes in order to attract people with the most suitable profiles for existing vacancies.
- **Personnel Administration Area:** This area is responsible for maintaining a positive working environment for employees, ensuring compliance with current labour legislation.
- **Training Area:** This area is responsible for managing the training and development of the staff employed by the institution:
- **Teaching area:** This area is responsible for managing the legal and financial aspects of the teaching activities organised by the medical staff, including congresses, courses, workshops, and other events.
- **Health & Safety and Biosecurity Area:** This area is responsible for the management of the Institute's preventive activities; it is in charge of risk assessment and the implementation of measures to guarantee the safety, health and well-being of staff, as well as protection against biological risks, complying with legal requirements regarding biological risks and genetically modified organisms.
- **Labour Relations Area:** This area is responsible for mediating relations between employees and the Institution.



7.3.4 Executive Secretariat

Eva Sanfeliu

Coordinator

Staff

Carina Massuto

Functions

- Provide support to the management team and the Institute's administrative and research staff.
- Maintain internal and external interactions with governing bodies, Institute staff, other national and international institutions, and public or private organisations within the research and healthcare ecosystem (including those in Catalonia, Spain, and internationally).
- Centralise travel management for in-house and associated IR staff, as well as for external experts when needed.
- Offer technical secretarial support specialised in transfers and/or accommodation.
- Provide advice to ensure compliance with the legal framework and requirements associated with national and international competitive funding.
- Ensure compliance with internal regulations.
- Coordinate with users and travel agencies linked to the Central Results Centre of the Generalitat de Catalunya to guarantee comprehensive relocation and accommodation services.
- Manage the procedures required for hosting national and international students (bachelor's, master's, doctoral, etc.).
- Provide information and documentation to researchers and educational institutions.
- Interact with university platforms for the management and processing of training offers and internships.
- Handle all documentation necessary for student hosting.



7.3.5 Information Systems Unit

Adrià Aceituno

Coordinator

Staff

David Sanfeliu, David Sánchez

Functions

- Manage and maintain the organisation's technology infrastructure (servers, networks, hardware, and other key components).
- Ensure the availability, reliability, and performance of the IT infrastructure to support business operations.
- Provide end-user support by addressing technical issues and troubleshooting problems.
- Assist users with software applications and hardware.
- Maintain a helpdesk or support team to respond to inquiries and resolve issues promptly.
- Implement security measures to protect data from cyber threats.
- Manage access controls and ensure the implementation of proper data backups and recovery processes.
- Stay up to date on security trends and apply best practices to reduce risks.
- Align technology initiatives with the organisation's overall business strategy.
- Conduct strategic planning to identify technology needs.
- Evaluate and adopt new technologies to improve efficiency.
- Ensure that the IT infrastructure supports the organisation's long-term goals.



7.3.6 Services and Infrastructures Coordination Unit

Javier Crespo

Coordinator

Functions

- The Services and Infrastructures Coordination Unit is responsible for coordinating the activities of the various sub-units it comprises.
- These sub-units include:
 - Scientific and technical service platforms
 - General services
 - Infrastructure management
- This coordination ensures a more effective response to the needs of the scientists and staff at the centre's structural facilities.



7.3.6.1 Infrastructure Unit

Staff

Rosa García

Functions

- Organising, selecting, and allocating spaces among the various departments and research groups.
- Coordinating with the institutions within the Sant Pau Campus to organise shared spaces.
- Responsible for designing and creating new workspaces to enhance the working conditions of different teams.



7.3.6.2 General Service Unit

Staff

Pau Escartín, Cristina García, Laura Ríos,
Josep Moreno, Rosa García,
Matilde Parreño

Functions

- **Building Management:** Overall supervision of the facility to ensure proper functioning and upkeep of the building. This includes coordinating general services, addressing structural issues, and monitoring the correct use of spaces by staff and visitors.
- **Maintenance of the Building and equipment:** Responsible for ensuring that both the building infrastructure and the technical and operational equipment are in optimal condition. This includes regular inspections, repairs, and coordination with external providers when needed.
- **Security.** Management and supervision of building protection measures, access control, and general surveillance to ensure a safe environment for all staff, visitors, and institute property
- **Warehouse:** Management and organization of the storage area for materials, equipment, and supplies. This includes receiving, recording, distributing, and tracking inventory needed for the institute's daily operations.
- **Booking of Meeting rooms:** Management of availability and allocation of rooms for meetings, internal events, or institutional visits. This includes scheduling, coordinating technical requirements, and ensuring proper use of the spaces.
- **Overseeing cleaning services and treatment waste.** Coordination and supervision of cleaning services to maintain hygiene and order throughout the building. Also includes the management of proper treatment and disposal of waste, particularly that generated by scientific activities
- **Transfers:** Organization and management of the movement of materials, equipment, or personnel, both within the building and to external locations. This includes logistical coordination and monitoring to ensure transfers are carried out safely and efficiently.



7.3.7 Communication Unit

Laura Díaz-Roig

Communications Director

Staff

Media Relations and content creator

Karla Islas (until August 2024),

Miguel Ramudo (from October 2024)

Fundraising

Paola Grommes

Public Engagement

Jorge Clusa (from April 2024)

Internal Communications

David Torrente (from May 2024)

Functions

- Increase the reputation and visibility of the Institute, and strengthen and create new relationships with key stakeholders.
- Define and develop the corporate image, manage media relations, foster citizen participation, promote scientific education, coordinate internal communication, and support fundraising efforts.
- Communicate and disseminate the Institute's innovative and pioneering research at both national and international levels.
- Engage with citizens and various stakeholders through activities and projects to promote public commitment and raise awareness of biomedical research.
- Organise and distribute all internal communications within the Institute, including the production of newsletters and other materials.
- Act as an accredited Unit of Scientific Culture and Innovation (UCC+i) by the Spanish Foundation for Science and Technology (FECYT).
- Be a member of the Scientific Culture and Innovation Units Network, which includes the main science and innovation dissemination agents in Spain.



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