ANNUAL SCIENTIFIC REPORT 2019

IDIBAPS

FUNDACIÓ CLÍNIC BARCELONA



IDIBAPS

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Institució CERCA
Centres de Recerca de Catalunya

HR EXCELLENCE IN RESEARCH


ANNUAL
SCIENTIFIC
REPORT
2019


IDIBAPS


FUNDACIÓ
CLÍNIC
BARCELONA

ANNUAL SCIENTIFIC REPORT 2019

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ANNUAL SCIENTIFIC REPORT 2019

FOREWORD

© Saül Pascual Diaz

Director's foreword

When I write these introductory words to the 2019 IDIBAPS/FCRB Scientific report, I cannot overlook the perplexing situation we are currently facing with the COVID19 pandemic and its deep impact in all our personal and institutional lifes. It is still early to have a thorough perspective of its influence and consequences but we have already experienced the extraordinary value we have at IDIBAPS to confront these difficult times. I would like to highlight the immediate reaction of our researchers launching more than 200 multidisciplinary and collaborative projects addressing major questions in this new disease, the relevance of the close relationship between IDIBAPS, Medical School and Hospital to efficiently coordinate the action at multiple levels, and the extraordinary generosity of our citizens supporting our research with donations and other initiatives. This extremely stressing situation has revealed the strong commitment of our professionals, the robust integration of our institutions, and the understanding by the general population of the importance of research as essential values to overcome the challenges of the pandemic.

Turning to the presentation of the 2019 activities I would like to emphasize the progressive implementation of our **new strategic plan** which was presented to the IDIBAPS community in March 2019. Different working commissions were created to discuss the actions for each of the strategic objectives defining the main difficulties and proposing new alternatives to succeed. The analysis of the current situation of biomedical research and the social and scientific challenges that we all face have led us to define a roadmap for addressing the complex situation in which we work. Major effort will be dedicated to consolidate and improve excellence in translational research, attracting and retaining talent, particularly with the crucial task of generational turnover and the need to promote the clinician scientist career. We need to reinforce innovation and technology translation to attain the highest impact in clinical practice and optimize the resources to achieve the desired objectives. We have been setting the pillars for the institutional fusion of IDIBAPS and Fundació Clínic per a la Recerca Biomèdica (FCRB) (SUMA project), which should facilitate research in the Clínic Barcelona Campus. In this sense, this 2019 Scientific Report presents the consolidated scientific and economical achievements of both accredited (IDIBAPS) and associated (FCRB) researchers providing a comprehensive view of the strong research activities in our Campus.

This year was a time for the renewal of **Institutional accreditations**. We received the visits of Instituto de Salud Carlos III, Asociación Española contra el Cáncer and CERCA, to audit our last five years of performance, improvement, commitment and our plans for the coming years. The Direction and Administration of IDIBAPS, with the contribution of many researchers, made an extra effort to show the good work done and the three audits were passed with high grades.

The major strength of IDIBAPS continues to be the intense and excellent **scientific production** of its researchers, who in 2019 have maintained the high level reached in previous years. Of over 1,200 original articles published, more than 400 (34%) were in first-decile journals and 180 (14%) in top journals (impact factor over 10). Our researchers also published 326 reviews and editorial articles, which underscores the high level of international leadership of our researchers. One hallmark of the research at IDIBAPS is its excellence in multiple disciplines and covering a spectrum of perspectives from immediate clinical applications to more basic studies improving the understanding of the diseases. It is not possible to summarize the remarkable amount of contributions, but some examples worth mentioning include the seminal contributions in the use of innovative technologies such as the use of graphene to detect cerebral activity, the vascularization of mini-kidneys from stem cells or the use of gold nanoparticles to treat liver fibrosis. They have also provided important novel information on the treatment of diseases such as autoimmune encephalitis, breast and liver cancer, chronic lymphocytic leukemia and multiple sclerosis. From a more basic perspective, our scientists have described mechanisms of insuline resistance in obese people, the molecular bases for genetic predisposition to leukemia, mutations in previous unexplored regions of the genome or the discovery of a genome region involved in hereditary pulmonary hypertension. I should also mention the 45 international clinical guidelines in which our researchers have participated, setting the standards for diagnostic procedures and therapeutic management of a variety of diseases–clear proof of the institutional spirit and commitment to translate research into clinical practice. In this sense, 4 new spin-off companies were created to accelerate the transfer of knowledge to society and 7 patents were approved.

IDIBAPS researchers have raised a significant amount of **national and international funds**, with more than 200 new projects from competitive and private sources that guarantee the continuation of all these outstanding projects. Indeed, IDIBAPS appears to be one of the national institutions with a better success rate in the ISCIII and H2020 programs.

One key point in our strategic plan is the development of the **Clinician Scientist career**. In this sense, a special 2019 achievement was the launching of the BITRECS (COFUND-MS-CA-EU) program to promote the clinician scientist track among young talented researchers. Seven fellows were selected after an international competitive call and started the program by the middle of the year. It is worth mentioning the support received by La Caixa Foundation for this program as well as for the programs for Immunotherapy Treatments and Comprehensive support to patients with advanced diseases.

Incorporation of young and dynamic talented researchers is crucial for the **scientific renovation** at IDIBAPS. In 2019, we welcomed two new junior group leaders, Joaquim Radua as head of the group "Imaging of mood- and anxiety-related disorders" and Itziar Salaverria as head of the group "Molecular genetics of pediatric lymphomas". We all must be also proud for the recognition of the long term contributions of our senior researchers as the 2019 Clinical Biomedical Research award of the Lilly Foundation to Dr. Josep Dalmau and the inclusion of 11 of our researchers among the 1% worldwide most cited investigators in Biomedicine according to Clarivate Analytics.

Promoting education of the young scientific community is also a crucial element in our strategic plan. In 2019, 99 students defended their theses. We have organized 39 institutional seminars and a special mention goes to our Stepping-Stone training program, which seeks to provide young researchers at IDIBAPS with the non-scientific tools and skills that are key to the development of their careers.

Limited institutional funding continues to be an important limitation to fully unfold the initiatives required by our Strategic Plan. One of the most affected objectives is the renovation of our technological infrastructure. Nevertheless, IDIBAPS core facilities are making a tremendous effort to help our scientists reach their objectives. The activity of our five core facilities has increased significantly, providing services to more than 850 scientists.

Science needs to reach and permeate our **society**. We have developed new initiatives to reinforce our commitment. In 2019, we organized 64 activities that reached almost 2,500 people of all ages, from 4 years old in the Science Summer Camps and programs for young students who want to follow a scientific career, to the most elderly attending the talks at the Urgell Civic Center. It is noteworthy that some of these activities received competitive funding from Barcelona City Council.

We also finished the construction of the **new website**, which is improving the visibility of our researchers and institution. This new website is linked to the also new website of Hospital Clínic de Barcelona and the Portal Clínic, to reinforce collaboration between the two institutions. The new website received the Avedis Donabedian quality award to the best website of a health or social institution.

Seeing the creative landscape of IDIBAPS/FCRB contributions in this 2019 flashback it is not difficult to understand the response of our researchers to the challenges of the 2020 COVID19 era. It is not only to overcome the disease, it is also to fulfill the need of continuing all the projects and multidisciplinary research lines of our Institution with renewed intensity and commitment. At IDIBAPS/FCRB we are convinced that multidisciplinary research focus on clinical needs and performed in a collaborative atmosphere is the path to overcome the challenges that disease brings to our society.

Elías Campo
Director

About us

The Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS) is a biomedical research institute of excellence. It combines clinical and basic research in order to accelerate the translation of the knowledge to the benefit of the patients. IDIBAPS is a CERCA (Research Centers of Catalonia) center and was first accredited as Instituto de Investigación Sanitaria (Instituto de Salud Carlos III) in 2009.

Founded in 1996, it is a public consortium formed by the Generalitat de Catalunya, Hospital Clínic de Barcelona, School of Medicine and Health Sciences of the University of Barcelona and, as an associated partner, the CSIC's Barcelona Biomedical Research Institute..

The **IDIBAPS** research community is composed of more than 1,800 people, grouped into 109 groups organized across 5 different areas of knowledge.

AREA 1
Biological aggression and response mechanisms

AREA 2
Respiratory, cardiovascular and renal pathobiology and bioengineering

AREA 3
Liver, digestive system and metabolism

AREA 4
Clinical and experimental neuroscience

AREA 5
Oncology and haematology

Additionally, 3 transversal groups perform research in Primary Care, Nursing, Pharmacology and Clinical Trials.

The Fundació Clínic per a la Recerca Biomèdica (FCRB) is a private, non-profit foundation set up in 1989 by the Hospital Clínic Barcelona and the University of Barcelona. Its main mission is to provide administrative support to researchers at Hospital Clínic Barcelona in the management, development and justification of their scientific activity.

It also works to attract resources for research and, through the Aula Clínic and Eixample Clínic platforms, to promote and disseminate continuous training in the health sciences.

FCRB is member of the Red de Entidades Gestoras de Investigación Clínica Hospitalaria y Biosanitaria (REGIC).

Scientific breakthroughs are never the result of chance. They are the fruit of long-term commitments that involve not only researchers, but also society as a whole.

IDIBAPS - FCRB has made such a commitment, to encourage translational research, innovation and technological progress in the field of biomedicine, through different programmes addressing diseases with a high prevalence, morbidity and mortality in our society.

The data presented in this Annual Scientific Report details the ever-growing scientific achievements made by IDIBAPS -FCRB investigators and their capacity for attracting public and private funding. This enormous potential for capturing resources and their translation into applied results for clinical practice constitute the best guarantee for securing the future of the Institute and its impact on society and industry.

Organisation chart

IDIBAPS requires a solid administrative infrastructure to support the state of the art research developed by its researchers.

IDIBAPS works together with the Fundació Clínic per a la Recerca Biomèdica (FCRB) to ensure efficiency and quality in the services offered to its research staff, in particular, in the areas of research project management and administration.

Elías Campo, MD PhD
Director of IDIBAPS and of FCRB

Gemma Pedrola
Secretary
direccio@idibaps.org
T. +34 93 312 94 11
CEK, mezzanine floor

Marga Nadal, PhD
Director of Strategy

Arantxa Fernández
Secretary
arantxa.fernandez@idibaps.org
T.+34 93 227 18 30
CEK, mezzanine floor

Daniel Arbós
Head of the Communication Office

Gemma Llaverias
Head of the Scientific Coordination Office

Gemma Pascual
Head of the Institutional Actions Office

Sandra Piquer
Head of IDIBAPS laboratories

Aina Rodríguez
Head of IDIBAPS core facilities and Biobank coordinator

Elisenda Vendrell
Head of the KTT Office

Rosa Vilavella
General Manager

Laura Lopera
Secretary
llopera@clinic.cat
T. +34 93 227 18 42
CEK, mezzanine floor

Juan Abolafia
Head of the Pre-Award Office for International Grants

Sergio Camacho
Head of economic planning and Management control

Núria Castro
Head of Public hiring

Ernest Costa
Head of the TIC Office

Marta Fernández
Head of the Human Resources Office

Judit Martínez
Head of the Post-award Grants Office

Guillem Masdeu
Head of the Legal Office

Sònia Meléndez
Head of the Accounting and Finance Office

Luís Mochón
Head of the Purchasing Deparment

Sandra Pérez
Head of the Pre-Award Office for National Grants

Juan Suero
Head of the Purchasing and General Services Office

Núria Vilamajó
Head of Patronage

Governance and structure

Governance is exercised through the following boards and committees:

IDIBAPS BOARD OF GOVERNORS

Conformed by representatives of the different institutions of the consortium, supervises IDIBAPS actions, budget and results. Its mission is to take scientific decisions in consultation with the Scientific Advisory Board, and to evaluate the implementation of the strategic plan.

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VICE-CHAIRMAN
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General Manager, Hospital Clínic de Barcelona

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Research Vice-Dean, Universitat de Barcelona

Lluís Calvo
Institutional Coordinator, Consejo Superior de Investigaciones Científicas (CSIC) in Catalonia

Antoni Trilla
Dean of the School of Medicine and Health Sciences

Elías Campo
Director, IDIBAPS and FCRB

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Medical Director, Hospital Clínic de Barcelona

Roser Cortés
Director, Instituto de Investigaciones Biomédicas de Barcelona (IIBB-CSIC)

SECRETARY
Lluís Rovira
Director, CERCA

THE SCIENTIFIC ADVISORY BOARD

External leading scientists chosen by the Board of Governors, compose this board to advise IDIBAPS on the different scientific issues affecting its activities. These leading scientists have in-depth knowledge of the Spanish, European and/or American R+D+I systems as they hold positions in prestigious research institutions.

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Hospital La Princesa, Madrid

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Centro de Investigación del Cáncer (CIC), Salamanca

Antonio Vidal-Puig
Cambridge Phenomics Center, UK

THE STEERING COMMITTEE

Which is responsible for the supervision of the progress achieved by the five IDIBAPS research areas, the recruitment of new scientists within the framework of different research programmes, and the evaluation of IDIBAPS training programmes.

CHAIRMAN
Elías Campo
Director

MEMBERS
Neus Agell
Vice-Dean of School of Medicine and Health Sciences
Universitat de Barcelona

Cristina Fillat
Group Leader
Gene therapy and cancer

Joan Carles García-Pagán
Group Leader
Hepatic hemodynamics and portal hypertension.
Research Deputy Director. Hospital Clínic de Barcelona

Josep Maria Llovet
Group Leader
Translational research in hepatic oncology

Anna Planas
Coordinator of the IDIBAPS Research Area 4

Rosa Vilavella
General Manager

SECRETARY
Marga Nadal
Strategy Director

THE INTERNAL ADVISORY COMMITTEE

IDIBAPS researchers representing all research areas advise the IDIBAPS director to implement the strategic decisions taken by the Board of Governors.

CHAIRMAN
Elías Campo
Director

STEERING COMMITTEE REPRESENTATIVES
Josep Maria Llovet
Group Leader
Translational research in hepatic oncology

Joan Carles García-Pagán
Group Leader.
Hepatic hemodynamics and portal hypertension
Research Deputy Director. Hospital Clínic de Barcelona

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Physicians' Representatives
Hospital Clínic de Barcelona

Guadalupe Mengod
Deputy Director
Instituto de Investigaciones Biomédicas de Barcelona (IIBB-CSIC)

AREA REPRESENTATIVES
AREA 1
Josep Maria Miró, Coordinator
Maria Cinta Cid, Representative

AREA 2
Ramón Farré, Coordinator
Joan Albert Barberà, Representative

AREA 3
Jordi Bruix, Coordinator
Francesc Balaguer, Representative

AREA 4
Anna Planas, Coordinator
Josep Dalmau, Representative

AREA 5
Dolors Colomer, Coordinator
Aleix Prat, Representative

TRAINING COORDINATOR
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Vice-Dean of School of Medicine and Health Sciences
Universitat de Barcelona

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Works Committee President

Antoni Trilla
Dean of the School of Medicine
Universitat de Barcelona

Fàtima Crispi
Researcher
Fetal and perinatal medicine

Roser Cortés
Director
Instituto de Investigaciones Biomédicas de Barcelona (IIBB-CSIC)

Anna Novials
Group Leader
Pathogenesis and prevention of diabetes

Carmen Peralta
Group Leader
Liver transplantation and graft viability

Azucena Salas
Researcher
Inflammatory bowel disease (IBD)

Antoni Sisó
CAPSBE, Primary Care
Research Coordinator

SECRETARY
Marga Nadal
Strategy Director

The Medicines Clinical Research Ethics Committee (Comitè d'Ètica d'Investigació amb Medicaments - CEIm) of the HCB
ceic@clinic.cat

The Animal Experimentation Ethics Committee (Comitè d'Ètica d'Experimentació Animal - CEEA) of the UB
ceea@ccit.ub.edu

Biosafety Committee (CBS)
bioseguretat@idibaps.org

Mentoring Committee
coordinacio.cientifica@idibaps.org

Training Committee
stepping.stone@idibaps.org

Clinicians and Research Committee

Ombuds Committee
ombudscommittee@idibaps.org

Works council
comite.empresa@idibaps.org
cefcrb@clinic.cat

FCRB BOARD OF GOVERNORS

Board of trustees

PRESIDENT
Joan Elías
Dean
Universitat de Barcelona

VICE-PRESIDENT
Josep M. Campistol
General manager
Hospital Clínic de Barcelona

SECRETARY
Antoni Castells
Medical director
Hospital Clínic de Barcelona

Board members

Antoni Trilla
Dean of the School of Medicine
Universitat de Barcelona

Elías Campo
Director
IDIBAPS

Carles Ponsa
Board of governors

PRESIDENT
Josep M. Campistol
General manager
Hospital Clínic de Barcelona

Research areas, teams and groups

AREA 1.
BIOLOGICAL AGRESSION AND RESPONSE MECHANISMS

1.1. Ocular inflammation clinical and experimental studies
1.2. Systemic autoimmune diseases
1.3. Systemic vasculitis
1.4. Molecular and cellular bases of inflammation. Structural and biological mass spectrometry
1.5. Immunogenetics and immunotherapy in autoinflammatory and immune responses
1.6. Immune receptors of the innate and adaptive system
1.7. AIDS and HIV infection
1.8. Endocarditis. Cardiovascular infections. Experimental model
1.9. Emergencies: processes and pathologies
1.10. Infections in solid-organ transplant recipients
1.11. Inflammatory joint diseases (IJDs)
1.12. Nosocomial infection

AREA 2.
RESPIRATORY, CARDIOVASCULAR AND RENAL PATHOBIOLOGY AND BIOENGINEERING

2.1. Inflammation and repair in respiratory diseases
2.2. Genetics and urological tumours
2.3. Physiopathological mechanisms of respiratory illnesses
2.4. Translational computing in cardiology
2.5. Translational research in pulmonary vascular diseases cell proliferation and apoptotic mechanisms in pulmonary arterial hypertension
2.6. Familial cardiompathies and sudden death syndrome
2.7. Nephro-urological diseases and kidney transplantation
2.8. Vascular cell biology
2.9. Cardiovascular risk nutrition and aging
2.10. Respiratory biophysics and bioengineering
2.11. Arrhythmias and physical activity
2.12. Atrial fibrillation biopathology and therapy
2.13. Breathing disturbances in sleep
2.14. Clinical and experimental respiratory immunoallergy
2.15. Translational research in post-transplant neoplasia
2.16. Atherosclerosis, coronary disease and heart failure
2.17. Cardiac imaging
2.18. Applied research in infectious respiratory diseases and critically ill patients

AREA 3.
LIVER, DIGESTIVE SYSTEM AND METABOLISM

3.1. Hepatic oncology (BCLC)
3.2. Gastrointestinal and pancreatic oncology
3.3. Genetic predisposition to gastrointestinal cancer
3.4. Neuronal control of metabolism (NeuCoMe)
3.5. Inflammation and liver disease
3.6. Angiogenesis in liver disease
3.7. Mitochondrial regulation of cell death and steatohepatitis
3.8. Gene therapy and cancer
3.9. Liver transplantation and graft viability
3.10. Viral toxic and metabolic hepatopathies
3.11. Regulation of liver microcirculation in cirrhosis and hepatic vascular diseases
3.12. Chronic liver diseases molecular mechanisms and clinical consequences
3.13. Liver vascular biology
3.14. Fetal and perinatal medicine
3.15. Metabolic bone disease
3.16. Endocrine disorders. Crosstalk between molecular, metabolic and therapeutic determinants
3.17. Translational research group in new therapeutic and diagnostic strategies in liver diseases
3.18. Translational research in hepatic oncology
3.19. Gynecological endocrinology and human reproduction
3.20. Hepatocellular signaling and cancer
3.21. Pathogenesis and prevention of diabetes
3.22. Inflammatory bowel disease
3.23. Cholestasis
3.24. Protective strategies against hepatic ischemia reperfusion injury
3.25. Inherited metabolic diseases
3.26. Liver cell plasticity and tissue repair
3.27. Pathogenesis and treatment of autoimmunity
3.28. Translational research in diabetes lipids and obesity

AREA 4.
CLINICAL AND EXPERIMENTAL NEUROSCIENCE

- **4.1.** Pathophysiology and treatment of neurodegenerative disorders
- **4.2.** Systems neuropharmacology
- **4.3.** Schizophrenia
- **4.4.** Child and adolescent psychiatry and psychology
- **4.5.** Brain ischemia clinical and experimental studies
- **4.6.** Theoretical neurobiology of cortical circuits
- **4.7.** Pathogenesis of autoimmune neuronal disorders
- **4.8.** Cortical circuit dynamics
- **4.9.** Neurophysiology
- **4.10.** Muscular research and mitochondrial function
- **4.11.** Clinical addictions
- **4.12.** Clinical Neurophysiology
- **4.13.** Neuropsychology
- **4.14.** Advanced imaging in neuroimmunological diseases (ImaginEM)
- **4.15.** Parkinson disease and other neurodegenerative movement disorders clinical and experimental research
- **4.16.** Molecular neuropharmacology
- **4.17.** Systems neuroscience
- **4.18.** Alzheimer's disease and other cognitive disorders
- **4.19.** Mechanisms of neurotoxicity and neurodegeneration
- **4.20.** Cellular neurobiology
- **4.21.** Multimodal neuroimaging in high risk and early psychosis
- **4.22.** Neurobiology
- **4.23.** Bipolar and depressive disorders
- **4.24.** Pathogenesis and new treatments in multiple sclerosis

AREA 5.
ONCOLOGY AND HAEMATOLOGY

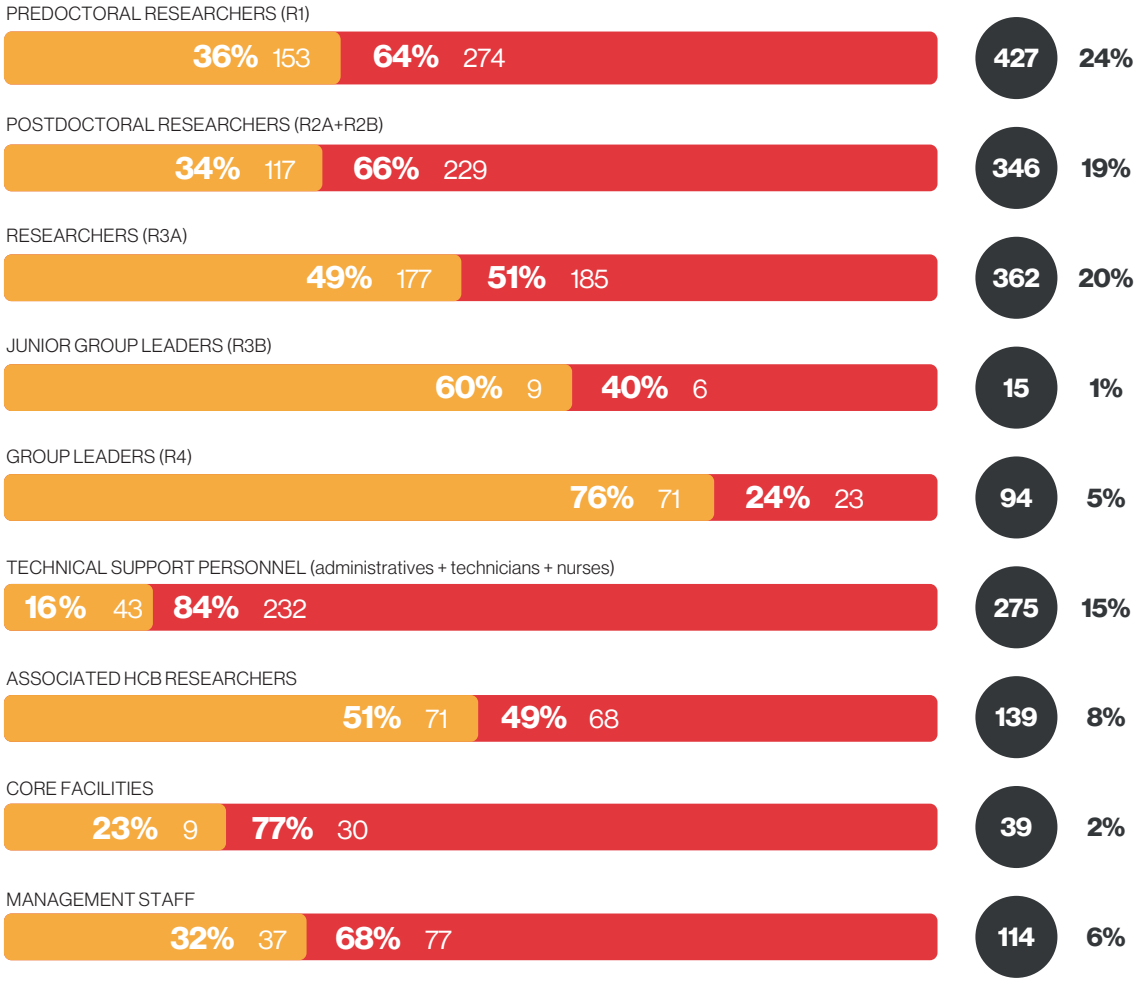
- **5.1.** Signal transduction and cell cycle
- **5.2.** Functional characterization of oncogenic mechanisms in lymphomagenesis
- **5.3.** Cell proliferation and signaling
- **5.4.** Myeloma and other monoclonal gammopathies
- **5.5.** Molecular pathology of lymphoid neoplasms
- **5.6.** Myeloid neoplasms
- **5.7.** Experimental therapies in lymphoid neoplasms
- **5.8.** Molecular pathology of inflammatory conditions and solid tumours
- **5.9.** Endocytosis and intracellular trafficking of proteins and colesterol
- **5.10.** Hemotherapy-hemostasis
- **5.11.** Mechanisms of progression in monoclonal gammopathies
- **5.12.** Molecular and translational oncology
- **5.13.** Lymphoid neoplasms
- **5.14.** Biomedical epigenomics
- **5.15.** Genetics
- **5.16.** Molecular biology of reproduction and development
- **5.17.** Microenvironment in lymphoma pathogenesis and therapy
- **5.18.** Lipid trafficking and disease
- **5.19.** Diagnosis and therapy in oncology
- **5.20.** Transcriptional regulation of gene expression
- **5.21.** Translational genomics and targeted therapies in solid tumours
- **5.22.** Melanoma imaging, genetics and immunology
- **5.23.** Hematopoietic progenitor cell transplantation

TRANSVERSAL RESEARCH GROUPS

- **T.1.** Clinical pharmacology
- **T.2.** Primary healthcare transversal research group
- **T.3.** Research in nursing

Staff


687
38%
Men
TOTAL
1,811
Women
1,124
62%


PREDOCTORAL RESEARCHERS (R1)
36% 153
64% 274
427
24%
POSTDOCTORAL RESEARCHERS (R2A+R2B)
34% 117
66% 229
346
19%
RESEARCHERS (R3A)
49% 177
51% 185
362
20%
JUNIOR GROUP LEADERS (R3B)
60% 9
40% 6
15
1%
GROUP LEADERS (R4)
76% 71
24% 23
94
5%
TECHNICAL SUPPORT PERSONNEL (administratives + technicians + nurses)
16% 43
84% 232
275
15%
ASSOCIATED HCB RESEARCHERS
51% 71
49% 68
139
8%
CORE FACILITIES
23% 9
77% 30
39
2%
MANAGEMENT STAFF
32% 37
68% 77
114
6%

Recruitment and retention of talent programs

INSTITUCIÓ CATALANA DE RECERCA I ESTUDIS AVANÇATS (ICREA)

ICREA, the Catalan Institute for Research and Advanced Studies, is a foundation supported by the Catalan Government through the Catalan Ministry of Economy and Knowledge that aims to recruit top scientists for the Catalan R&D system. Currently IDIBAPS has seven ICREA Research Professors:

Josep Dalmau
Pathogenesis of autoimmune neuronal disorders

Josep M. Llovet
Translational research in hepatic oncology

José Ignacio Martín-Subero
Biomedical epigenomics

Albert Pol
Lipid trafficking and disease

Antonio Postigo
Transcriptional regulation of gene expression

María Victoria Sánchez-Vives
Systems neuroscience

Bart Bijnens
Translational computing in cardiology

IDIBAPS 80/20 PROGRAMME

With the final mission to strengthen translational clinical research IDIBAPS launched this program in 2013. The 80/20 researchers are consolidated clinical investigators from Hospital Clinic and IDIBAPS with no reductions in the care load due to management positions within the Hospital organization and strategic research projects to develop. The beneficiaries of this program release 30 hours devoted to weekly care activities (80% of a full-time dedication) to dedicate to research. It consists in a 3-year position extendable for additional 2 years prior positive evaluation.

Maria Cinta Cid
Systemic vasculitis

Josep M. Miró
Endocarditis. Cardiovascular infections. Experimental model

IDIBAPS 50/50 PROGRAMME

With the final mission to strengthen translational clinical research, IDIBAPS and Hospital Clinic of Barcelona started in 2012 this pioneering program designed to facilitate the combination of research and clinical activity. The 50/50 researchers are young medical staff specialists (MD) with a strong research career (PhD) built up, at least in part, in the most prestigious foreign research centers. These junior group leaders are called to be the future clinical research group leaders that this institution will need.

Felicia Alexandra Hanzu
Endocrine disorders: crosstalk between molecular and metabolic determinants

Ignacio Revuelta
Translational research in posttransplant neoplasia

Isabel Blanco
Translational research in pulmonary vascular diseases: cell proliferation and apoptotic mechanisms in pulmonary arterial hypertension

Gisela Sugranyes
Multimodal neuroimaging in high risk and early psychosis

Carlos Fernández de Larrea
Mechanisms of progression in monoclonal gammopathies

Eduard Guasch
Arrhythmias and physical activity

Sara Llufriu
Advanced imaging in neuroimmunological diseases (ImaginEM)

PHD4MD PROGRAMME

The health system requires an increasing number of physician-scientists with a deep understanding of research and medicine to ensure that discoveries in fundamental research can reach clinical practice. The objective of the PhD4MD programme is to provide medical doctors with advanced hands-on training on the latest fields of research and cutting-edge technologies. Ultimately, the medical professionals enrolled in the program will obtain their PhD title from one of the associated Universities.

Medical professionals who enroll in the PhD4MD programme will carry out a project in translational research jointly coordinated by a basic and a clinical research investigator, belonging to one of the four participating institutions: the CRG (Centre for Genomic Regulation), the IRB Barcelona, the IDIBAPS and the VHIR (Vall d'Hebron Research Institute).

The PhD4MD programme was launched for the first time in 2015. During this year, 6 awardees of the programme have been working at IDIBAPS.

Csaba Fehér

PROJECT

Systems vaccinology to guide effective and safe hiv therapeutic vaccines.

PRINCIPAL INVESTIGATORS

Felipe García / Mireia Arnedo (IDIBAPS) and Patrick Aloy (IRB Barcelona)

Irene López

PROJECT

Splicing factor mutations in hematological malignancies.

PRINCIPAL INVESTIGATORS

Dolors Colomer (IDIBAPS) and Juan Valcárcel (CRG)

Alexandra Pérez

PROJECT

Multiple system atrophy: synuclein regulation and biomarkers discovery.

PRINCIPAL INVESTIGATORS

M José Martí (IDIBAPS) and Gian Tartaglia (CRG)

Francisco Aya

PROJECT

Targeting of BRAF mutant mRNA alternative splicing in melanoma.

PRINCIPAL INVESTIGATORS

Ana Arance (IDIBAPS) and Juan Valcárcel (CRG)

Fernanda Inés Hernández

PROJECT

Cellular senescense in fibrosing interstitial lung diseases

PRINCIPAL INVESTIGATORS

Jacobo Sellarés (IDIBAPS) and Manuel Serrano (IRB)

Research and innovation outputs

Scientific publications

Publication output and indicators.

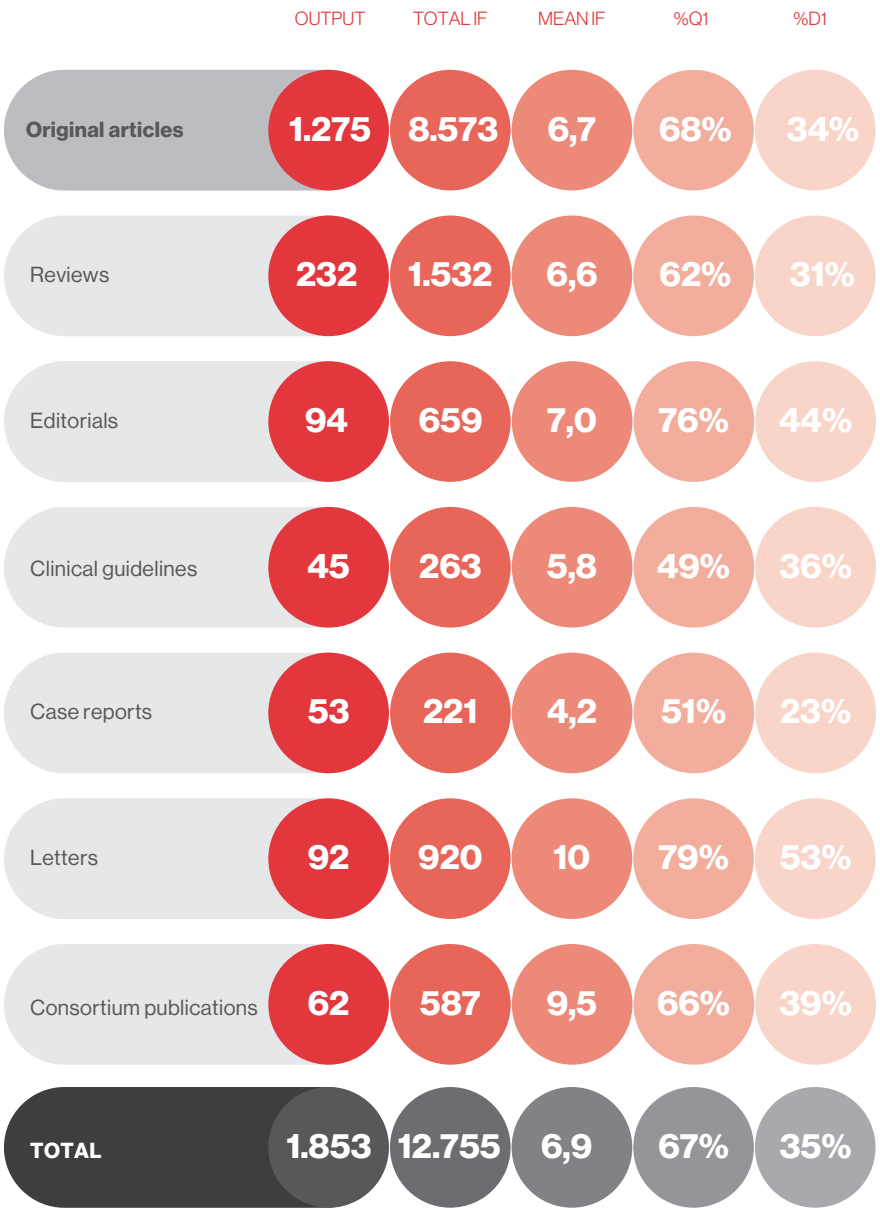


FIGURE LEGEND

Output
Total number of documents published in scholarly journals indexed in the ISI Web of Science.

Total IF
Accumulated impact factor of all the scientific publications.

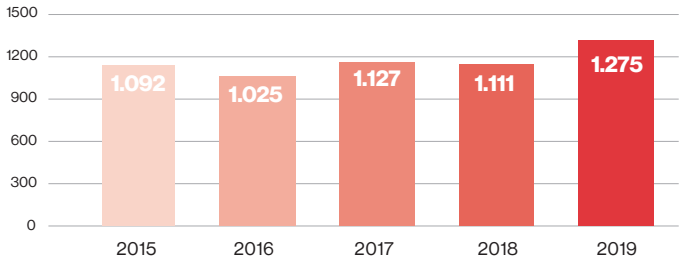
Mean IF
Mean impact factor of all the scientific publications.

% Q1
% of publications published in journals ranked in the first quartile (top 25%) of their category as ordered by the 2018 Journal Citation Reports.

% D1
% of publications published in journals ranked in the first decile (top 10%) of their category as ordered by the 2018 Journal Citation Reports.

Evolution of the total number of original articles (A) and the total number of original articles per area (B).

A) Number of original articles



B) Number of original articles per area

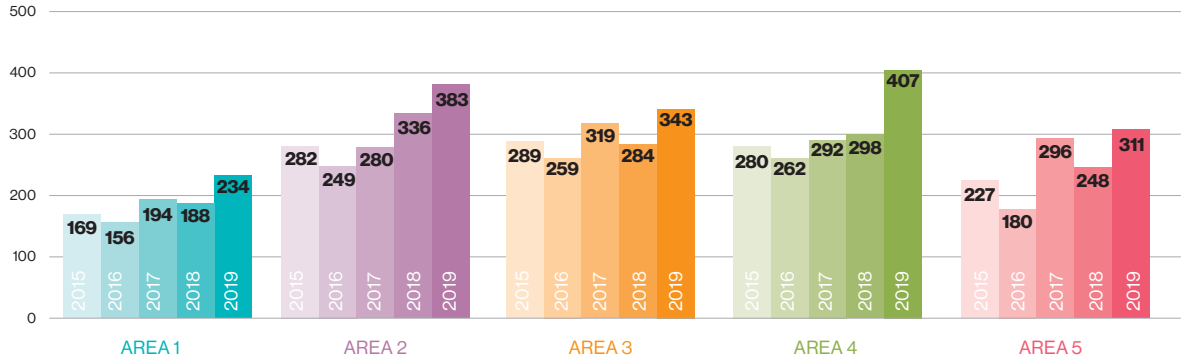
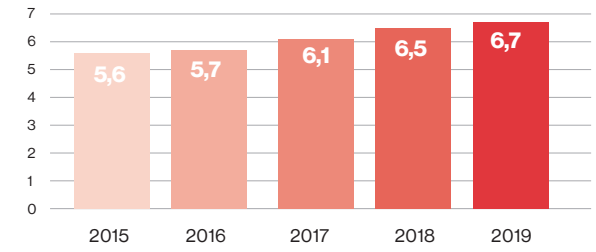


FIGURE LEGEND

Only original articles were taken into consideration. Publications resulting from collaboration between teams from different areas have been counted once for each area, so the sum of the articles per area is higher than the total.

Evolution of the mean IF (A) and % Q1 (B).

A) Mean IF



B) % Q1

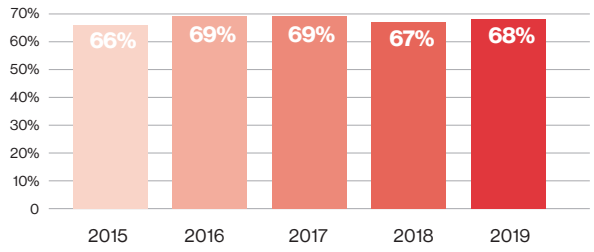


FIGURE LEGEND

Only original articles were taken into consideration. **%Q1**: % of publications published in journals ranked in the first quartile (top 25%) of their category as ordered by the 2018 Journal Citation Reports.

Original articles in the highest impact factor journals (IF>10).



Number of original articles in IF>10 journals.
(see table A).



Originals with IDIBAPS main contribution.
(see table B).

TABLE A

JOURNAL	IF	TOTAL ORIGINAL ARTICLES
New England Journal Of Medicine	70,67	**4**
Lancet	59,102	**7**
Jama-journal Of The American Medical Association	51,273	**1**
Nature	43,07	**2**
Nature Materials	38,887	**2**
Cell	36,216	**1**
Lancet Oncology	35,386	**5**
World Psychiatry	34,024	**1**
Nature Medicine	30,641	**2**
Lancet Neurology	28,755	**1**
Journal Of Clinical Oncology	28,245	**3**
Cancer Discovery	26,37	**2**
Nature Genetics	25,455	**3**
The Lancet Diabetes And Endocrinology	24,54	**1**
European Heart Journal	23,239	**2**
Circulation	23,054	**3**
The Lancet Respiratory Medicine	22,992	**1**
Jama Oncology	22,416	**2**
Cell Stem Cell	21,464	**1**
Annals Of Internal Medicine	19,315	**1**
Gastroenterology	19,233	**13**
Intensive Care Medicine	18,967	**1**
Journal Of Hepatology	18,946	**9**
Journal Of The American College Of Cardiology	18,639	**7**
Lancet Psychiatry	18,329	**1**
Acta Neuropathologica	18,174	**2**
Gut	17,943	**7**
Cell Research	17,848	**1**
European Urology	17,298	**1**
Science Translational Medicine	17,161	**3**
Blood	16,562	**8**
American Journal Of Respiratory And Critical Care Medicine	16,494	**2**
Jama Psychiatry	15,916	**1**
Lancet Global Health	15,873	**1**
Circulation Research	15,862	**1**
Diabetes Care	15,27	**3**
Hepatology	14,971	**7**
The Lancet Hiv	14,753	**1**
Journal Of The American Chemical Society	14,695	**1**
Alzheimer's And Dementia	14,423	**3**
Neuron	14,403	**1**
Annals Of The Rheumatic Diseases	14,299	**7**
Annals Of Oncology	14,196	**3**
Journal Of Allergy And Clinical Immunology	14,11	**3**
European Journal Of Heart Failure	13,965	**3**
American Journal Of Psychiatry	13,655	**3**
Science Advances	12,804	**1**
Journal Of Thoracic Oncology	12,46	**1**
Jama Neurology	12,321	**1**
Journal Of Clinical Investigation	12,282	**1**
Nature Chemical Biology	12,154	**1**
The Lancet Haematology	11,99	**1**
Nature Communications	11,878	**14**
Jama Cardiology	11,866	**1**
Brain. A Journal Of Neurology	11,814	**3**
European Respiratory Journal	11,807	**5**
Biological Psychiatry	11,501	**4**
Nucleic Acids Research	11,147	**1**
Journal Of Experimental Medicine	10,892	**1**
Journal Of Cachexia, Sarcopenia And Muscle	10,754	**1**
Jama Surgery	10,668	**1**
American Journal Of Gastroenterology	10,241	**3**
Journal Of The National Cancer Institute	10,211	**1**
Neuro-oncology	10,091	**1**
TOTAL		**180**

TABLE B

AUTHORS	TITLE	REFERENCE	IF
Estruch R, Martínez-González MA, Corella D, Salas-Salvadó J, Fitó M, Chiva-Blanch G, Fiol M, Gómez-Gracia E, Arós F, Lapetra J, Serra-Majem L, Pintó X, Buil-Cosiales P, Sorlí JV, Muñoz MA, Basora-Gallisá J, Lamuela-Raventós RM, Serra-Mir M, **Ros E**, PREDIMED Study Investigators	**Effect of a high-fat Mediterranean diet on bodyweight and waist circumference: a prespecified secondary outcomes analysis of the PREDIMED randomised controlled trial.**	*THE LANCET DIABETES AND ENDOCRINOLOGY 7(5):e6-e17*	**24,54**
Sabaté M, Alfonso F, Cequier A, Romaní S, Bordes P, Serra A, Iñiguez A, Salinas P, García Del Blanco B, Goicolea J, Hernández-Antolín R, Cuesta J, Gómez-Hospital JA, Ortega-Paz L, Gomez-Lara J, **Brugaletta S**	**Magnesium-Based Resorbable Scaffold Versus Permanent Metallic Sirolimus-Eluting Stent in Patients With ST-Segment Elevation Myocardial Infarction: The MAGSTEMI Randomized Clinical Trial.**	*CIRCULATION 140(23):1904-1916*	**23,054**
Puig I, López-Cerón M, Arnau A, Rosiñol Ò, Cuatrecasas M, Herreros-de-Tejada A, Ferrández Á, Serra-Burriel M, Nogales Ó, Vida F, de Castro L, López-Vicente J, Vega P, Álvarez-González MA, González-Santiago J, Hernández-Conde M, Díez-Redondo P, Rivero-Sánchez L, Gimeno-García AZ, Burgos A, García-Alonso FJ, Bustamante-Balén M, Martínez-Bauer E, Peñas B, **Pellise M**, EndoCAR group, Spanish Gastroenterological Association and the Spanish Digestive Endoscopy Society	**Accuracy of the Narrow-Band Imaging International Colorectal Endoscopic Classification System in Identification of Deep Invasion in Colorectal Polyps.**	*GASTROENTEROLOGY 156(1):75-87*	**19,233**
Teufel M, Seidel H, Köchert K, Meinhardt G, Finn RS, Llovet JM, **Bruix J**	**Biomarkers associated with response to regorafenib in patients with hepatocellular carcinoma.**	*GASTROENTEROLOGY 156(6):1731-1741*	**19,233**
Ordás I, Rimola J, Alfaro I, Rodríguez S, Castro-Poceiro J, Ramírez-Morros A, Gallego M, Giner À, Barastegui R, Fernández-Clotet A, Masamunt M, Ricart E, **Panés J**	**Development and Validation of a Simplified Magnetic Resonance Index of Activity for Crohn's disease.**	*GASTROENTEROLOGY 157(2):432-439.e1*	**19,233**
Fernández J, Clària J, Amorós A, Aguilar F, Castro M, Casulleras M, Acevedo J, Duran-Güell M, Nuñez L, Costa M, Torres M, Horrillo R, Ruiz-Del-Árbol L, Villanueva C, Prado V, Arteaga M, Trebicka J, Angeli P, Merli M, Alessandria C, Aagaard NK, Soriano G, Durand F, Gerbes A, Gustot T, Welzel TM, Salerno F, Bañares R, Vargas V, Albillos A, Silva A, Morales-Ruiz M, Carlos García-Pagán J, Pavesi M, Jalan R, Bernardi M, Moreau R, Páez A, **Arroyo V**	**Effects of Albumin Treatment on Systemic and Portal Hemodynamics and Systemic Inflammation in Patients With Decompensated Cirrhosis.**	*GASTROENTEROLOGY 157(1):149-162*	**19,233**
Torres S, Baulies A, Insausti-Urkia N, Alarcón-Vila C, Fucho R, Solsona-Vilarrasa E, Núñez S, Robles D, Ribas V, Wakefield L, Grompe M, Lucena MI, Andrade RJ, Win S, Aung TA, Kaplowitz N, García-Ruiz C, **Fernández-Checa JC**	**Endoplasmic Reticulum Stress-induced Upregulation of STARD1 Promotes Acetaminophen-induced Acute Liver Failure.**	*GASTROENTEROLOGY 157(2):552-568*	**19,233**
Moeini A, Torrecilla S, Tovar V, Montironi C, Andreu-Oller C, Peix J, Higuera M, Pfister D, Ramadori P, Pinyol R, Solé M, Heikenwälder M, Friedman SL, Sia D, **Llovet JM.**	**An Immune Gene Expression Signature Associated With Development of Human Hepatocellular Carcinoma Identifies Mice That Respond to Chemopreventive Agents.**	*GASTROENTEROLOGY 157(5):1383-1397.e11*	**19,233**
Martin-Loeches, Ignacio; Torres, Antoni; Povoa, Pedro; Zampieri, Fernando G.; Salluh, Jorge; Nseir, Saad; Ferrer, Miquel; Rodriguez, Alejandro; Zampieri, Fernando; Curcio, D.; Mira, R.; Cordero, M. L.; Lepecq, R.; Girault, C.; Candeias, C.; Seguin, P.; Paulino, C.; Messika, J.; Castro, A. G.; Coelho, L.; Rabello, L.; Lisboa, T.; Salluh, J.; Fernandez, R. O.; Arroyo, J.; Gabriela, M.; Alvarez, R.; Reyes, A. T.; Dellera, C.; Molina, F.; Franco, D. M.; Parada, E. G.; Yepez, E. S.; Ona, F. P.; Tutillo, D. M.; Barahona, D.; Lerma, F. A.; Alvarez, A. A.; Gallego, J. M.; Morillas, F. J.; Aguilar, A. L.; Lorenzana, M. L.; Iniesta, R. S.; Almirall, J.; Albaya, A.; Santana, S. R.; Fernandez, C.; Potro, M. A.; Cortes, P., V.; Jimenez, B.; Sierra, R.; Ortiz, M. Del Valle; Cruza, N.; Olaechea, P. M.; Zirena, A. C.; Gonzalez, P. P.; Gomez, T. R.; Crespi, L. S.; Galleymore, P. R.; Marcos, R. J.; Palazon, C.; Rueda, B. G.; Ballesteros, J. C.; Arnilla, M. P.; Socias, A.; Amador, J.; Silvero, E. M.; Redin, L. M.; Elson, M. Z.; Pericas, L. C.; Rodriguez, J. A.; Nieto, M.; Molinos, E.; Josefi, A.; Catorze, N.; Povoa, P.; Andre, P.; Angel, M.; Garcia, G.; Ramirez, C. S.; Calizaya, M.; Estella, A.;	**The association of cardiovascular failure with treatment for ventilator-associated lower respiratory tract infection.**	*INTENSIVE CARE MEDICINE 45(12):1753-1762*	**18,967**

Albis, A.; Aguilar, G.; Torrents, E.; Puente, M. G.; Sanchez, A. G.; Azambuja, P.; Knibel, M. F.; Ranzani, O.; Camargo, L. D.; Junior, A. P.; Ferreira, C. B.; Lobo, S.; Park, M.; de Carvalho, A. G.; Valencia, M.; Lopez, A. A.; Caballero, J. M.; Jaffal, K.; Parmentier-Decrucq, E.; Preau, S.; Rousselin, C.; Blazejewski, C.; Masse, J.; Robriquet, L.; Satre-Buisson, L.; Mira, J. P.; Martin, N.; Mentec, H.; Marchalot, A.; Ricard, J. D.; Megarbane, B.; Valade, S.; Azoulay, E.; Boussekey, N.; Leroy, O.; Reignier, J.; Clavel, M.; Pichon, N.; Baudry, T.; Argaud, L.; Beuret, P.; Hssain, A. A.; Nyunga, M.; Alves, I; Dewavrin, F.; Brunin, G.; Merat, S.; Pasquier, P.; Brun, F.; Palud, A.; Voisin, B.; Grenot, R.; Van Grunderbeeck, N.; Thevenin, D.; Misset, B.; Philippart, F.; Frat, J. P.; Coudroy, R.; Cabaret, P.; Ledein, M.; Slimane, F. Z.; Miguel-Montanes, R.; Weiss, N.; Bolgert, F.; Just, B.;TAVeM Study Grp			
Ruart M., Chavarria L., Campreciós G., Suárez-Herrera N., Montironi C., Guixé-Muntet S., Bosch J., Friedman S., Garcia-Pagán J., **Hernández-Gea V**.	**Impaired endothelial autophagy promotes liver fibrosis by aggravating the oxidative stress response during acute liver injury.**	*JOURNAL OF HEPATOLOGY 70(3):458-469*	**18,946**
Hessheimer AJ, Coll E, Torres F, Ruíz P, Gastaca M, Rivas JI, Gómez M, Sánchez B, Santoyo J, Ramírez P, Parrilla P, Marín LM, Gómez-Bravo MÁ, García-Valdecasas JC, López-Monclús J, Boscá A, López-Andújar R, Fundora-Suárez J, Villar J, García-Sesma Á, Jiménez C, Rodríguez-Laíz G, Lladó L, Rodríguez JC, Barrera M, Charco R, López-Baena JÁ, Briceño J, Pardo F, Blanco G, Pacheco D, Domínguez-Gil B, Sánchez Turrión V, **Fondevila C**	**Normothermic regional perfusion vs. super-rapid recovery in controlled donation after circulatory death liver transplantation. DYRK1A modulates c-MET in pancreatic ductal adenocarcinoma to drive tumour growth.**	*JOURNAL OF HEPATOLOGY 70(4):658-665*	**18,946**
Mariño Z, Darnell A, Lens S, Sapena V, Díaz A, Belmonte E, Perelló C, Calleja JL, Varela M, Rodriguez M, Rodriguez de Lope C, Llerena S, Torras X, Gallego A, Sala M, Morillas RM, Minguez B, Llaneras J, Coll S, Carrion JA, Iñarrairaegui M, Sangro B, Vilana R, Sole M, Ayuso C, Ríos J, Forns X, Bruix J, **Reig M**	**Time association between hepatitis C therapy and hepatocellular carcinoma emergence in cirrhosis: relevance of non-characterized nodules.**	*JOURNAL OF HEPATOLOGY 70(5):874-884*	**18,946**
Reverter E, Cirera I, Albillos A, Debernardi-Venon W, Abraldes JG, Llop E, Flores A, Martínez-Palli G, Blasi A, Martínez J, Turon F, García-Valdecasas JC, Berzigotti A, de Lacy AM, Fuster J, Hernández-Gea V, Bosch J, **García-Pagán JC.**	**The prognostic role of hepatic venous pressure gradient in cirrhotic patients undergoing elective extrahepatic surgery.**	*JOURNAL OF HEPATOLOGY 71(5):942-950*	**18,946**
Otxoa-de-Amezaga A., Miró-Mur F., Pedragosa J., Gallizioli M., Justicia C., Gaja-Capdevila N., Ruíz-Jaen F., Salas-Perdomo A., Bosch A., Calvo M., Márquez-Kisinousky L., Denes A., Gunzer M., **Planas A.**	**Microglial cell loss after ischemic stroke favors brain neutrophil accumulation.**	*ACTA NEUROPATHOLOGICA 137(2):321-341*	**18,174**
Pinyol R, Montal R, Bassaganyas L, Sia D, Takayama T, Chau GY, Mazzaferro V, Roayaie S, Lee HC, Kokudo N, Zhang Z, Torrecilla S, Moeini A, Rodriguez-Carunchio L, Gane E, Verslype C, Croitoru AE, Cillo U, de la Mata M, Lupo L, Strasser S, Park JW, Camps J, Solé M, Thung SN, Villanueva A, Pena C, Meinhardt G, Bruix J, **Llovet JM.**	**Molecular predictors of prevention of recurrence in HCC with sorafenib as adjuvant treatment and prognostic factors in the phase 3 STORM trial.**	*GUT 68(6):1065-1075*	**17,943**
Luna J., Boni J., Cuatrecasas M., Bofill-De Ros X., Núñez-Manchón E., Gironella M., Vaquero E.C., Arbones M.L., De La Luna S., **Fillat C.**	**DYRK1A modulates c-MET in pancreatic ductal adenocarcinoma to drive tumour growth.**	*GUT 68(8):1465-1476*	**17,943**
De Barrios, Oriol; Sanchez-Moral, Lidia; Cortes, Marlies; Ninfali, Chiara; Profitos-Peleja, Nuria; Martinez-Campanario, M. C.; Siles, Laura; del Campo, Rosa; Jesus Fernandez-Acenero, Maria; Darling, Douglas S.; Castells, Antoni; Maurel, Joan; Salas, Azucena; Dean, Douglas C.; **Postigo, Antonio**	**ZEB1 promotes inflammation and progression towards inflammation-driven carcinoma through repression of the DNA repair glycosylase MPG in epithelial cells.**	*GUT 68(12):2129-2141*	**17,943**
Figueiredo, Hugo; Figueroa, Ana Lucia C.; Garcia, Ainhoa; Fernandez-Ruiz, Rebeca; Broca, Christophe; Wojtusciszyn, Anne; Malpique, Rita; **Gasa, Rosa**; **Gomis, Ramon**	**Targeting pancreatic islet PTP1B improves islet graft revascularization and transplant outcomes.**	*SCIENCE TRANSLATIONAL MEDICINE 11(497):eaar6294*	**17,161**

Martín-Garcia D, Navarro A, Valdés-Mas R, Clot G, Gutiérrez-Abril J, Prieto M, Ribera-Cortada I, Woroniecka R, Rymkiewicz G, Bens S, de Leval L, Rosenwald A, Ferry JA, Hsi ED, Fu K, Delabie J, Weisenburger D, de Jong D, Climent F, O'Connor SJ, Swerdlow SH, Torrents D, Beltran S, Espinet B, González-Farré B, Veloza L, Costa D, Matutes E, Siebert R, Ott G, Quintanilla-Martinez L, Jaffe ES, López-Otín C, Salaverria I, Puente XS, Campo E, **Beà S**	**CCND2 and CCND3 hijack immunoglobulin light-chain enhancers in cyclin D1(-) mantle cell lymphoma.**	*BLOOD 133(9):940-951*	**16,562**
Lahuerta JJ, Jiménez-Ubieto A, Paiva B, Martínez-López J, González-Medina J, López-Anglada L, Cedena MT, Puig N, Oriol A, Blanchard MJ, Ríos R, Martin J, Martínez R, Sureda A, Hernández MT, de la Rubia J, Krsnik I, Cabañas V, Palomera L, Bargay J, Mateos MV, Rosiñol L, San Miguel JF, **Blade J**	**Role of urine immunofixation in the complete response assessment of MM patients other than light-chain-only disease.**	*BLOOD 133(25):2664-2668*	**16,562**
Rosiñol L, Oriol A, Rios R, Sureda A, Blanchard MJ, Hernández MT, Martínez-Martínez R, Moraleda JM, Jarque I, Bargay J, Gironella M, de Arriba F, Palomera L, González-Montes Y, Martí JM, Krsnik I, Arguiñano JM, González ME, González AP, Casado LF, López-Anglada L, Paiva B, Mateos MV, San Miguel JF, Lahuerta JJ, **Bladé J**	**Bortezomib, lenalidomide, and dexamethasone as induction therapy prior to autologous transplant in multiple myeloma.**	*BLOOD 134(16):1337-1345*	**16,562**
Farré R, Trias G, Solana G, Ginovart G, Gozal D, Navajas D	**Novel Approach for Providing Pediatric Continuous Positive Airway Pressure (CPAP) Devices in Low-Income Underesourced Regions.**	*AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE 199(1):118-120*	**16,494**
Brait V., Miró-Mur F., Pérez-de-Puig I., Notario L., Hurtado B., Pedragosa J., Gallizioli M., Jiménez-Altayó F., Arbaizar-Rovirosa M., Otxoa-de-Amezaga A., Monteagudo J., Ferrer-Ferrer M., de la Rosa X., Bonfill-Teixidor E., Salas-Perdomo A., Hernández-Vidal A., Garcia-de-Frutos P., Lauzurica P., **Planas A.**	**CD69 Plays a Beneficial Role in Ischemic Stroke by Dampening Endothelial Activation.**	*CIRCULATION RESEARCH 124(2):279-291*	**15,862**
Ceriello A, Rossi MC, De Cosmo S, Lucisano G, Pontremoli R, Fioretto P, Giorda C, Pacilli A, Viazzi F, Russo G, Nicolucci A, AMD-Annals Study Group	**Overall Quality of Care Predicts the Variability of Key Risk Factors for Complications in Type 2 Diabetes: An Observational, Longitudinal Retrospective Study.**	*DIABETES CARE 42(4):514-519*	**15,27**
Hernández-Gea V, Procopet B, Giráldez Á, Amitrano L, Villanueva C, Thabut D, Ibañez-Samaniego L, Silva-Junior G, Martinez J, Genescà J, Bureau C, Trebicka J, Llop E, Laleman W, Palazon JM, Castellote J, Rodrigues S, Gluud LL, Noronha Ferreira C, Barcelo R, Cañete N, Rodríguez M, Ferlitsch A, Mundi JL, Gronbaek H, Hernández-Guerra M, Sassatelli R, Dell'Era A, Senzolo M, Abraldes JG, Romero-Gómez M, Zipprich A, Casas M, Masnou H, Primignani M, Krag A, Nevens F, Calleja JL, Jansen C, Robic MA, Conejo I, Catalina MV, Albillos A, Rudler M, Alvarado E, Guardascione MA, Tantau M, Bosch J, Torres F, **Garcia-Pagán** JC, International Variceal Bleeding Observational Study Group and Baveno Cooperation	**Preemptive-TIPS Improves Outcome in High-Risk Variceal Bleeding: An Observational Study.**	*HEPATOLOGY 69(1):282-293*	**14,971**
Garcia-Tsao G, Fuchs M, Shiffman M, Borg BB, Pyrsopoulos N, Shetty K, Gallegos-Orozco JF, Reddy KR, Feyssa E, Chan JL, Yamashita M, Robinson JM, Spada AP, Hagerty DT, **Bosch J.**	**Emricasan (IDN-6556) Lowers Portal Pressure in Patients With Compensated Cirrhosis and Severe Portal Hypertension.**	*HEPATOLOGY 69(2):717-728*	**14,971**
Clària J, Moreau R, Fenaille F, Amorós A, Junot C, Gronbaek H, Coenraad MJ, Pruvost A, Ghettas A, Chu-Van E, López-Vicario C, Oettl K, Caraceni P, Alessandria C, Trebicka J, Pavesi M, Deulofeu C, Albillos A, Gustot T, Welzel TM, Fernández J, Stauber RE, Saliba F, Butin N, Colsch B, Moreno C, Durand F, Nevens F, Bañares R, Benten D, Ginès P, Gerbes A, Jalan R, Angeli P, Bernardi M, **Arroyo V**, CANONIC Study Investigators of the EASL Clif Consortium, Grifols Chair and the European Foundation for the Study of Chronic Liver Failure (EF Clif)	**Orchestration of Tryptophan-Kynurenine pathway, acute decompensation and acute-on-chronic liver failure in cirrhosis.**	*HEPATOLOGY 69(4):1686-1701*	**14,971**

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FIGURE LEGEND

Original articles with main author (first, last or corresponding author) from IDIBAPS (underlined in the table).

Translation of knowledge and innovation

CLINICAL GUIDELINES

As a general perspective of IDIBAPS/FCRB' impact in society, it is worth mentioning that every year our researchers participate in the elaboration of international clinical guides. These guidelines have a remarkable impact in patients' care and medical practice.

45 **Clinical guidelines published in 2019.**

AUTHORS	TITLE	REFERENCE	IF	Q/D1
European Association for the Study of the Liver. Chair: Manuela Merli; EASL Governing Boardrepresentative: Annalisa Berzigotti; Panel members: Shira Zelber-Sagi, SrinivasanDasarathy, Sara Montagnese, Laurence Genton, Mathias Plauth, **Albert Parés.**	**EASL Clinical Practice Guidelines on nutrition in chronic liver disease.**	*JOURNAL OF HEPATOLOGY. 70(1):172-193*	**18,946**	Q1/D1
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Brunet M., Van Gelder T., Åsberg A., Haufroid V., Hesselink D., Langman L., Lemaitre F., Marquet P., Seger C., Shipkova M., Vinks A., Wallemacq P., Wieland E., Woillard J., Barten M., Budde K., Colom H., Dieterlen M., Elens L., Johnson-Davis K., Kunicki P., Macphee I., Masuda S., Mathew B., **Millán O.**, Mizuno T., Moes D., Monchaud C., Noceti O., Pawinski T., Picard N., Van Schaik R., Sommerer C., Vethe N., De Winter B., Christians U., Bergan S.	**Therapeutic Drug Monitoring of Tacrolimus-Personalized Therapy: Second Consensus Report.**	*THERAPEUTIC DRUG MONITORING. 41(3):261-307*	**2,047**	Q3
Crespo, Javier; Albillos, Agustin; Buti, Maria; Luis Calleja, Jose; Garcia Samaniego, Javier; Hernandez Guerra, Manuel; Serrano, Trinidad; Turnes, Juan; Acin, Enrique; Berenguer, Juan; Berenguer, Marina; Colom, Joan; Fernandez, Inmaculada; Fernandez Rodriguez, Conrado; **Forns, Xavier**; Garcia, Federico; Granados, Rafael; Lazarus, Jeffrey; Maria Molero, Jose; Molina, Esther; Perez Escanilla, Fernando; Pineda, Juan A.; Rodriguez, Manuel; Romero, Manuel; Roncero, Carlos; Saiz de la Hoya, Pablo; Sanchez Antolin, Gloria.	**Elimination of hepatitis C. Positioning document of the Spanish Association for the Study of the Liver (AEEH).**	*REVISTA ESPANOLA DE ENFERMEDADES DIGESTIVAS. 111(11):862-873*	**1,858**	Q4
AIDS Study Group (GeSIDA) of the Spanish Society of Infectious Diseases and Clinical Microbiology and the National AIDS Plan. José A Pérez-Molina, Rosa Polo, José López-Aldeguer, Fernando Lozano, Koldo Aguirrebengoa, José Ramón Arribas, Vicente Boix, Juan Berenguer, José Ramón Blanco, Pere Domingo, Vicente Estrada, María José Galindo, Federico García, José María Gatell, Juan González-García, Félix Gutiérrez, José Antonio Iribarren, Hernando Knobel, Josep María Llibre, Juan Carlos López-Bernaldo de Quirós, Luis Fernando López-Cortés, Juan Emilio Losa, Ana Mariño, **José M Miró**, María L Montes, Santiago Moreno, Eugenia Negredo, María J Pérez-Elías, Daniel Podzamczer, Joaquín Portilla, Eva Poveda, Federico Pulido, Esteban Ribera, Antonio Rivero, Rafael Rubio, Jesús Santos, José Sanz-Moreno, Jesús Sanz-Sanz, Sergio Serrano, Javier de la Torre, **Montserrat Tuset**, Miguel A von Wichman, **Esteban Martínez.**	**Executive summary of the GeSIDA/National AIDS Plan consensus document on antiretroviral therapy in adults infected by the human immunodeficiency virus (updated January 2018).**	*ENFERMEDADES INFECCIOSAS Y MICROBIOLOGIA CLINICA. 37(3):195-202*	**1,685**	Q4
Garcia-Vidal C, Alastruey-Izquierdo A, Aguilar-Guisado M, Carratalà J, Castro C, Fernández-Ruiz M, Aguado JM, Fernández JM, Fortún J, Garnacho-Montero J, Gavaldà J, Gudiol C, Guinea J, Gómez-López A, Muñoz P, Pemán J, **Rovira M**, Ruiz-Camps I, Cuenca-Estrella M	**Executive summary of clinical practice guideline for the management of invasive diseases caused by Aspergillus: 2018 Update by the GEMICOMED-SEIMC/REIPI.**	*ENFERMEDADES INFECCIOSAS Y MICROBIOLOGIA CLINICA. 37(8):535-541*	**1,685**	Q4
Len O., Los-Arcos I., Aguado J., Blanes M., **Bodro M.**, Carratalà J., Cordero E., Fariñas M., Fernández-Ruiz M., Fortún J., Gavaldà J., López-Medrano F., López-Vélez R., Lumbreras C., Mahillo B., Marcos M., Martin-Dávila P., Montejo J., Moreno A., Muñoz P., Norman F., Pérez-Sáenz J., Pumarola T., Sabé N., San-Juan R., Vidal E., Domínguez-Gil B.	**Executive summary of the Consensus Statement of the Transplant Infection Study Group (GESITRA) of the Spanish Society of Infectious Diseases and Clinical Microbiology (SEIMC) and the National Transplant Organization (ONT) on the Selection Criteria of Donors of Solid Organs in relation to**	*ENFERMEDADES INFECCIOSAS Y MICROBIOLOGIA CLINICA. 38(8): 379-389*	**1,685**	Q4

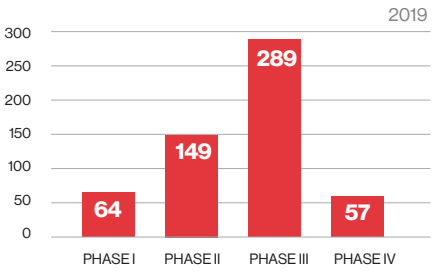
	Infectious Diseases *[Resumen ejecutivo de la Declaración de consenso del Grupo de Estudio de la Infección en el Trasplante (GESITRA) de la Sociedad Española de Enfermedades Infecciosas y Microbiología Clínica (SEIMC) y la Organización Nacional de Trasplantes (ONT) sobre los criterios de selección de donantes de órganos sólidos en relación con las enfermedades infecciosas].*			
Di Renzo G., **Gratacos E.**, Kurtser M., Malone F., Nambiar S., Sierra N., Yang H., Fuchtner C., Berghella V., Castelazo Morales E., Hanson M., Hod M., Ville Y., Visser G., Simpson J., Adra A., Bataeva R., Chmait R., Cheng Y., Hyett J., Giardina I., Morrison J., Nazareth A., Poon C., Quintero R., Sepulveda W., Tosto V.	**Good clinical practice advice: Prediction of preterm labor and preterm premature rupture of membranes.**	*INTERNATIONAL JOURNAL OF GYNECOLOGY AND OBSTETRICS. 144(3):340-346*	**1,671**	Q3
Di Renzo G., **Gratacos E.**, Kurtser M., Malone F., Nambiar S., Sierra N., Yang H., Fuchtner C., Berghella V., Castelazo Morales E., Hanson M., Hod M., Ville Y., Visser G., Simpson J., Adra A., Bataeva R., Chmait R., Cheng Y., Hyett J., Giardina I., Morrison J., Nazareth A., Poon C., Quintero R., Sepulveda W., Tosto V.	**Good clinical practice advice: Iron deficiency anemia in pregnancy.**	*INTERNATIONAL JOURNAL OF GYNECOLOGY AND OBSTETRICS. 144(3):322-324*	**1,671**	Q3
Di Renzo G., **Gratacos E.**, Kurtser M., Malone F., Nambiar S., Sierra N., Yang H., Fuchtner C., Berghella V., Castelazo Morales E., Hanson M., Hod M., Ville Y., Visser G., Simpson J., Adra A., Bataeva R., Chmait R., Cheng Y., Hyett J., Giardina I., Morrison J., Nazareth A., Poon C., Quintero R., Sepulveda W., Tosto V.	**Good clinical practice advice: Antenatal corticosteroids for fetal lung maturation.**	*INTERNATIONAL JOURNAL OF GYNECOLOGY AND OBSTETRICS. 144(3):352-355*	**1,671**	Q3
Di Renzo G., **Gratacos E.**, Kurtser M., Malone F., Nambiar S., Sierra N., Yang H., Fuchtner C., Berghella V., Castelazo Morales E., Hanson M., Hod M., Ville Y., Visser G., Simpson J., Adra A., Bataeva R., Chmait R., Cheng Y., Hyett J., Giardina I., Morrison J., Nazareth A., Poon C., Quintero R., Sepulveda W., Tosto V.	**Good clinical practice advice: Management of twin pregnancy.**	*INTERNATIONAL JOURNAL OF GYNECOLOGY AND OBSTETRICS. 144(3):330-337*	**1,671**	Q3
Di Renzo G., **Gratacos E.**, Kurtser M., Malone F., Nambiar S., Sierra N., Yang H., Fuchtner C., Berghella V., Castelazo Morales E., Hanson M., Hod M., Ville Y., Visser G., Simpson J., Adra A., Bataeva R., Chmait R., Cheng Y., Hyett J., Giardina I., Morrison J., Nazareth A., Poon C., Quintero R., Sepulveda W., Tosto V.	**Good clinical practice advice: Role of ultrasound in the management of twin pregnancy.**	*INTERNATIONAL JOURNAL OF GYNECOLOGY AND OBSTETRICS. 144(3):338-339*	**1,671**	Q3
Di Renzo G., **Gratacos E.**, Kurtser M., Malone F., Nambiar S., Sierra N., Yang H., Fuchtner C., Berghella V., Castelazo Morales E., Hanson M., Hod M., Ville Y., Visser G., Simpson J., Adra A., Bataeva R., Chmait R., Cheng Y., Hyett J., Giardina I., Morrison J., Nazareth A., Poon C., Quintero R., Sepulveda W., Tosto V.	**Good clinical practice advice: Micronutrients in the periconceptional period and pregnancy.**	*INTERNATIONAL JOURNAL OF GYNECOLOGY AND OBSTETRICS. 144(3):317-321*	**1,671**	Q3
Di Renzo G., **Gratacos E.**, Kurtser M., Malone F., Nambiar S., Sierra N., Yang H., Fuchtner C., Berghella V., Castelazo Morales E., Hanson M., Hod M., Ville Y., Visser G., Simpson J., Adra A., Bataeva R., Chmait R., Cheng Y., Hyett J., Giardina I., Morrison J., Nazareth A., Poon C., Quintero R., Sepulveda W., Tosto V.	**Good clinical practice advice: First trimester screening and prevention of pre-eclampsia in singleton pregnancy.**	*INTERNATIONAL JOURNAL OF GYNECOLOGY AND OBSTETRICS. 144(3):325-329*	**1,671**	Q3
Di Renzo G.C., **Gratacos E.**, Kurtser M., Malone F., Nambiar S., Sierra N., Yang H., Fuchtner C., Berghella V., Castelazo Morales E., Hanson M., Hod M., Ville Y., Visser G., Simpson J.L., Adra A., Bataeva R., Chmait R.H., Cheng Y., Hyett J., Giardina I., Morrison J., Nazareth A., Poon C.Y.L., Quintero R., Sepulveda W., Tosto V.	**Good clinical practice advice: Thyroid and pregnancy.**	*INTERNATIONAL JOURNAL OF GYNECOLOGY AND OBSTETRICS. 144(3):347-351*	**1,671**	Q3
Alastruey-Izquierdo A., Asensio A., Besoli A., Calabuig E., Fernández-Ruiz M., **Garcia-Vidal C.**, Gasch O., Guinea J., Martín-Gomez M.T., Paño J.R., Ramirez P., Ruiz-Gaitán A., Salavert M., Tasias M., Viñuela L., Pemán J.	**GEMICOMED/GEIRAS-SEIMC recommendations for the management of Candida auris infection and colonization.**	*REVISTA IBEROAMERICANA DE MICOLOGIA. 36(3):109-114*	**1,597**	Q4
Caballeria L., Augustin S., Broquetas T., Morillas R., Vergara M., Virolés S., Hernández M., Serra I., Goday A., Vila L., **Siso-Almirall A.**, Solans R., Fernández-Real J., Carrión J., **Graupera I., Ginès P.**	**Recommendations for the detection, diagnosis and follow-up of patients with non-alcoholic fatty liver disease in primary and hospital care.**	*MEDICINA CLINICA. 153(4):169-177*	**1,277**	Q3
Oriola J; Carrasco P; Díez O; Ezquieta B; en representación de la Comisión de Genética de la SEQC.	**Recommendations for the elaboration of diagnostic genetic reports in the clinical setting.**	*MEDICINA CLINICA. 153(7):293-297*	**1,277**	Q3
Escorsell À., Castellote J., Sánchez-Delgado J., Charco R., **Crespo G.**, **Fernández J.**	**Management of acute liver failure. Clinical guideline from the Catalan Society of Digestology** *[Manejo de la insuficiencia hepática aguda grave. Documento de posicionamiento de la Societat Catalana de Digestologia].*	*GASTROENTEROLOGIA Y HEPATOLOGIA. 42(1):51-64*	**1,126**	Q4
Crespo J., Albillos A., Buti M., Calleja J.L., García-Samaniego J., Hernández-Guerra M., Serrano T., Turnes J., Acín E., Berenguer J., Berenguer M., Colom J., Fernández I., Fernández Rodríguez C., **Forns X.**, García F., Rafael Granados , Lazarus J.V., Molero J.M., Molina E., Pérez Escanilla F., Pineda J.A., Rodríguez M., Romero M., Roncero C., Saiz de la Hoya P., Sánchez Antolín G.	**Elimination of hepatitis C. Positioning document of the Spanish Association for the Study of the Liver (AEEH).**	*GASTROENTEROLOGIA Y HEPATOLOGIA. 42(9):579-592*	**1,126**	Q4
Bataller R, Cabezas J, Aller R, Ventura-Cots M, Abad J, Albillos A, Altamirano J, Arias-Loste MT, Bañares R, **Caballería J**, Caballería L, Carrión JA, Diago M, Fernández Rodríguez C, Gallego R, García-Cortes M, García-Monzón C, Genescà J, Ginés P, Hernandez-Guerra M, Jorquera F, Lligoña A, Molina E, Pareja MJ, Planas R, Tomé S, Salmerón J, Romero-Gómez M	**Alcohol-related liver disease.**	*GASTROENTEROLOGIA Y HEPATOLOGIA. 42(10):657-676*	**1,126**	Q4

CLINICAL TRIALS

The IDIBAPS/FCRB constitutes the ideal setting for completing a number of the crucial steps in the development of new medical products. Basic biomedical research and applied clinical research, together with specialized healthcare practice, are aspects of IDIBAPS that may be very useful for the development of drugs.

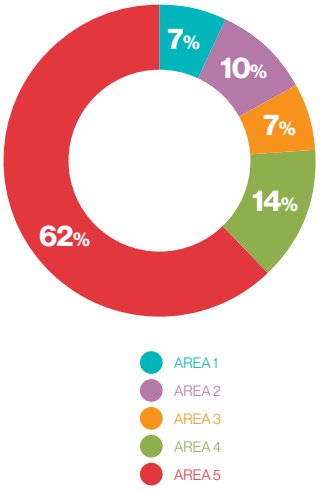
The adjacent graphics summarize the number of active clinical trials in 2019.
In 2019, 259 new clinical trials were opened and overall, there were 559 active clinical trials. Most of these clinical trials correspond to phase III (51,7%).

Active clinical trials by phase:





By scientific areas, most of the trials are performed in the area of hemato-oncology: (Area 5, 62%):



PATENTS AND LICENSE AGREEMENTS

The Institute currently manages 52 patent families and 8 proprietary software, 38 license agreements have been signed with several industry partners.

During 2018 **12** new patent applications were filed: **7** priority patents, **4** PCTs, and 1 patent entered into National Phases in several countries. Besides, **3** new license agreements were signed with national and international companies.

PORTFOLIO OF SPIN-OFFS

The activity of researchers gave rise to 4 new companies based on the knowledge from IDIBAPS/HCB: AIS Channel SL, project led by Dr. Antonio M. Lacy; Miwendo Solutions SL, project led by Dra. Glòria Fernàndez-Esparrach; Predictheon SL, project led by Dr. Perdro Gambús; and Surg Solutions SL, project led by Dr. Joan Fontdevila.

IDIBAPS researchers have founded **15** spin-offs since 2008, **14** of which are active companies that together employ more than 50 people.

Spin-offs from IDIBAPS researchers where IDIBAPS or FCRB participate as shareholders:

OWL METABOLOMICS (2008)
http://www.owlmetabolomics.com/
Dr. Joan Caballeria

OWL is a biotechnology company in the field of Metabolomics with pioneering diagnostics products and unique R&D services for the scientific community. The OWLiver Test is the first in vitro test for determining steatosis and NASH.

TRANSPLANT BIOMEDICALS (2014)
https://www.transplantbiomed.com/
Dr. Carmen Peralta

Transplant Biomedicals SL is a European company based in Barcelona aimed to become an international leader in the field of organ, tissue and cell preservation. The company is at the end-stage of the development of VIVIAN®, a new generation disposable organ preservation device for kidney and available for hospital use. The device integrates the Hypothermic Ultrasound Preservation Technology (HUPT), a revolutionary proprietary and patented technology that leads to superior preservation of organs during ex-vivo conditions.

VIRTUAL BODYWORKS (2015)
https://virtualbodyworks.com/
Dr. Maria Victoria Sanchez-Vives

Virtual Bodyworks is changing the the future of social, medical and psychological rehabilitation. They are developing several tools such as: i-Cortex (a tool that facilitates the neurological and physical rehabilitation of individuals who have experienced a wide range of traumas ranging from chronic pain management to stroke) and VRespect.Me (a powerful virtual

reality experience designed to rehabilitate men with a history of domestic violence, the only scientifically proven product of its kind in the market).

ESTIMTRACK (2016)
http://www.estimtrack.com/
Dr. Jaume Balust

Estimtrack provides an intelligent set of tools to schedule, track and orchestrate all involved personnel in surgical procedures and operating rooms based on Machine Learning (ML), which improves the efficiency of operating room tracks in healthcare organizations by 31%

BARCELONA LIVER BIOSERVICES (2017)
http://liver.barcelona/
Dr. Jordi Gracia-Sancho

BLB is a contract research organization that offers cutting-edge research services and consultancy in the field of liver diseases. They provide tailored reliable solutions to different partners for successful strategic decision making. The ExoLiver, a patented product, allows co-culture of healthy or diseased hepatic cells, unravels key biological data obtained in a human-like system, therefore representing the ultimate pre-clinical step in any development pipeline.

BIOMARKERS CLINICAL DIAGNOSIS AND APPLICATIONS (2018)
Dr. Rafael Molina

The aim of this company is the development of tumour markers for clinical application through the creation of computer algorithms for the evaluation and detection of cancer.

AIS CHANNEL (2019)
https://aischannel.com/about-ais-channel/
Dr. Antonio M. Lacy

AIS Channel SL (Advances In Surgery Channel) is an online platform for surgical education. AIS's main mission is to bring the best education to every corner of the world from the best surgeons. AIS Channel is a new approach to the communication of advances in cutting-edge surgical expertise, provided by leading surgeons. The AIS Channel project was conceived by Dr. Antonio M. Lacy and his team.

MIWENDO SOLUTIONS (2019)
https://www.miwendo.com/
Dr. Glòria Fernàndez- Esparrach

MiWEndo Solutions SL is a low-cost and safe (non-ionizing) electromagnetic device designed to be attached at the tip of a conventional colonoscope. MiWEndo automatizes polyp detection emitting an alarm when a polyp is sensed, increases the field of view to 360º and provides quantitative differentiation between malignant and benign polyps without changing the current clinical practice.

PREDICTHEON (2019)
Dr. Pedro Gambús
http://www.linkedin.com/company/predictheon/about/

Predictheon SL develops mathematical models, based on artificial intelligence, to optimize the monitoring systems for patients undergoing sedation or general anesthesia processes, anticipating side effects and therefore increasing the safety of the patient subjected to these processes.

SURG SOLUTIONS (2019)
https://www.vessconnect.com/
Dr. Joan Fontdevila and Dr. Jordi Descarrega

Surg Solution SL aims to be a world reference company in innovative devices and solutions in the field of vascular and microvascular anastomosis. The first product developed by the company is VessConnect, that addresses the need of simplifying vascular anastomosis (joining of two vessels), especially in microvascular procedures. VessConnect medical device addresses the issues related to vascular and microvascular anastomosis procedures by providing an easier, faster and safer way to perform these procedures using the memory-shape properties of some advanced materials.

Spinoffs from IDIBAPS researchers where IDIBAPS or FCRB do not participate as shareholders:

TRANSMURAL BIOTECH (2009)
www.transmuralbiotech.com
Dr. Eduard Gratacós

Transmural Biotech is developing innovative products and services in the perinatal field by applying image analysis technologies that facilitate a better diagnosis in a non-invasive way and representing a saving for the health system.

BIONURE (2009)
www.bionure.com
Dr. Pablo Villoslada

Bionure is a clinical stage biotechnology company. Based on more than 15-year of research in neuroprotection, the company develops new first-in-class disease-modifier drugs able to slow down, stop or reverse the damaging process affecting neurons for the treatment of degenerative, ischemic, toxic and inflammatory diseases of the nervous system.

AELIX THERAPEUTICS (2015)
www.aelixtherapeutics.com
Dr. Josep M. Gatell

AELIX Therapeutics is a clinical stage biotechnology company focused on the development of a therapeutic HIV vaccine to be used in cure/eradication strategies. The HIV Vaccine program is based on an innovative T cell vaccine immunogen design that directs the body's immune defence to the most vulnerable parts of HIV.

FREEOX BIOTECH (2017)
www.freeoxbiotech.com
Dr. Ángel Chamorro

Freeox Biotech is an innovative company born to discover and develop medicines addressed to reduce the effects of the oxidative stress in the organism, and especially those related to the neurological and cardiovascular system. The company is focused mainly in Stroke, a condition characterized by the interruption of blood flow to the brain which is a leading cause of death and disability worldwide.

tecnio catalonia
Fins a 31/12/2019
ACCIÓ
Generalitat de Catalunya

The Agency for Business Competitiveness (ACCIÓ) of the Government of Catalonia awarded IDIBAPS in 2016 with the TECNIO logo, thus identifying the institute as a facilitator of access to technology and a body helping businesses to gain knowledge of the technology generated in their scientific and technical environment.

Funding

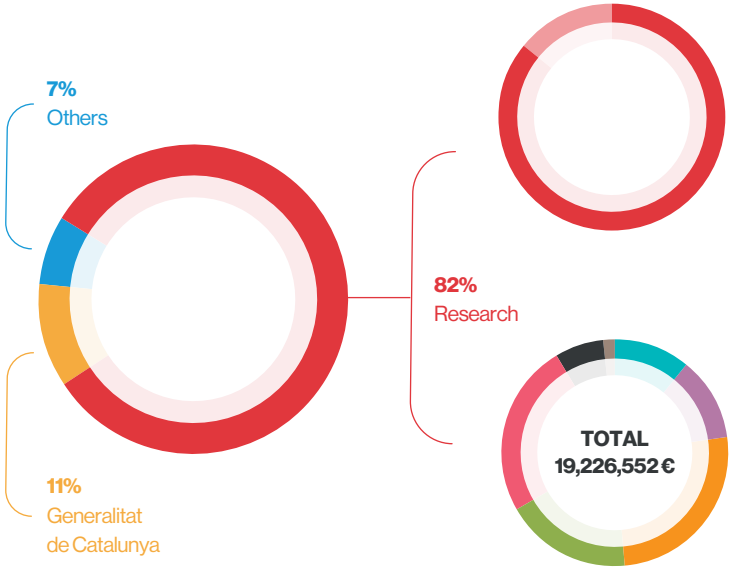
From a financial and managerial perspective, IDIBAPS and FCRB are managed in a global and consolidated manner.

The two institutions share the principal investigators (PI) accredited by IDIBAPS, who have funds, projects and resources in both entities. Annually, the research executed by IDIBAPS accredited PIs is almost 93% of the executed research activity, with the remaining 7% executed by non-accredited PIs.

In 2019, the two entities recorded 53,8 M€ consolidated of income and 53 M€ of expenditure, of which 43.8 M€ were directly related to the execution of research projects. Around 11% of this amount corresponds to the contribution of the Generalitat de Catalunya from the Departament d'Empresa i Coneixement and the Departament de Salut.

Funding sources (consolidated IDIBAPS+FCRB)

1	Calls for funding	21,374,208 €	39%
2	Private funding	16,711,411 €	30%
3	Donations	3,793,698 €	7%
4	Knowledge dissemination	3,295,635 €	6%
5	Generalitat de Catalunya	6,097,150 €	11%
6	Core facilities	1,181,494 €	2%
7	Rental income	825,536 €	1%
8	Intercompany services	338,796 €	1%
9	Financial income	105,600 €	0%
10	Capital grant	1,642,764 €	3%
	TOTAL	**55,366,292 €**	



Executed funds by source

84% National
16% International

Executed funds by research area

11% **Area 1.** Biological aggression and response mechanisms
11.8% **Area 2.** Respiratory, cardiovascular and renal pathobiology...
25.7% **Area 3.** Liver, digestive system and metabolism
17.7% **Area 4.** Clinical and experimental neuroscience
24.9% **Area 5.** Oncology and haematology
7.2% **Other research**
1.4% **Transversal research groups**

New competitive projects

The granted external funding supports mainly research projects and human resources grants. Some of these resources also fund scientific equipments or facilities.

IDIBAPS researchers and other staff are competitive in a wide range of opportunities launched at different levels (International, Spanish or Catalan). Regardless the funding's origin, many of the granted activities are co-funded by the European Regional Development Fund (ERDF).

From research groups

Total 236

163 Projects

73 Human resources grants

International 47

- **43** Projects
  - **29** European Commission. *Coordinated=7*
  - **8** National Institutes of Health. *New=3, renewed=5*
  - **6** Other
- **4** Human resources grants
  - **2** European Commission
  - **2** Other

Spanish 144

- **99** Projects
- **45** Human resources grants

Catalan 45

- **21** Projects
- **24** Human resources grants

Other new competitive projects

Total 17

13 Projects

4 Human resources grants

International 8

Spanish 3

Catalan 2

Spanish 4

The following table classifies the **253** new competitive projects in 2019 per funding agency. **236** of them were awarded to members of IDIBAPS research groups. **17** projects were raised by other Institute's staff members or associated researchers from Hospital Clinic of Barcelona beyond IDIBAPS research groups. The funding institutions listed below are grouped in two sections, public and private:

COMPETITIVE PUBLIC FUNDING	NUMBER OF PROJECTS
TOTAL	**189**
Catalan institutions	**27**
Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR)	10
Ajuntament de Barcelona	1
Generalitat de Catalunya	16
National institutions	**117**
Instituto de Salud Carlos III (ISCIII)	88
Ministerio de Ciencia, Innovación y Universidades (MCIU)	28
Ministerio de Sanidad, política social e igualdad	1
International institutions	**45**
European Commission	37
National Institute of Health (NIH)	8

COMPETITIVE PRIVATE FUNDING	NUMBER OF PROJECTS
TOTAL	**64**
Catalan institutions	**20**
Fundació Academia de Ciències Mèdiques i de la Salut de Catalunya i Balears	3
Fundació Catalana de Pneumologia	1
Fundació infermeria i societat	1
Fundació La Marató de TV3	13
Societat Catalana de Psiquiatria i Salut Mental	1
Societat Catalana d'Oftalmologia (SCOFT)	1
National institutions	**34**
Asociación Cáncer de Mama Metastásico (CMM)	1
Asociación Española de Pancreatología (AESPANC)	2
Asociación Española de Psiquiatría del Niño y el Adolescente (AEPNYA)	1
Barcelona Mobile Ventures SL	2
Eusko Jaurlaritza – Gobierno Vasco	1
Fundación Bancaria "La Caixa"	4
Fundación Casa del Corazón	1
Fundación Científica Asociación Española Contra el Cáncer (AECC)	3
Fundación de Investigación Médica Mutua Madrileña	3
Fundación Española de Hematología y Hemoterapia (FEHH)	1
Fundación Merck Salud	2
Fundación Privada Olga Torres (FOT)	1
Fundación Probitas	1
Fundación Ramon Areces	1
Fundación Senefro	2
Fundación Sociedad Española de Endoscopia Digestiva (SEED)	1
GILEAD Sciencies	4
Grupo Español Cáncer Digestivo (GEMCAD)	1
Grupo Español Multidisciplinar de Melanoma (GEM)	1
Sociedad Española de Epilepsia (SEEP)	1
International institutions	**10**
American association for cancer research	1
European association for the study of the liver (EASL)	1
European society for medical oncology (ESMO)	1
Gobierno de Colombia (Colciencias)	1
Helmsley Charitable Trust	1
Lady Tata memorial trust	1
Pfizer	2
Sociedade Portuguesa de Nefrologia (Spnefro)	1
Vasculitis foundation	1

Active competitive projects

In 2019, there were 688 active competitive projects. 634 of them were from IDIBAPS research groups. 34 remaining projects were from other Institute's staff members or associated researchers from Hospital Clinic of Barcelona beyond IDIBAPS research groups.

From research groups

Total 634

501 Projects

133 Human resources grants

International 83

- **80** Projects
  - **54** European Commission. *Coordinated=13*
  - **10** National Institutes of Health
  - **16** Other
- **3** Human resources grants
  - **2** European Commission
  - **1** Other

Spanish 368

- **285** Projects
- **83** Human resources grants

Catalan 183

- **136** Projects
- **47** Human resources grants

Other active competitive projects

Total 34

27 Projects

7 Human resources grants

International 10

Spanish 10

Catalan 7

Spanish 6

Catalan 1

Leadership in EU funded projects

IDIBAPS research groups have a strong background both participating and leading competitive projects supported by the European Commission.

In 2019, the following projects are to be highlighted:

GRANTS FUNDED BY THE EUROPEAN RESEARCH COUNCIL

PRIORS
Neural circuit dynamics underlying expectation and their impact on the variability of perceptual choices.

Dr. Jaime de la Rocha
2015 – 2021
Call: CE_H2020-ERC-2015_Consolidator grant
Official code: 683209

MITOSENSING
Decoding mitochondrial nutrient-sensing programs in POMC neurons as key determinants of metabolic health.

Dr. Marc Claret
2017 – 2022
Call: CE_H2020-ERC-2016_Consolidator grant
Official code: 725004

BCLLatlas
Single-cell genomics to comprehensively understand healthy B-cell maturation and transformation to chronic lymphocytic leukemia.

Dr. Elias Campo and Dr. Iñaki Martín Subero *(participating as independent Principal Investigators)*
2019 – 2024
Call: CE_H2020-ERC-2018_Synergy grants
Official code: 810287

MARIE SŁODOWSKA CURIE ACTIONS' MONOCONTRACTOR GRANTS

BITRECS
Biomedicine international training research programme for excellent clinician-scientists.

Dr. Elías Campo
2017 – 2022
Call: CE_H2020-MSCA-COF-16
Official code: 754550

Exh-Res-CART
Exhaustion resistent CAR-T cells for the treatment of solid tumors.

Fellow: **Dr. Sonia Guedan**
Mentor: **Dr. Aleix Prat**
2019 – 2020
Call: CE_H2020-MSCA-IF-18
Official code: 839566

PDX-PC
Elucidation of tumour cell plasticity mechanisms associated to treatment in metastatic prostate càncer.

Fellow: **Dr. Mercedes Marín**
Mentors: **Dr. Aleix Prat and Dr. Begoña Mellado**
2019 – 2021
Call: CE_H2020-MSCA-IF-18
Official code: 841121

COORDINATED COLLABORATIVE PROJECTS

INTEGRATE
Joint Action on integrating prevention, testing and linkage to care strategies acros HIV, viral hepatitis, TB and STIs in Europe.

Dr. Agata Raquel León
2017 – 2020
Call: HP-JA-2016
Official code: 761319

HIVACAR
Evaluating a Combination of Immune-based Therapies to Achieve a Functional Cure of HIV Infection.

Dr. Felipe Garcia
2017 – 2021
Call: H2020-SC1-2016-RTD
Official code: 731626

LIVERHOPE
Simvastatin and rifaximin as new therapy for patients with decompensated cirrhosis.

Dr. Pere Ginès
2017 – 2022
Call: H2020-SC1-2016-RTD
Official code: 731875

FUTURIZE
A step ahead to tackle future trends in addictions.

Dr. Silvia Matrai
2018 – 2020
Call: CE_JUST-2017-AG-DRUG
Official code: 806964

IMLINFO
Red Transfronteriza de Immunoterapias Personalizadas para Linfomas no- Hodgkin.

Dr. Patricia Pérez Galán
2018 – 2020
Call: CE_Interreg-16_POCTEFA
Official code: EFA281/16

TRANSCOLONCAN
Identifying Biomarkers Through Translational Research for Prevention and Stratification of Colorectal Cancer.

Dr. Sergi Castellví
2018 – 2022
Call: CE_H2020-COST17
Official code: CA17118

CKDSens
A novel home healthcare platform for chronic kidney disease.

Dr. Josep M. Campistol
2019-2020
Call: CE_EIT_2ndI19
Official code:19579

COTELHF
Co-creating tools for elderly patients with heart failure.

Dr. Miguel Camafort
2019 – 2020
Call: CE_EIT_1stC19
Official code: 19364

CATALAN OPEN INNOVATION HUB
Twining.

Dr. Josep Roca
2019 – 2021
Call: CE_EIPonAHA_19

Institutional projects

BITRECS

Biomedicine international training research programme for excellent clinician-scientists.

WEB
www.bitrecs.idibaps.org

Bitrecs
Biomedicine international training research programme for excellent clinician-scientists

BITRECS is a 60-month research and training fellowship programme (2017 - 2022). It has as main aim to recruit excellent and highly motivated postdoctoral clinician-scientists to help them become clinician-scientist leaders in the future. It is an IDIBAPS programme having the support of the European Commission and "La Caixa" Foundation.

In 2019, as a result of the second international peer-reviewed call of the programme, 7 fellows were selected. They were expected to perform their own research projects and focus on their career development under the guidance of an IDIBAPS Principle investigator (PI). During the year, 3 of these fellows started their 36-month fellowship at IDIBAPS (incoming scheme). At the same time, 4 fellows initiated a 12-18 month outgoing stay in other worldwide research institutions that has to be followed by a 18-24 month period at IDIBAPS (outgoing scheme).

In October, the official welcoming of BITRECS fellows took place in the kick-off meeting. It allowed introducing IDIBAPS institutional framework and supportive departments for the researchers. The fellows had also the opportunity to present themselves and their proposed work. At last, a brief training activity gave them the needed tools to draw their personal career development plans.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 754550 and from "La Caixa" Foundation (ID 100010434), under the agreement LCF/PR/GN18/50310006.



BITRECS fellows from left to right: Luis Gerardo Rodríguez (PI: Carlos Fernández de Larrea), Lorna Leal (PIs:Josep Mallolas and Felipe García), Gianluigi Li Bassi (PI: Antoni Torres), Marco Antonio Alba (PI: Maria Cinta Cid), Norma Verdolini (PI: Eduard Vieta), Isabel Valli (PI: Gisela Sugranyes) and Helena Ariño (PI: Josep Dalmau).

GENERACIÓ CIÈNCIA

In 2019, IDIBAPS was granted by Institute of Culture (ICUB) from Ajuntament de Barcelona to organise an activity for promoting scientific culture to be run during the Week of Science. It was the second edition of the event.

GENERACIÓ CIÈNCIA

As a novelty, in this edition, it was created a new catching name, an attractive visual identity as well as customized dissemination material to be used in this edition and the ones foreseen in the future.

During two mornings in November, "Generació ciència" welcomed at IDIBAPS close to 250 students from high schools in Barcelona together with their teachers. They had the chance to participate in 4 hands-on scientific workshops based in IDIBAPS science conducted by Institute's researchers. They also could visit the lab facilities and the Biobank of the research institute.
All those activities were prepared to help them become a biomedical scientist for a while to promote their future as scientists. Therefore, "Generació ciència" is an activity that helps IDIBAPS to be better known and more accessible to the society as well as to promote the culture in science in the city of Barcelona.



Collaborators:

SC[18]
www.setmanaciencia.cat

PhD COMMUNITY IDIBAPS

With the supposrt of:

Ajuntament de Barcelona

ICUB Institut de Cultura

Development of a valorization programme to increase and make sustainable the international profile of IDIBAPS.

IDIBAPS and the researchers at the Campus Clínic through FCRB have obtained and coordinated a considerable number of European and international competitive projects since 2008. However, to make sustainable and increase the international positioning of IDIBAPS/FCRB, a project funded by the Health Department of the Catalan Government within the Go Europe programme is now being implemented.

The two main objectives of this project are:

1) To increase the number of internationally funded projects.

2) To improve the international institutional positioning.

To achieve them, the project is implementing, among others, the following initiatives:

1) Exploring the potential of researchers who have not yet participated in European and international projects.

2) Support the researchers and the lines of research with the greatest potential, with special attention to junior Group Leaders and women researchers.

3) Promote institutional actions that enhance the visibility of IDIBAPS.

Generalitat de Catalunya
Departament de Salut

Supported by the Health Department
(Go Europe: SLT008/18/00199)

HRS4R

Human Resources Strategy for Researchers.

WEB
www.clinicbarcelona.org/en/idibaps/research-career

HR EXCELLENCE IN RESEARCH

IDIBAPS is awarded with the logo **"HR Excellence in research"** since 2015 due to it has acquired a commitment to implement the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers (Charter & Code) in their policies and practices. Overall, IDIBAPS has its own HRS4R strategy to prioritize the working environment of the researchers in terms of professionalism, recruitment, conditions as well as supervision.

In 2019, IDIBAPS was implementing its updated Action Plan (2017-2020) resulting from the interim assessment performed in 2017. Along 2019 some actions were concluded such as:

1) IDIBAPS launched its own Strategic Plan (2018-2021) integrating its HRS4R vision and strategy in it.

2) The document "Research Career at IDIBAPS" was updated.

3) The "Code of Good Scientific Practices" was revised and broaden including in it the "Code of Conduct" of the CERCA Institution.

4) The document *"Recruitment Policy: Personnel Selection Process. Guide for the open, transparent and merit-based recruitment of research community (OTM-R)"* was designed and approved.

5) The Regulation for creating spin-off companies at IDIBAPS was created and approved to be added to the current Intellectual Property Rights Policy.

Most of these actions were possible thanks to the engagement of many researchers and other IDIBAPS staff being members of specific working groups or committees responsible for those actions.

Spanish Biomedical Networks

ISCIII Networks

The Instituto de Salud Carlos III, ISCIII, from the Spanish Ministry of Science, Innovation and Universities promote the consolidation of several Spanish networks with the participation of IDIBAPS that are detailed below:

RESEARCH NETWORKS

The Networked Biomedical Research Centres (Centros de Investigacion Biomédica en Red, CIBERs and also CIBERNED) and the Cooperative Research Topic Networks (Redes Temáticas de Investigación Cooperativa en Salud, RETICs) represent a cooperative way of understanding biomedical research to achieve excellent results.
In 2019, IDIBAPS has been related to most of the existing virtual research structures as it is described below:

CIBERS

ciber
Centro de Investigación Biomédica en Red

Two IDIBAPS researchers are Scientific Directors in their corresponding CIBERs as leaders of their corresponding fields of research:

Dr. Jordi Bruix
Scientific Director at CIBER for Hepatic and digestive diseases (CIBEREHD).
www.ciberehd.org

The main purpose of this CIBER is the promotion and protection of health through the promotion of research of a basic nature and oriented to clinical and translational aspects in the area of Hepatic and Digestive Diseases.

Dr. Eduard Vieta
Scientific Director at CIBER for Mental health (CIBERSAM).
www.cibersam.es

The mission of this network is to provide answers and solutions to treat mental illnesses and thus improve the quality of life of citizens.

To sum up, 29 top IDIBAPS researchers are group leaders within CIBER networks and CIBERNED in those proportions:

CIBERDEM Diabetes and assoc. metabolic disorders	**2**
CIBERER Rare diseases	**6**
CIBEROBN Obesity and nutrition	**2**
CIBERES Respiratory diseases	**5**
CIBERSAM Mental health	**2**
CIBERCV Cardiovascular	**1**
CIBERONC Oncology	**2**
CIBERNED Neurodegenerative diseases	**1**
CIBEREHD Hepatic and digestive diseases	**8**

RETICS

13 IDIBAPS high-level researchers are also group leaders within RETICs networks. According to their field of work they are distributed in the following structures:

INVICTUS Cerebral Vascular Diseases	**1**
OFTARED Eye Diseases: Prevention, early detection and treatment of prevalent, degenerative and chronic ocular pathology	**2**
REDINREN Renal Research	**1**
REEM Multiple Sclerosis	**3**
RIER Research in Inflammation and Rheumatic Diseases	**1**
ARADyAL Asthma, allergic and adverse reactions	**1**
RTA Addictive Disorders	**1**
SAMID Maternal and Child Health and Development	**1**
REDRIS Research in Aids	**1**
TERCELL Cell Therapy network	**1**

Other Networks

ITEMAS NETWORK
https://www.itemas.org

The Medical Technology Innovation Platform (ITEMAS) has as a partner IDIBAPS. This network is one of the Thematic Platforms for Cooperative Research as a key component in its multidimensional vision of innovation within its area of interest.
ITEMAS aims to promote innovation in medical technology as an essential tool in making the Spanish National Health System more sustainable. It also supports the development of the culture of innovation necessary to facilitate integration of all the relevant agents in the field of medical technology.
The core of the ITEMAS comprises the innovation units of 29 large hospitals belonging to the Spanish National Health System, in addition to the Ministry of Health, Social Services and Equality and the National Center for Cardiovascular Research (CNIC).

SPANISH NETWORK OF BIOBANKS PLATFORM

IDIBAPS Biobank is part of the Spanish Network of Biobanks Platform. The main aim of this collaborative initiative is to provide an added value to the National Health System, favoring the development and quality of scientific production. Its members are biobanks of hospitals, autonomic networks, virtual biobancs, biobanks of the main research centers linked to healthcare institutions, between others.

This network is grouped into five working programs being all led by one single scientific coordination:

1) Strategic collections
2) Networked services
3) Research, development and innovation
4) Ethics, law and society
5) Coordination and training

SPANISH CLINICAL RESEARCH NETWORK, SCREN

IDIBAPS Principle Investigators are supported by the Fundació Clínic per la Recerca Biomèdica (FCRB) and also by the IDIBAPS Core Facility of Medical Statistics while performing their clinical research and also their clinical trials. It is for this purpose that the SCReN network has as members both FCRB and IDIBAPS.
This platform is responsible for grouping 31 Units of Clinical Research and Clinical trials. Its objective is to achieve high quality standards in all clinical research procedures, from the design to the final dissemination of the results. The participants of the SCReN network have different profiles such as researchers, cooperative groups, research centres between others.

The network is organized into internal programmes:

1) Regulation and monitoring
2) Pharmacovigilance
3) Methodology, biostatistics and data management
4) Coordination and training. It is noteworthy to mention that the IDIBAPS Core Facility of Medical Statistics, since 2014 until 2018, has been appointed to be the Spanish leader of the above-mentioned programme “Methodology, biostatistics and data management”.

NETWORK OF TUMOR BANKS OF CATALONIA (XBTC)

HCB-IDIBAPS Biobank has a tumour and tissue bank composed by nearly one million samples representative of tumoral tissues belonged to patients with cancer or other kind of diseases.
In 2006, as part of the Oncology Master Plan of Catalonia led by Dr. Pedro L. Fernández, the Network of Tumor Banks of Catalonia (XBTC) was created.
This structure compile 11 sources of tumour samples linked to the main hospitals of Catalonia. HCB-IDIBAPS Biobank is the coordinator node of the XBTC network.

Scientific facilities

CEK, Esther Koplowitz Research Center

Inaugurated by the end of 2010 and with space for more than 350 researchers, the CEK building receives international scientists and PhD students, fostering the exchange of experience and professional synergies.

The building has a laboratory area of 4,860 m2 on the ground. In the basement one underground floor offers a total area of 2,565 m2, including space for scientific core facilities, a category 2 radioactive non-encapsulated sources type facility (IRA-3029), and a BSL-3 laboratory GMO notified (A/ES/13/I-11).

The CEK building was made possible thanks to the contribution of several public and private institutions, the Generalitat de Catalunya, the Ministerio de Economía y Competitividad, and the Instituto de Salud Carlos III, as well as from the support of other donors such as the Fundación Esther Koplowitz, Fundació Privada Cellex, Acció Sardà Farriol para la Investigación en Diabetes and Laboratorios Esteve.

CELLEX, Biomedical Research Center

Since 2013, CELLEX center is a space with four floors located in the UB School of Medicine. Thanks to the collaboration between the public and private sectors 2,290 m2 of laboratories, scientific and technological services and other spaces are available to the research developed at IDIBAPS and the University of Barcelona.

The renovation and adaptation of these areas is mainly the result of a donation from the CELLEX Foundation. Part of the contribution of the IDIBAPS has been funded with ERDF funds from the Generalitat de Catalunya and the rest comes from specific calls by the Instituto de Salud Carlos III. These IDIBAPS facilities home over 200 researchers.

Core facilities

Excellent biomedical research requires the use of highly specialised techniques and equipment. IDIBAPS has five core facilities to provide all researchers with big infrastructures and high quality technical expertise:

Functional Genomics
NGS
Transcriptomics

Flow cytometry and cell sorting
Flow cytometry
Cell sorting

Biobank
Neurological tissue bank
Tumor and tissue bank
Biologic fluids bank

Medical Statistics
Statistics
Data management
Information technology

Magnetic Resonance Imaging
3T
7T
Image lab

On the other hand, IDIBAPS has an agreement with its consortium partners to optimise investments in infrastructures so duplicities are avoided and a wider spectrum of scientific services can be offered to the community. Universitat de Barcelona at the Clínic Campus, provides researchers with some complementary infrastructures such as microscopy, animal facility, library and proteomics.

SERVICES

	NEW INTERNAL USERS	NEW EXTERNAL USERS	TOTAL USERS
BIOBANK	60	48	208
CYTOMETRY	11	-	167
GENOMICS	29	10	140
MAGNETIC RESONANCE	12	6	82
MEDICAL STATISTICS	1	-	275

RESEARCH

	PUBLICATIONS	ACKNOWLEDGED PUBLICATIONS
BIOBANK	37	43
CYTOMETRY	-	6
GENOMICS	5	4
MAGNETIC RESONANCE	20	7
MEDICAL STATISTICS	34	-

HCB-IDIBAPS Biobank

FOR FURTHER INFORMATION
www.clinicbiobanc.org
biobanc@idibaps.org

NEUROLOGICAL TISSUE BANK
biobanc.btn@idibaps.org

TUMOUR AND TISSUE BANK
biobanc.bancdetumors@idibaps.org

BIOLOGICAL FLUIDS BANK
biobanc.fluids@idibaps.org

Joan Carles García Pagán, MD, PhD (HCB)
Scientific director

Aina Rodríguez, PhD
Head of core facility

DESCRIPTION

The **Biobank** coordinates the collection, processing, storage and transfer of human biological samples to promote biomedical research of the highest standard. In compliance with the legal and ethical framework, the Biobank only provides samples to projects that have been approved by the ethical and scientific committees. With the aim of optimizing the human resources and equipment in the Biobank, this facility offers a wide range of services for the processing and analysis of the samples gathered by the research groups. All the procedures performed at the Biobank are carried out under ISO 9001:2015 certification.

The HCB-IDIBAPS Biobank's catalogue of samples is formed by the samples collected by three large banks, all of which have extensive experience in research with human samples and which are available for scientific purposes for the consolidation of personalised medicine:

Neurological tissue bank
A nervous tissue repository (brain and spinal cord) created from donations from deceased donors with or without neurological disorders. Brain tissue samples are sent to scientific researchers worldwide, in order to help to increase the understanding of the human brain and to develop therapies for neurological diseases.

Tumour and tissue bank
It is a repository of tumoural and non-tumoural frozen tissue samples from around 12.000 cancer patients. Additionally, the Anatomical Pathology collection consists of paraffin-embedded tissue samples from all kind of adult diseases, which gathers more than 1.6 million tissue blocks. All these samples are surplus to diagnostic requirements from the Department of Anatomical Pathology in the Hospital Clínic and are essential for current large-scale tissue research projects. Different diagnosis consultants from Hospital Clinic help us in the histopathological evaluation of samples.

Biological fluids bank
This repository contains samples of patients with diverse clinical diagnosis, including metabolic, inflammatory bowel, oncological, digestive, psychiatric and maternal and foetal diseases. It houses a large variety of samples of scientific interest: primarily whole blood, serum, plasma urine and DNA isolated from body fluid samples, among others. These samples are collected in clinical laboratories and medical interventions and surgeries for Biobank donation.

Flow cytometry and cell sorting

FOR FURTHER INFORMATION
idicitom@idibaps.org

Isabel Crespo, PhD
Head of core facility

DESCRIPTION

The Flow Cytometry core facility provides high quality state-of-the-art multiparametric flow cytometry and cell sorting instrumentation as well as associated expertise and services to all investigators at IDIBAPS and other outside customers. Skilled staff provide help with experimental design, sample acquisition, data analysis, sorting and help with interpreting the data and producing figures for publication.

The facility has upgraded their BD FACS Aria SORP cell sorter with the last version of the software BD FACSDiVa (v8.0.1) that includes support for index sorting and sorting using Terasaki plates.

Functional genomics

FOR FURTHER INFORMATION
genomica.idibaps@idibaps.org

Pedro Jares, PhD
Scientific director

Magda Pinyol, PhD
Head of core facility

DESCRIPTION

The **Functional Genomics** core facility provides access to different high throughput genomic tecnologies to the researchers. The facility manages samples for genomic analysis including transcriptional profiling, low density and large-scale genotyping, gene copy number analysis and gene-panel sequencing using different technological platforms such as real-time PCR, digital quantification, microarrays and next-generation sequencing. Recently, we have incorporated a new next-generation sequencer, NextSeq2000, which will allow the implementation of new sequencing protocols such as RNASeq or EXOMES.In addition, the facility offers advice on experimental design and application of genomic techonologies.

Magnetic resonance imaging

FOR FURTHER INFORMATION
plataformaimatgemedica@idibaps.org

Núria Bargalló MD, PhD (HCB)
Head of core facility

DESCRIPTION

The **Magnetic Resonance Imaging** (MRI) core facility is equipped with a 7 Tesla Bruker magnet for small animal imaging and a PRISMA 3 Tesla magnet for humans (upgraded in 2017 thanks to own funds and funds obtained from Ministerio de Economia y Competitividad and FEDER). During 2019, all acquisition protocols were optimized and running in regular basis for all clinical studies.

The main objectives of this Core Facility are:

- To provide services related to medical imaging techniques for researchers from IDIBAPS and other institutions, and to industries connected with health.
- To perform first-rate basic and clinical research into medical imaging using structural and functional magnetic resonance imaging, magnetic resonance spectroscopy, molecular imaging, other types of medical imaging and image processing.
- Training of the users and keeping the state of art in MRI techniques to enable researchers conducting experimental and clinical studies, thereby allowing them to explore the advantages of translational research.
- To complement this infrastructure we count with the Laboratory of Image Analysis where the users have different workstations available to use with the most common softwares used in the MR Field installed.

Medical statistics

FOR FURTHER INFORMATION
bioestadistica@idibaps.org

Ferran Torres, MD, PhD
Head of core facility

DESCRIPTION

The **Medical Statistics** core facility provides methodological and statistical support for IDIBAPS research projects and those of allied institutions.
The main objective is to promote clinical research excellence and facilitate resources to achieve this.
The platform's tasks are conducted in compliance with the International Conference of Harmonisation guidelines, European and local laws, as well as with the regulatory recommendations. Standard Operating Procedures (SOPs) are in place to fulfil those standards.

Training

Doctoral theses

99 Doctoral theses defended in 2019.

18 Theses with European mention.

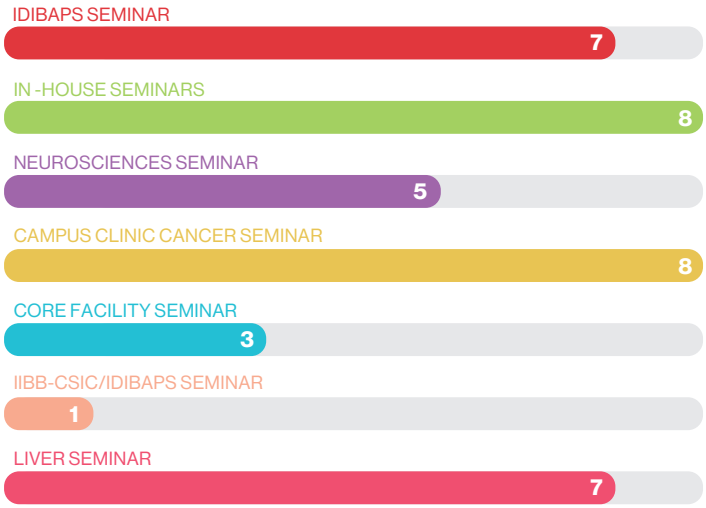
THESIS AUTHOR	TITLE	THESIS DIRECTORS
Alexandra Abos Ortega	MRI connectomics in movement disorders	**Junqué C**
Silvia Amoretti Guadall	La reserva cognitiva en el trastorno mental grave	**Bernardo M**
Gabriel Bernardino Pérez	Computational anatomy as a driver of understanding structural and functional cardiac remodelling	**Bijnens B**
Daniel Boloc	Single nucleotide polymorphism selection and pharmacogenetic prediction in antipsychotic-induced extrapyramidal effects	**Bernardo M**
Marcos Díaz Gay	Identification of new candidates genes for germline predisposition to familial colorectal cancer using somatic mutational profiling	**Castellví S, Balaguer F**
Diana Alicia Díaz Rizzolo	Type 2 diabetes preventive effects through specific dietary patterns and nutrition intervention in e lderly population with prediabetes	**Gomis R**
Marina Garriga Carrizosa	Fetal programming, severe mental illness and metabolic related disturbances	**Garcia Rizo C**
Neus Gimenez Carabaza	Targeted Therapies In CII. New Drugs Against CII Recurrent Mutations	**Campo E, Colomer D**
Ainhoa Hermoso	The impact of expectation on perceptual decision-making: From behavior to neural dynamics	**De La Rocha J**
Ignasi Jorba Masdéu	Multiscale nonlinear mechanics of soft biological tissues	**Navajas D**
Grigorios Kalapotharakos	Preeclampsia a cardiovascular risk factor?	**Crispi F, Hansson S**
Molka Kammoum	Genomic Analysis of Congenital Diaphragmatic Hernia	**Eixarch E**
Nadine Margit Hahner	Assessment of cortical development in fetuses whit isolated non-severe ventriculomegaly and its correlation with neurodevelopmental outcome	**Gratacós E, Eixarch E**
Elsa Meneses-Salas	Estudio de los mecanismos moleculares del transporte de colesterol desde los endo-lisosomas: papel de la AnxA6 y los contactos de membranas	**Enrich C**
Alvaro Pérez Moreno	Quantitative ultrasound texture analysis for its use on prematurity	**Palacio M, Bonet-Carne E**
Neus Rabaneda Lombarte	Brain immune response as therapeutic target in the treatment of Parkinson's disease	**Solà C, Saura J**
Álvaro Gabriel Sepúlveda	Impact of fetal growth restriction on cardiovascular structure and function across life course	**Crispi F**
Carme Uribe Codesal	Cortical atrophy patterns associated to cognitive impairment in Parkinson's disease	**Junqué C, Segura B**
Diana Alarcón Arís	Proteína alfa-sinucleína y modulación de los sistemas monoaminérgicos. Desde la función fisiológica a diana terapéutica utilizando ácidos nucleicos de interferencia	Bortolozzi A, Artigas F
Magí Andorrà Inglés	Dynamics of central nervous system neuroaxonal injury in multiple sclerosis	Villoslada P
Guillem Angulo Montserrat	Estudio de la interferencia de ICOSL (CD275) como una nueva estrategia de inmunoevasión viral	Angulo A

Adrian Arturo Ceccato	Estrategias Diagnósticas y Terapéuticas de la Neumonía Adquirida en la Comunidad por Streptococcus pneumoniae	Torres A
João M. Barbosa	Neural Network Mechanisms of working memory interference	Compte A
Carla Bastida Fernández	Dose optimization of intravenous tocilizumab in rheumatoid arthritis patients	Sanmarti R
Francesc Borrisser Pairó	Expressió miocardíaca d'IGF-1 i miostatina en donants hipertensos i amb consum excessiu d'alcohol. Relació amb el desenvolupament de miocardiopatia	Fernández Solà J
Esther Bujaldón Ormaechea	Mecanismos de acción de los factores de crecimiento en hígados esteatósicos sometidos a resección bajo oclusión vascular	Cornide ME, Peralta C
Joan Josep Castellano Pérez	Impacto pronóstico del lincRNA-p21 en tejido tumoral y exosomas de cáncer de pulmón de célula no pequeña	Navarro A
José César Milisenda	Avances en miopatías inflamatorias	Grau Junyent JM
Silvia Collado Nieto	Enfermedad cardiovascular en hemodiálisis: análisis de la prevalencia y relevancia de los factores de riesgo cardiovascular	Cases A
Ana M. Corraliza Márquez	Immune mechanisms involved in inducing remission in Crohn's disease patients undergoing hematopoietic stem cell transplant	Salas A
Gilberto de Almeida Silva Junior	Gradiente de presión portal en la cirrosis. Relevancia de los aspectos técnicos en su valor pronóstico	García Pagán JC, Hernández Gea V
Estefanía de Gregorio Robles	Participación de las Catepsinas B y S en la respuesta inflamatoria hepática	Morales A
Sara de Pablo Pons	Effect of chaperones on pancreatic islet amyloid deposition and glucose homeostasis	Servitja JM, Novials A
Eduardo Delgado Oliver	Utilidad del ganglio centinela en el cáncer papilar de tiroides	Vidal Pérez O, Vidal Sicart S
Álvaro Díaz González	Evaluación clínica prospectiva del perfil genético - inmuno / inflamatorio en el tratamiento con sorafenib del carcinoma hepatocelular para predecir tolerancia y supervivencia	Bruix J, Reig ME
Carla Domuro Soriano	Paper de la proteïna p27 en la regulació de l'expressió d'alfa-sinucleïna: Implicacions en la Malaltia de Parkinson	Pujol MJ
Mariana Donadon	Depressão pós-parto e reconhecimento de expressões faciais de emoções em bebés: construção de um conjunto de estímulos e efeitos agudos da ocitocina	Martín-Santos R
Saray Duran Sanchon	Identificación y validación de microRNAs como biomarcadores para la detección precoz del cáncer colorrectal	Castells A, Gironella M
Neus Falgas Martinez	Utilitat dels marcadors bioquímics i de neuroimatge per al diagnòstic de la malaltia d'Alzheimer d'inici precoç	Lladó A, Sánchez del Valle R
Marta Farré Almacellas	Els costos i els recursos utilitzats en l'atenció de les persones amb demència des d'una perspectiva social	Zabalegui A
Sara Fernandez Garcia	Deciphering neuronal network alterations of the basal ganglia circuit in Huntington's disease	Alberch J, Masana M
Inés María Fernández Guerrero	Actividad investigadora de los médicos españoles de urgencias y emergencias. Análisis de la productividad y calidad de ponencias a congresos, artículos científicos y tesis doctorales	Miró Ò
Vicenç Ferres Padro	Indicadores de calidad en la exposición a monóxido de carbono, humo de incendios, gases y otros tóxicos: del conocimiento a la práctica multidisciplinar en la asistencia prehospitalaria	Amigó M
Sònia Feu Coll	Replication stress: mechanisms and molecules involved in DNA replication progression and reinitiation	Agell N
Sebastià Franch Expósito	Variants de número de còpia al càncer colorectal: predisposició germinal i perfils genòmics tumorals.	Castellví S
Mª Neus Fullana Llinàs	Post-transcriptional modulation of glial glutamate transporters in mouse prefrontal cortex. Involvement of glutamatergic system in depression	Artigas F, Bortolozzi A
Marta Garcia Forn	Lamin B1 in the pathophysiology of Huntington's disease: from the brain to the periphery	Perez Navarro E

Ana Gonzalez Cordon	Enfermedad cardiovascular en la infección por el virus de la inmunodeficiencia humana. Factores implicados, tratamiento antirretroviral y utilidad de marcadores de ateromatosis subclínica	Martínez Chamorro E
Ingrid González Casacuberta	Transcriptomic, mitochondrial and autophagic phenotype of fibroblasts from Parkinson's disease patients carrying PRKN mutations	Garrabou G, Moren C
Meritxell Gracia Quero	Papel de la histeroscopia y otras herramientas de diagnóstico y tratamiento en el manejo de patología uterina benigna.	Carmona F
Martina Guerrero Hernández	Targeting tumor microenvironment crosstalk through GPCR receptors and PI3K pathway	Pérez Galán P, Camps J
Angela Guirao Montes	The dog as a tool for early diagnosis of lung carcer using exhaled breath biomarkers	Agustí A
Katarzyna Holub	Impact of host-immune inflammatory response on survival outcomes of patients diagnosed with endometrial or cervical cancer	Biete A
Patricia Huelin Álvarez	Paper dels biomarcadors renals en la nova proposta de classificació d'Acute kidney Injury (AKI) en pacients amb cirrosi hepática	Ginès P
Gustavo David Jiménez Britez	Parada cardiaca extra-hospitalaria e hipotermia terapéutica en el Síndrome Coronario Agudo: riesgo de trombosis y hemorragias	Sabaté M, Freixa X
Diana Luz Juarez Flores	Mitochondial and autophagic alterations in human-derived cell models of Parkinson's Disease related to LRRK2(G2019S) and GBA (N370S) mutations	Garrabou G, Moren C
Marc Julià Manresa	Receptores del sistema inmunitario innato (Toll-like receptors y receptores de la Fc-gamma) y adaptativo (CD5 y CD6) como factores de susceptibilidad, modificadores de la enfermedad y respuesta al tratamiento biológico en psoriasis	Lozano F
Carlos Leal Valdivieso	Esdeveniments adversos posteriors a la colangiografia retròfrada endoscòpica en els pacients amb cirrosi hepàtica i en el receptors de trasplantament hepàtic	Cárdenas A
Pere Leyes Garcia	Homeòstasi del colesterol en pacients infectats per VIH que reben tractament antiretroviral	Martínez Chamorro E
Alejandra López Giraldo	New approaches for the study of COPD pathobiology: from abnormal repair to systemic manifestations.	Agustí A, Faner R
David Martín Garcia	Caraterització genètica del Limfoma de Cèl·lules del Mantell i la Leucèmia limfàtica Crònica mitjançant microarrays i tècniques de seqüenciació: noves eines pel diagnòstic i pronòstic	Beà S
Vanessa Martins Da Silva	Phenotype and Molecular Characterization of Large to Giant Congenital Melanocytic Nevi	Puig S, Malvehy J
Jessica Matas Fassi	Estudio de factores clínicos, hallazgos de tomografía de coherencia optica y biomarcadores como factores pronósticos en el edema macular secundario a uveítis no infecciosa	Adán A, Llorens V
Maria Mayoral Peñalva	Tomografía por Emisión de Positrones cuantificada en la evaluación prequirúrgica de la Epilepsia	Setoain X, Pons F
Federico Migliorelli Falcone	Evaluación de los factores clínicos y ecográficos predictivos del resultado de la inducción del parto en gestaciones únicas	Palacio M
Ester Monclús Cols	Maneig de la sepsia en un servei d'urgències d'un hospital de tercer nivel. Oportunitats de millora	Ortega-Romero M
Jordina Munrós Feliu	Nous mecanismes en la fisiopatologia de l'endometriosi profunda	Martinez Zamora MA, Tassies D
Arnau Navines Ferrer	New insights in mast cell function triggered by FcεRI, KIT and MRGPRX2 receptors	Martín Andorrà M
Elsa Negrete	Papel de los factores de crecimiento en hígados esteatósicos procedentes de donantes cadavéricos. Mecanismos de acción y regulación farmacológica	Peralta C, Jiménez-Castro M
Chiara Ninfali	Regulation of skeletal muscle atrophy by the ZEB1 transcription factor	Postigo A
Guillaume Noel	Multi-level integrated analysis of Chronic Obstruc tive Pulmonary Disease (COPD) Heterogeneity	Agustí A, Faner R
Anna Nogués Sabaté	Llum de Banda Estreta en lesions premalignes i malignes del cap i coll. Utilitat i reproductibilitat de la tècnica	Vilaseca I
Giovanni Oriolo	Mood, immunity and brain connectivity in patients with chronic hepatitis C	Martín-Santos R

Jordi Pedragosa Ollé	Els macròfags perivasculars i la infiltració leucocitària en la isquèmia cerebral	Miró F, Planas A
Amalia Pelegrina Manzano	Nuevos métodos predictivos de pronóstico y complicaciones en pacientes con metástasis hepáticas por cáncer colorrectal	Fuster J
Veronica Perea Castilla	Efecte de les hipoglucèmies repetides i desapercebudes en el control pregestacional i la gestació en les pacients amb diabetis mellitus tipus 1	Conget I
Ana Pérez Vigil	Functional impairment in obsessive-compulsive disorder: educational attainment and labour market outcomes	Lazaro ML
Andrés Perissinotti	Utilidad de la SPECT de perfusión y la PET-FDG en la valoración prequirúrgica de pacientes con epilepsia	Pons F, Setoain FJ
Maria Rosa Pigrau Santpere	La seva malaltia i el seu regnat.	Vieta E
Sandra Piquer Gibert	IA2 i GAD65: Estudi de la resposta humoral específica en la Diabetis Mellitus tipus I. Desenvolupament d'eines per a l'estudi d'una possible relació causal d'ambdós autoantígens en el desencadenament de la malaltia	Gomis R
M.Teresa Plana Turro	Estudi de la relació clínica i genètica entre pacients amb enorèxia nerviosa i pacients amb transtorn obsessiu-compulsiu d'inici en la infància i l'adolescència	Lazaro ML
Flavia Pozzobon Torres	Influencia de la genética en la dermatoscopia del melanoma	Puig S
Ander Regueiro Cueva	Redes regionales para la atención del infarto agudo de miocardio. Impacto clínico y económico	Roqué M, Sabaté M
Oscar Reig Torras	Biomarcadors i resistència a la quimioteràpia en càncer de pròstata	Mellado B
Júlia Rodriguez Comas	Pancreatic islet inflammation and stress-induced β -cell failure: potential strategies to recover β -cell function	Servitja JM, Novials A
Jhon Fredy Rojas Lievano	Nuevas estratégias para mejorar la tolerabilidad del tratamiento antirretroviral y disminuir su impacto sobre las comorbilidades	Martínez Chamorro E
Irene Roth Perez	Efectos de la ingesta moderada de vinos andaluces de crianza biológica sobre la función endotelial	Estruch R, Casas R
Salvatore Rudilosso	Estudio de las características hemodinámicas de los infartos lacunares con técnicas de neuroimagen de perfusión cerebral	Chamorro A, Urra X
Angelica Maria Salas Perdomo	Estudio de la lesión por reperfusión en la isquemia cerebral experimental y su tratamiento	Planas A, Miró F
Lidia Sanchez Moral	Role of ZEB1 in adenoma formation, inflammation and inflammation-driven carcinoma	Postigo A, Castells A
Cristina Sánchez Montes	Análisis del rendimiento off-line de métodos computacionales para la detección y predicción histológica de pólipos en imágenes de colonoscopia	Fernández Esparrach MG
Cristina Solé Martí	Inflamació sistèmica i cirrosi hepàtica. Implicació en el pronòstic i fisiopatologia de la insuficiència hepàtica aguda sobre crònica i de la síndrome hepatorenal	Ginès P, Solà E
María Suárez-Lledó Grande	Infección por Citomegalovirus en el trasplante alogénico de progenitores hematopoyéticos en la era del tratamiento anticipado: consideraciones actuales sobre la definición de grupos de riesgo y el diagnòstico	Urbano A, Rovira M
Mireia Tarrés Gatius	Neurobiological mechanisms involved in the antidepressant and psychotomimetic effects of NMDA receptor antagonists: role of the GluN2C subunit	Castañé A. Artigas F
Marc Torra Massana	Molecular and cellular mechanisms of fertilization failure after ICSI	Oliva R
Valeria Tubita	Papel de los exosomas de células tumorales en la progresión tumoral y metástasis en cáncer posttrasplante bajo diferentes tipos de inmunosupresión	Ramírez Bajo MJ, Revuelta I
Pedro Ventura-Aguiar	Donor-derived risk factors for graft failure in pancreas transplantation	Campistol JM
Ferran Vilaplana Mira	La vitrectomía en las complicaciones del segmento posterior en la osteoqueratoprótesis	Casaroli Marano RP
Jair Asir Villanueva Padilla	Advanced methodologies for improving the characterization and treatment of sleep apnea	Farré R, Montserrat JM

Seminars



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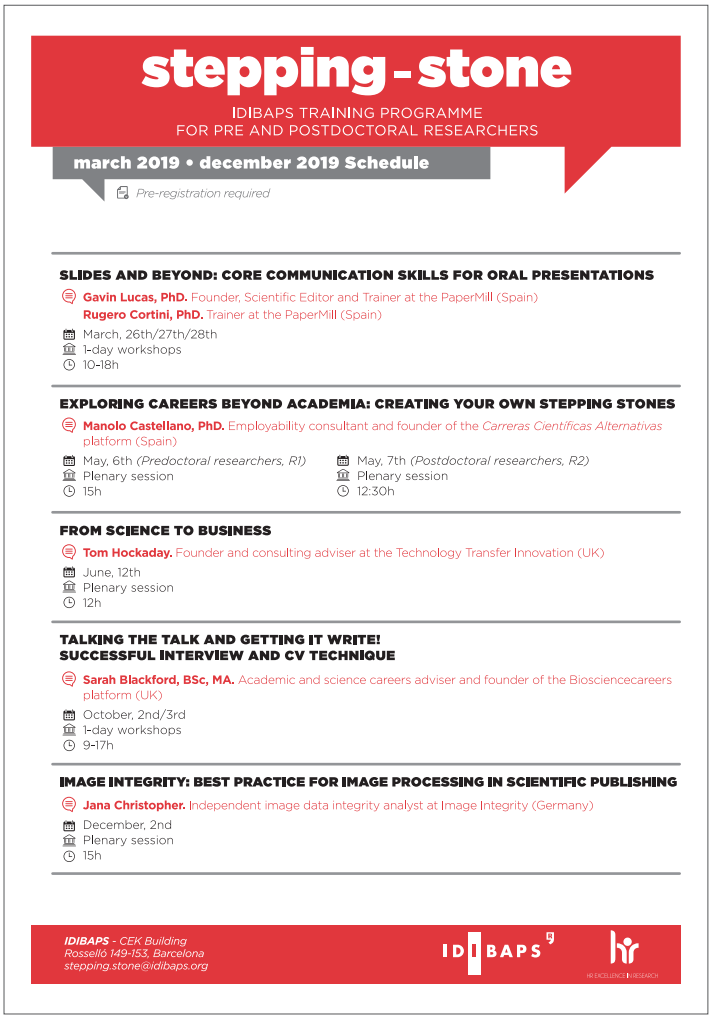
Institutional Seminars



Stepping-stone training programme



stepping - stone

IDIBAPS TRAINING PROGRAMME
FOR PRE AND POSTDOCTORAL RESEARCHERS

march 2019 • december 2019 Schedule

Pre-registration required

SLIDES AND BEYOND: CORE COMMUNICATION SKILLS FOR ORAL PRESENTATIONS

Gavin Lucas, PhD. Founder, Scientific Editor and Trainer at the PaperMill (Spain)
Rugero Cortini, PhD. Trainer at the PaperMill (Spain)

March, 26th/27th/28th
1-day workshops
10-18h

EXPLORING CAREERS BEYOND ACADEMIA: CREATING YOUR OWN STEPPING STONES

Manolo Castellano, PhD. Employability consultant and founder of the *Carreras Científicas Alternativas* platform (Spain)

May, 6th *(Predoctoral researchers, R1)*
Plenary session
15h

May, 7th *(Postdoctoral researchers, R2)*
Plenary session
12:30h

FROM SCIENCE TO BUSINESS

Tom Hockaday. Founder and consulting adviser at the Technology Transfer Innovation (UK)

June, 12th
Plenary session
12h

TALKING THE TALK AND GETTING IT WRITE!
SUCCESSFUL INTERVIEW AND CV TECHNIQUE

Sarah Blackford, BSc, MA. Academic and science careers adviser and founder of the Biosciencecareers platform (UK)

October, 2nd/3rd
1-day workshops
9-17h

IMAGE INTEGRITY: BEST PRACTICE FOR IMAGE PROCESSING IN SCIENTIFIC PUBLISHING

Jana Christopher. Independent image data integrity analyst at Image Integrity (Germany)

December, 2nd
Plenary session
15h

IDIBAPS - CEK Building
Rosselló 149-153, Barcelona
stepping.stone@idibaps.org

IDIBAPS

It is a training programme that seeks to provide predoctoral (R1) and postdoctoral (R2) researchers at IDIBAPS with non-scientific tools and skills which are key for the development of their careers.

This initiative started in 2016 and it was one of the results of the IDIBAPS Human Resources Strategy for Researchers (HRS4R).

4 **Sessions in 2019**

5 **Workshops in 2019**

ATTENDEES

188 **Sessions in 2019**

92 **Workshops in 2019**

Aula Clínic

Aula Clínic is dedicated to the promotion and dissemination of continuing education in Health Science.

It also develops, plans and provides logistical support to the training initiatives of the professionals of the Hospital Clínic de Barcelona through the design of courses, providing advice, administration, management and marketing support and disseminating the teaching activities.

In 2019, **125** professionals from the Clinic campus entrust the organization of their continuing education activity to Aula Clinic. Among others, Aula Clinic, organised:

- II Edition of the *CLINIC Barcelona Summer School*

- II National conference on HIV

- Ibero-American Congress on Bipolar Disorder

- International Congress of European Study Group on Lysosomal Diseases (ESGLD)

Patronage

The Fundació Clínic - IDIBAPS has the support of companies, entities and people who, through financial contributions or organizing fundraising activities, help to finance research projects.

They also contribute to the dissemination and social awareness of their activity.

In 2019, the Fundació Clínic received a total of € 3,793,698 from patronage activities.

The Foundation would like to thank all the individuals, organizations and entities that have collaborated with the institution in 2019, including:

FUNDACIÓN FERO

FUNDACIÓN MIARNAU

FUNDACIÓN MANUEL LAO

FUNDACIÓN LA CAIXA

Communication and public engagement

MEDIA RELATIONS

32 Press releases

PUBLIC RELATIONS

22 Events organised

SOCIAL MEDIA

Facebook
2673 page likes*

Twitter
10148 followers*

Linkedin
3924 followes*

*at december 31

PUBLIC ENGAGEMENT

64 Activities organised
(14 different categories of activities)

2471 Audience Reached

ACTIVITIES
Primary school students

90 Summer Camp.
Assistants

ACTIVITIES
Secondary school students

5 Escolab.
Participants

12 Brain Awareness Week.
Participants

12 Barcelona Int. Youth Science ChallengeVisits.
Participants

25 Bojos per la Medicina.
Participants

350 IDIBAPS Science Party.
Participants

250 Generació Ciència.
Participants

350 Steam Anella.
Participants

ACTIVITIES
General Public

12 "A la recerca de la salut" at Centre Cívic Urgell
Assistants

3 La Marató de TV3.
Assistants

6 Pint of Science.
Assistants

2 European Researcher's Night.
Assistants

News

JANUARY

IDIBAPS has two new research groups: Microenvironment in pathogenesis and treatment of lymphoma, led by Patricia Pérez-Galán, and Functional characterization of oncogenic mechanisms in lymphoid neoplasms, led by Virginia Amador. *(Photo 1)*

MARCH

IDIBAPS incorporates seven clinical scientists, thanks to the Bitrecs program.

MAY

Participation success at the IDIBAPS open day and science festival. *(Photo 2)*

JUNE

Josep Dalmau awarded the 2019 Lilly Foundation prize for Clinical Biomedical Research.

IDIBAPS celebrates its first PhD Day.

JULY

IDIBAPS initiates the campaign "Female talent: women scientists speak". *(Photo 3)*

The new joint IDIBAPS-Fundació Clínic-Hospital Clínic website goes into operation.

SEPTEMBER

IDIBAPS re-accredited as a health care research institute by the Carlos III Institute of Health.

Ninety boys and girls become little great scientists at the IDIBAPS summer camp. *(Photo 4)*

OCTOBER

IDIBAPS signs onto the Letter of Commitment for gender equality in research centers

NOVEMBER

Eleven researchers from Hospital Clínic-IDIBAPS and Universitat de Barcelona in the ranking among the best in the world. *(Photo 5)*

IDIBAPS hosts 'Generació Ciència': 250 high-school students become researchers for a day. *(Photo 6)*

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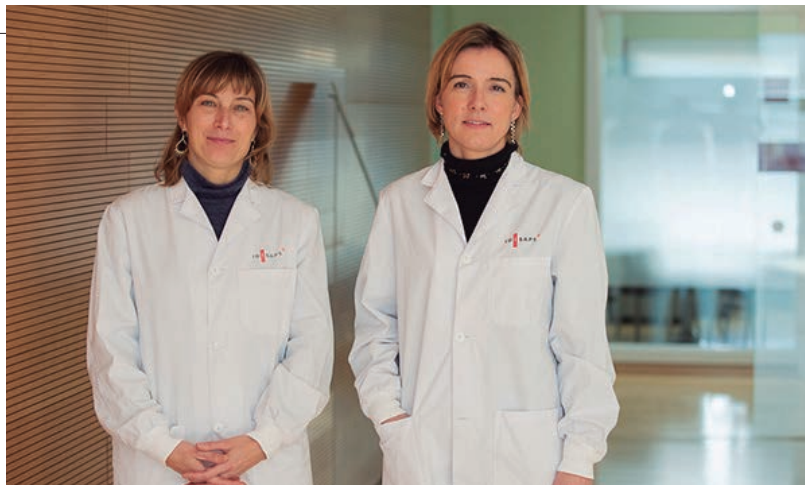

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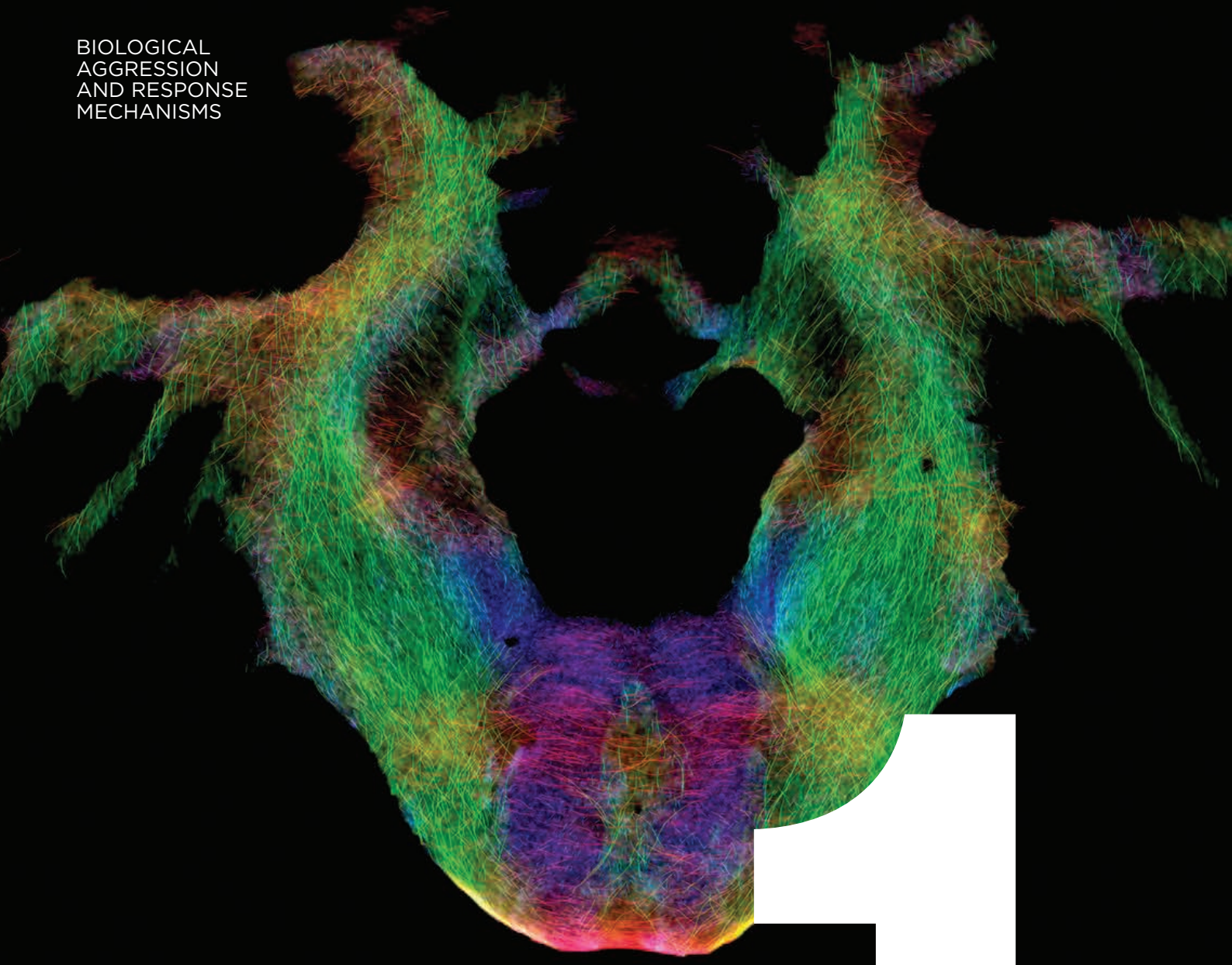
ANNUAL
SCIENTIFIC REPORT
2019

AREA 1

BIOLOGICAL AGGRESSION AND RESPONSE MECHANISMS



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AREA 1

BIOLOGICAL AGGRESSION AND RESPONSE MECHANISMS

1.1 **Ocular inflammation clinical and experimental studies**
Alfredo Adán

1.2 **Systemic autoimmune diseases**
Ricard Cervera

1.3 **Systemic vasculitis**
Maria Cinta Cid

1.4 **Molecular and cellular bases of inflammation. Structural and biological mass spectrometry**
Daniel Closa

1.5 **Immunogenetics and immunotherapy in autoinflammatory and immune responses**
Manel Juan

1.6 **Immune receptors of the innate and adaptive system**
Francisco Lozano

1.7 **AIDS and HIV infection**
Josep Mallolas

1.8 **Endocarditis. Cardiovascular infections. Experimental model**
Josep Maria Miró

1.9 **Emergencies: processes and pathologies**
Oscar Miró

1.10 **Infections in solid-organ transplant recipients**
Asunción Moreno

1.11 **Inflammatory joint diseases (IJDs)**
Raimon Sanmarti

1.12 **Nosocomial infection**
Alex Soriano

1.1 Ocular inflammation clinical and experimental studies

LOCATION
MATERNITAT building

KEYWORDS
1. **Ocular immunopathology**
2. **Inflammation**
3. **Immunology**
4. **Biomarkers**
5. **Biological therapies**

RELATED DISEASES
1. **Uveitis**
2. **Diabetic retinopathy**
3. **Age-related macular degeneration**
4. **Glaucoma**

GROUP INVOLVED IN
OFTARED (RETIC)

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**16**	**47,03**	**2,94**	**31%**	**6%**



GROUP LEADER
Alfredo Adán (HCB)
T. 93 227 56 67
amadan@clinic.cat

RESEARCHERS
Víctor Llorens (HCB)
Elena Millá (HCB)
Maria Teresa Sáinz (HCB)
Javier Zarranz (HCB)

POST-DOCTORAL RESEARCHERS
Marc Figueras (HCB)
Jessica Matas (HCB)
Marina Mesquida (HCB)
Blanca Molins (FCRB)
Marta Pazos (HCB)
Anna Sala (HCB)

PRE-DOCTORAL RESEARCHERS
Aina Moll (HCB)
Sara Romero (FCRB)

TECHNICIANS
Jesus Gascón (FCRB)

NURSING STAFF
Victoria Hernández (FCRB)

PROBLEM

Ocular inflammation is the underlying cause of many highly prevalent eye diseases with a major socioeconomic burden, such as diabetic retinopathy (DR), age-related macular degeneration (AMD), uveitis, scleritis, and even glaucoma. These diseases often cause irreversible loss of sight.

APPROACH

The group has a multidisciplinary profile and is made up of ophthalmologists, optometrists, biomedical researchers, etc. to tackle this problem from a translational perspective: i.e., in the laboratory, it studies the pathophysiologic mechanisms involved in ocular inflammation and the immune response, and develops new tools that it applies in patients. There is considerable interaction between basic and clinical research, and clinical practice. The cycle of patient-problem- research- therapy feeds back on itself to provide patients with a better diagnosis and the most appropriate treatments.

IMPACT

The principal objective of the group is to promote research on inflammatory ocular diseases, especially the pathophysiologic mechanisms, the immune response and the development of new therapies. The group has taken part in the creation of new biological therapies for treating uveitis and aims to transfer this experience to other inflammatory eye diseases.

RESEARCH LINES

- Genetic polymorphisms predisposing to uveitis.

- Glaucoma.

- Macular pathology in diabetic patients.

- Molecular basis of age-related macular degeneration (AMD).

- New biologic therapies for the treatment of non-infectious uveitis.

- Prognostic factors in patients with macular edema associated with non-infectious uveitis.

- Tuberculosis-related uveitis.

PUBLICATIONS

Originals / I.F.: 47.026

1. Atienza-Mateo B, Martín-Varillas JL, Calvo-Río V, Demetrio-Pablo R, Beltrán E, Sánchez-Bursón J, Mesquida M, Adan A, Hernández MV, Hernández-Garfella M, Valls-Pascual E, Martínez-Costa L, Sellas-Fernández A, Cordero-Coma M, Díaz-Llopis M, Gallego R, García-Serrano JL, Ortego-Centeno N, Herreras JM, Fonollosa A, Garcia-Aparicio ÁM, Maíz-Alonso O, Blanco A, Torre-Salaberri I, Fernandez-Espartero C, Jovaní V, Peiteado D, Pato E, Cruz J, Férnandez-Cid C, Aurrecoechea E, García-Arias M, Castañeda S, Caracuel-Ruiz MA, Montilla-Morales CA, Atanes-Sandoval A, Francisco F, Insua S, González-Suárez S, Sanchez-Andrade A, Gamero F, Linares Ferrando LF, Romero-Bueno F, García-González AJ, González RA, Muro EM, Carrasco-Cubero C, Olive A, Prior Á, Vázquez J, Ruiz-Moreno O, Jiménez-Zorzo F, Manero J, Muñoz Fernandez S, Fernández-Carballido C, Rubio-Romero E, Pages FA, Toyos-Sáenz de Miera FJ, Martinez MG, Díaz-Valle D, López Longo FJ, Nolla JM, Álvarez ER, Martínez MR, González-López JJ, Rodríguez-Cundin P, Hernández JL, González-Gay MA, Blanco R. **Comparative Study of Infliximab Versus Adalimumab in Refractory Uveitis due to Behçet's Disease: National Multicenter Study of 177 Cases**. *ARTHRITIS & RHEUMATOLOGY*. 71(12):2081-2089. I.F.: 9.002

2. Vegas-Revenga N., Calvo-Río V., Mesquida M., Adán A., Hernández M.V., Beltrán E., Valls Pascual E., Díaz-Valle D., Díaz-Cordovés G., Hernandez-Garfella M., Martínez-Costa L., Calvo I., Atanes A., Linares L.F., Modesto C., González-Vela C., Demetrio-Pablo R., Aurrecoechea E., Cordero M., Domínguez-Casas L.C., Atienza-Mateo B., Martín-Varillas J.L., Loricera J., Palmou-Fontana N., Hernández J.L., González-Gay M.A., Blanco R. **Anti-IL6-Receptor Tocilizumab in Refractory and Noninfectious Uveitic Cystoid Macular Edema: Multicenter Study of 25 Patients.** *AMERICAN JOURNAL OF OPHTHALMOLOGY*. 200:85-94. I.F.: 4.483

3. Figueras-Roca M., Sala-Puigdollers A., Zarranz-Ventura J., Alba-Linero C., Alforja S., Esquinas C., Molins B., Adán A. **Anatomic Response to Intravitreal Dexamethasone Implant and Baseline Aqueous Humor Cytokine Levels in Diabetic Macular Edema.** *INVESTIGATIVE OPHTHALMOLOGY AND VISUAL SCIENCE*. 60(5):1336-1343. I.F.: 3.812

4. Leonardi A, Messmer E, Labetoulle M, Amrane M, Garrigue J, Ismail D, Sainz-De-La-Maza M, Figueiredo F, Baudouin C. **Efficacy and safety of 0.1% ciclosporin A cationic emulsion in dry eye disease: A pooled analysis of two double-masked, randomised, vehicle-controlled phase III clinical studies.** *BRITISH JOURNAL OF OPHTHALMOLOGY*. 103(1):125-131. I.F.: 3.615

5. Molins B., Mora A., Romero-Vázquez S., Pascual-Méndez A., Rovira S., Figueras-Roca M., Balcells M., Adán A., Martorell J. **Shear stress modulates inner blood retinal barrier phenotype.** *EXPERIMENTAL EYE RESEARCH*. 187:107751. I.F.: 2.998

6. Matas J, Llorenç V, Fonollosa A, Esquinas C, Diaz-Valle D, Berasategui B, Mesquida M, Artaraz J, Rios J, Adan A. **Predictors for functional and anatomic outcomes in macular edema secondary to non-infectious uveitis.** *PLOS ONE*. 14(1):e0210799. I.F.: 2.776

7. Zarranz-Ventura J, Sala-Puigdollers A, Velazquez-Villoria D, Figueras-Roca M, Copete S, Distefano L, Boixadera A, García-Arumi J, Adan A, Hospital Clínic-Hospital Vall de Hebron Intravitreal Dexamethasone Implant study group. **Long-term probability of intraocular pressure elevation with the intravitreal dexamethasone implant in the real-world.** *PLOS ONE*. 14(1):e0209997-e0209997. I.F.: 2.776

8. Mesquida M, Drawnel F, Lait PJ, Copland DA, Stimpson ML, Llorenç V, Sainz de la Maza M, Adan A, Widmer G, Strassburger P, Fauser S, Dick AD, Lee RWJ, Molins B. **Modelling Macular Edema: The Effect of IL-6 and IL-6R Blockade on Human Blood-Retinal Barrier Integrity In Vitro.** *TRANSLATIONAL VISION SCIENCE & TECHNOLOGY*. 8(5):32-32. I.F.: 2.399

9. Battaglia Parodi M, Romano F, Marchese A, Arrigo A, Llorenç V, Cicinelli MV, Bandello F, Adán A. **Anti-VEGF treatment for choroidal neovascularization complicating pattern dystrophy-like deposit associated with pseudoxanthoma elasticum.** *GRAEFE'S ARCHIVE FOR CLINICAL AND EXPERIMENTAL OPHTHALMOLOGY*. 257(2):273-278. I.F.: 2.250

10. Leszczynska A., Molins B., Fernández E., Adán A., Ortiz-Perez S. **Cytokine production in thyroid eye disease: in vitro effects of dexamethasone and IL-6 blockade with tocilizumab.** *GRAEFES ARCHIVE FOR CLINICAL AND EXPERIMENTAL OPHTHALMOLOGY*. 257(10):2307-2314. I.F.: 2.250

11. Figueras-Roca M, Sala-Puigdollers A, Alforja S, Torras J, Peraza-Nieves J, Zarranz-Ventura J, Adan Civera A, Molins B. **Aqueous Humour Cytokine Changes with Intravitreal Dexamethasone Implant Injection for Diabetic Macular Edema.** *OCULAR IMMUNOLOGY AND INFLAMMATION*. 27(8):1203-1210. I.F.: 2.231

12. Miserocchi E, Iuliano L, Fogliato G, Modorati G, Couto C, Schlaen A, Hurtado E, Llorenç V, Adan A, Bandello F. **Bilateral Acute Retinal Necrosis: Clinical Features and Outcomes in a Multicenter Study.** *OCULAR IMMUNOLOGY AND INFLAMMATION*. 27(7):1090-1098. I.F.: 2.231

13. Garcia Layana, Alfredo; Adan, Alfredo; Javier Ascaso, Francisco; Cabrera, Francisco; Donate, Juan; Escobar Barranco, Jose Juan; Peralta, Gema; Reyes Garcia, Rebeca; Rodriguez Maqueda, Mariano; Maria Ruiz- Moreno, Jose; Vinagre, Irene; MOMENTUM - D Study Grp. **Use of intravitreal dexamethasone implants in the treatment of diabetic macular edema: Expert recommendations using a Delphi approach.** *EUROPEAN JOURNAL OF OPHTHALMOLOGY*. :1120672119861623. I.F.: 1.716

14. Zarranz-Ventura J., Barraso M., Alé-Chilet A., Hernandez T., Oliva C., Gascón J., Sala-Puigdollers A., Figueras-Roca M., Vinagre I., Ortega E., Esmatjes E., Adan A. **Evaluation of microvascular changes in the perifoveal vascular network using optical coherence tomography angiography (OCTA) in type I diabetes mellitus: a large scale prospective trial.** *BMC MEDICAL IMAGING*. 19(1):91. I.F.: 1.622

15. Llorenç V, Fuster C, Alba-Linero C, Moll -Udina A, Serrano A, Solé M, Sainz de la Maza M, Aldecoa I, Adán A. **Clinical Features of Primary and Systemic Metastatic Intraocular Lymphomas in Spanish Patients.** *JOURNAL OF OPHTHALMOLOGY*. 2019(6327041):6327041. I.F.: 1.580

16. Latasiewicz M, Sala-Puigdollers A, Gonzalez-Ventosa A, Milla E, Adan Civera A. **Multimodal retinal imaging of familial amyloid polyneuropathy.** *OPHTHALMIC GENETICS.* 40(5):407-420. I.F.: 1.285

Review / I.F.: 6.804

1. Mesquida M, Drawnel F, Fauser S. **The role of inflammation in diabetic eye disease.** *SEMINARS IN IMMUNOPATHOLOGY.* 41(4):427-445. I.F.: 6.804

Case Reports / I.F.: 5.922

1. Liscombe-Sepulveda, John P.; Alba-Linero, Carmen; Llorenc-Belles, Victor; Adan-Civera, Alfredo. **Utility of ultra-widefield retinal imaging in the follow-up and management of patients with Cytomegalovirus retinitis.** *OCULAR IMMUNOLOGY AND INFLAMMATION.* :1-6. I.F.: 2.231

2. Adan, Alfredo; Moll-Udina, Aina; Ramirez, Julio; Llorenc, Victor. **Subcutaneous Tocilizumab for Cystoid Macular Edema Secondary to Juvenile Idiopathic Arthritis (JIA)-associated Uveitis: A Case Report.** *OCULAR IMMUNOLOGY AND INFLAMMATION.* :1-3. I.F.: 2.231

3. Figueras-Roca M, Budi V, Morató M, Camós-Carreras A, Muñoz JE, Sánchez-Dalmau B. **Cockayne syndrome in adults: complete retinal dysfunction exploration of two case reports.** *DOCUMENTA OPHTHALMOLOGICA.* 138(3):241-246. I.F.: 1.460

GRANTS FOR RESEARCH IN PROGRESS

Adán A. **Grup de recerca de malalties inflamatòries oculars.**
Sponsored by: Gerenalitat de Catalunya.
AGAUR_SGR17_701
Duration: 01/01/2017-31/12/2020

Adán A. **Red Temática de Investigación Cooperativa en Salud - Enfermedades oculares.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). RD16/0008/0013
Duration: 01/01/2017-12/31/2021

Adán A. **Diseño y validación de un índice de actividad objetivo compuesto para la uveítis basado en la tomografía de coherencia óptica Swept-Source.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00316
Duration: 01/01/2018-31/12/2020

Zarranz J. **Evaluation of microvascular changes in the perifoveal vascular network using Optical Coherence Tomography Angiography (OCT-A) in type I Diabetes Mellitus.**
Sponsored by: Fundació la Marató de Tv3.
TV3_Diabet_16
Duration: 24/02/2017-23/02/2020

Zarranz J. **Impacto de los factores sistémicos en la red capilar perifoveal evaluada con angiografía por tomografía de coherencia óptica en diabetes mellitus tipo 1.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00518
Duration: 01/1/2019-12/31/2021

DOCTORAL THESES

Adan A, Llorens V. **Estudio de factores clínicos, hallazgos de tomografía de coherencia optica y biomarcadores como factores pronósticos en el edema macular secundario a uveítis no infecciosa.**
PhD student: Jessica Matas Fassi

1.2 Systemic autoimmune diseases

LOCATION
HCB building
CELLEX building, floor 4B

KEYWORDS
1. **Systemic autoimmune diseases**
2. **Systemic lupus erythematosus**
3. **Antiphospholipid syndrome**
4. **Sjögren's syndrome**
5. **Systemic sclerosis**

RELATED DISEASES
1. **Systemic autoimmune diseases**

GROUP INVOLVED IN
AGAUR_SGR17: 00819, 01413

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**35**	**183,29**	**5,24**	**51%**	**31%**



GROUP LEADER
Ricard Cervera (HCB)
T. 93 227 57 74
rcervera@clinic.cat

RESEARCHERS
Ricardo P Casaroli-Marano (HCB)
Gerard Espinosa (HCB)
Laura Pelegrín (HCB)
Manuel Ramos-Casals (HCB)

PRE-DOCTORAL RESEARCHERS
Emmanuel Coloma-Bazán (HCB)
Pamela Doti (HCB)
Nerea Iniesta (HCB)
Alba Jerez (HCB)

ADMINISTRATIVE STAFF
Isabel Chaves (HCB)

PROBLEM

Autoimmune diseases are a group of disorders whose exact cause is unknown and in which the immune system attacks one or more organs in the body. More than 110 diseases of this type are currently known, and epidemiological studies estimate that over 10% of the population suffer from one or more of them.

In around forty of these diseases, a generalized attack against the entire body may occur; these are known as systemic autoimmune diseases. They feature highly varied clinical symptoms as a result of the simultaneous or successive involvement of different organs and systems, and they feature different antibodies as biological markers.

The clinical complexity of the diseases makes their diagnosis and control difficult. Current treatments do not yet offer a cure, as well as presenting many side effects.

APPROACH

The group promotes basic, clinical and translational research on systemic autoimmune diseases using a multidisciplinary approach and with the participation of members from different departments of Hospital Clínic, Barcelona.

It also cooperates with different international working groups, for which its team members are national or international coordinators, including: the European Working Party on Systemic Lupus Erythematosus, the European Forum on Antiphospholipid Antibodies, the Catastrophic Antiphospholipid Syndrome (CAPS) Registry Project Group, and Systemic Lupus International Collaborating Clinics (SLICC).

IMPACT

Its study of over 600 patients with systemic lupus erythematosus (SLE) has made it possible to individualize and define different clinical subgroups, such as late-onset SLE, subacute cutaneous lupus erythematosus, silent lupus nephritis, etc.

Another very important aspect of the group's work is its description of antiphospholipid syndrome (APS). This has included it describing both original primary APS and catastrophic APS. Similarly, its study of large cohorts of patients with systemic sclerosis, Sjögren's syndrome and mixed cryoglobulinaemia has led to a better clinical description of these diseases.

This experience has allowed the group to create and lead various European working groups to study these diseases (European Working Party on Systemic Lupus Erythematosus, European Forum on European Forum on Antiphospholipid Antibodies, etc.).

With our group conducting broad multidisciplinary, multi-centre studies, making use of the extensive clinical cases available will make it possible to improve the clinical and pathogenic description of these diseases and to improve their treatment.

RESEARCH LINES

- Sjögren's syndrome, autoimmune manifestations of hepatitis c virus infection and biological therapies.

- Systemic lupus erythematosus, antiphospholipid syndrome and systemic sclerosis.

PUBLICATIONS

Originals / I.F.: 183.287

1. Mendel A., Bernatsky S., Hanly J., Urowitz M., Clarke A., Romero-Diaz J., Gordon C., Bae S., Wallace D., Merrill J., Buyon J., Isenberg D., Rahman A., Ginzler E., Petri M., Dooley M., Fortin P., Gladman D., Steinsson K., Ramsey-Goldman R., Khamashta M., Aranow C., Mackay M., Alarcón G., Manzi S., Nived O., Jönsen A., Zoma A., Van Vollenhoven R., Ramos-Casals M., Ruiz-Irastorza G., Lim S., Kalunian K., Inanc M., Kamen D., Peschken C., Jacobsen S., Askanase A., Sanchez-Guerrero J., Bruce I., Mendel A., Bernatsky S. **Low aspirin use and high prevalence of pre-eclampsia risk factors among pregnant women in a multinational SLE inception cohort.** *ANNALS OF THE RHEUMATIC DISEASES.* 78(7):1010-1012. I.F.: 14.299

2. Aringer M, Costenbader K, Daikh D, Brinks R, Mosca M, Ramsey-Goldman R, Smolen J, Wofsy D, Boumpas D, Kamen D, Jayne D, Cervera R, Costedoat-Chalumeau N, Diamond B, Gladman D, Hahn B, Hiepe F, Jacobsen S, Khanna D, Lerstrøm K, Massarotti E, McCune J, Ruiz-Irastorza G, Sanchez-Guerrero J, Schneider M, Urowitz M, Bertsias G, Hoyer B, Leuchten N, Tani C, Tedeschi S, Touma Z, Schmajuk G, Anic B, Assan F, Chan T, Clarke A, Crow M, Czirják L, Doria A. **2019 European League Against Rheumatism/American College of Rheumatology classification criteria for systemic lupus erythematosus.** *ANNALS OF THE RHEUMATIC DISEASES.* 78(9):1151-1159. I.F.: 14.299

3. Brito-Zerón P., Bari K., Baughman R., Ramos-Casals M. **Sarcoidosis Involving the Gastrointestinal Tract: Diagnostic and Therapeutic Management.** *AMERICAN JOURNAL OF GASTROENTEROLOGY.* 114(8):1238-1247. I.F.: 10.241

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6. Legge A; Kirkland S; Rockwood K; Andreou P; Bae SC; Gordon C; Romero-Diaz J; Sanchez-Guerrero J; Wallace DJ; Bernatsky S; Clarke AE; Merrill JT; Ginzler EM; Fortin P; Gladman DD; Urowitz MB; Bruce IN; Isenberg DA; Rahman A; Alarcón GS; Petri M; Khamashta MA; Dooley MA; Ramsey-Goldman R; Manzi S; Steinsson K; Zoma AA; Aranow C; Mackay M; Ruiz-Irastorza G; Lim SS; Inanc M; van Vollenhoven RF; Jonsen A; Nived O; Ramos-Casals M; Kamen DL; Kalunian KC; Jacobsen S; Peschken CA; Askanase A; Hanly JG. **Evaluating the properties of a frailty index and its association with mortality risk among patients with systemic lupus erythematosus**. *ARTHRITIS & RHEUMATOLOGY.* 71(8):1297-1307. I.F.: 9.002

7. García-Carrasco M, Mendoza-Pinto C, Rojas-Villarraga A, Molano-González N, Vallejo-Ruiz V, Munguía-Realpozo P, Colombo AL, Cervera R. **Prevalence of cervical HPV infection in women with systemic lupus erythematosus: A systematic review and meta-analysis.** *AUTOIMMUNITY REVIEWS.* 18(2):184-191. I.F.: 7.716

8. Alijotas-Reig J., Esteve-Valverde E., Ferrer-Oliveras R., Sáez-Comet L., Lefkou E., Mekinian A., Belizna C., Ruffatti A., Tincani A., Marozio L., Espinosa G., Cervera R., Ríos-Garcés R., De Carolis S., Latino O., LLurba E., Chighizola C., Gerosa M., Pengo V., Lundelin K., Rovere-Querini P., Canti V., Mayer-Pickel K., Reshetnyak T., Hoxha A., Tabacco S., Stojanovich L., Gogou V., Varoudis A., Arnau A., Ruiz-Hidalgo D., Trapé J., Sos L., Stoppani C., Martí-Cañamares A., Farran-Codina I. **The European Registry on Obstetric Antiphospholipid Syndrome (EUROAPS): A survey of 1000 consecutive cases.** *AUTOIMMUNITY REVIEWS.* 18(4):406-414. I.F.: 7.716

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11. de Jesús GR, Sciascia S, Andrade D, Barbhaiya M, Tektonidou M, Banzato A, Pengo V, Ji L, Meroni PL, Ugarte A, Cohen H, Branch DW, Andreoli L, Belmont HM, Fortin PR, Petri M, Rodriguez E, Cervera R, Knight JS, Atsumi T, Willis R, Nascimento IS, Rosa R, Erkan D, Levy RA, APS ACTION. **Factors Associated with First Thrombosis in Patients Presenting with Obstetric Antiphospholipid Syndrome in APS Alliance For Clinical Trials & International**

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14. Mendel A, Bernatsky S, Pineau CA, St-Pierre Y, Hanly JG, Urowitz MB, Clarke AE, Romero-Diaz J, Gordon C, Bae SC, Wallace DJ, Merrill JT, Buyon J, Isenberg DA, Rahman A, Ginzler EM, Petri M, Dooley MA, Fortin P, Gladman DD, Steinsson K, Ramsey-Goldman R, Khamashta MA, Aranow C, Mackay M, Alarcón G, Manzi S, Nived O, Jönsen A, Zoma AA, van Vollenhoven RF, Ramos-Casals M, Ruiz-Irastorza G, Lim S, Kalunian KC, Inanc M, Kamen DL, Peschken CA, Jacobsen S, Askanase A, Sanchez-Guerrero J, Bruce IN, Costedoat-Chalumeau N, Vinet E . **Use of combined hormonal contraceptives among women with systemic lupus erythematosus with and without medical contraindications to oestrogen.** *RHEUMATOLOGY.* 58(7):1259-1267. I.F.: 5.149

15. Castaño-Núñez Á., Montes-Cano M.-A., García-Lozano J.-R., Ortego-Centeno N., García-Hernández F.-J., Espinosa G., Graña-Gil G., Sánchez-Bursón J., Juliá M.-R., Solans R., Blanco R., Barnosi-Marín A.-C., Gómez de la Torre R., Fanlo P., Rodríguez-Carballeira M., Rodríguez-Rodríguez L., Camps T., Castañeda S., Alegre-Sancho J.-J., Martín J., González-Escribano M.-F. **Association of Functional Polymorphisms of KIR3DL1/DS1 With Behçet's Disease.** *FRONTIERS IN IMMUNOLOGY.* 10(2755). I.F.: 4.716

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30. Anjo C., Mascaró J., Espinosa G., Cervera R. **Effectiveness and safety of belimumab in patients with systemic lupus erythematosus in a real-world setting.** *SCANDINAVIAN JOURNAL OF RHEUMATOLOGY*. 48(6):469-473. I.F.: 2.706

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33. Ramos-Casals M, Kostov B, Brito-Zerón P, Sisó-Almirall A, Baughman RP, **Autoimmune Big Data Study Group. How the Frequency and Phenotype of Sarcoidosis is Driven by Environmental Determinants.** *LUNG*. 197(4):427-436. I.F.: 2.231

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Review / I.F.: 32.470

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2. Munguia-Realpozo P., Mendoza-Pinto C., Sierra Benito C., Escarcega R., Garcia-Carrasco M., Mendez Martinez S., Etchegaray Morales I., Galvez Romero J., Ruiz-Arguelles A., Cervera R. **Systemic lupus erythematosus and hypertension.** *AUTOIMMUNITY REVIEWS.* 18(10):102371. I.F.: 7.716

3. Alvarez-Palomo B, Vives J, Casaroli-Marano RPP, G Gomez SG, Rodriguez Gómez L, Edel MJ, Querol Giner S . **Adapting Cord Blood Collection and Banking Standard Operating Procedures for HLA-Homozygous Induced Pluripotent Stem Cells Production and Banking for Clinical Application.** *JOURNAL OF CLINICAL MEDICINE.* 8(4):476. I.F.: 5.688

4. Ramos-Casals M, Retamozo S, Sisó-Almirall A, Pérez-Alvarez R, Pallarés L, Brito-Zerón P. **Clinically-useful serum biomarkers for diagnosis and prognosis of sarcoidosis.** *EXPERT REVIEW OF CLINICAL IMMUNOLOGY.* 15(4):391-405. I.F.: 3.907

5. Brito-Zerón P, Kostov B, Superville D, Baughman RP, Ramos-Casals M, Autoimmune Big Data Study Group. **Geoepidemiological big data approach to sarcoidosis: geographical and ethnic determinants.** *CLINICAL AND EXPERIMENTAL RHEUMATOLOGY.* 37(6):1052-1064. I.F.: 3.238

6. Llabres, Marta; Brito-Zeron, Pilar; Ramos-Casals, Manuel; Sellares, Jacobo. **Synthetic pharmacotherapy for pulmonary sarcoidosis.** *EXPERT OPINION ON PHARMACOTHERAPY.* 20(11):1397-1404. I.F.: 3.038

7. Rodríguez-Pintó I; Lozano M; Cid J; Espinosa G; Cervera R. **Plasma exchange in catastrophic antiphospholipid syndrome.** *PRESSE MEDICALE.* 48(11P2):347-353. I.F.: 1.167

Letters / I.F.: 16.718

1. Gómez-Puerta J, Cervera R, Alarcón G. **Overrepresentation of elderly subjects in a population-based study of antiphospholipid syndrome: comment on the article by Duarte-García et al.** *ARTHRITIS & RHEUMATOLOGY.* 71(10):1768-1769. I.F.: 9.002

2. Garcia-Carrasco M, Mendoza-Pinto C, Rojas-Villarraga A, Molano-Gonzalez N, Vallejo-Ruiz V, Munguia-Realpozo P, Colombo AL, Cervera R. **Reply to the editor.** *AUTOIMMUNITY REVIEWS.* 18(4):435-436. I.F.: 7.716

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1. Acar-Denizli, N.; Kostov, B.; Ramos-Casals, M.;Sjogren Big Data Consortium. **The Big Data Sjogren Consortium: a project for a new data science era.** *CLINICAL AND EXPERIMENTAL RHEUMATOLOGY.* 37(3):19-23. I.F.: 3.238

Clinical Guidelines / I.F.: 36.314

1. Fanouriakis A., Kostopoulou M., Alunno A., Aringer M., Bajema I., Boletis J., Cervera R., Doria A., Gordon C., Govoni M., Houssiau F., Jayne D., Kouloumas M., Kuhn A., Larsen J., Lerstrøm K., Moroni G., Mosca M., Schneider M., Smolen J., Svenungsson E., Tesar V., Tincani A., Troldborg A., Van Vollenhoven R., Wenzel J., Bertsias G., Boumpas D. **2019 update of the EULAR recommendations for the management of systemic lupus erythematosus.** *ANNALS OF THE RHEUMATIC DISEASES.* 78(6):736-745. I.F.: 14.299

2. Tektonidou M., Andreoli L., Limper M., Amoura Z., Cervera R., Costedoat-Chalumeau N., Cuadrado M., Dörner T., Ferrer-Oliveras R., Hambly K., Khamashta M., King J., Marchiori F., Meroni P., Mosca M., Pengo V., Raio L., Ruiz-Irastorza G., Shoenfeld Y., Stojanovich L., Svenungsson E., Wahl D., Tincani A., Ward M. **EULAR recommendations for the management of antiphospholipid syndrome in adults.** *ANNALS OF THE RHEUMATIC DISEASES.* 78(10):1296-1304. I.F.: 14.299

3. Giacomelli R, Afeltra A, Alunno A, Bartoloni-Bocci E, Berardicurti O, Bombardieri M, Bortoluzzi A, Caporali R, Caso F, Cervera R, Chimenti MS, Cipriani P, Coloma E, Conti F, D'Angelo S, De Vita S, Di Bartolomeo S, Distler O, Doria A, Feist E, Fisher BA, Gerosa M, Gilio M, Guggino G, Liakouli V, Margiotta DPE, Meroni P, Moroncini G, Perosa F, Prete M, Priori R, Rebuffi C, Ruscitti P, Scarpa R, Shoenfeld Y, Todoerti M, Ursini F, Valesini G, Vettori S, Vitali C, Tzioufas AG . **Guidelines for biomarkers in autoimmune rheumatic diseases - evidence based analysis.** *AUTOIMMUNITY REVIEWS. 18*(1):93-106. I.F.: 7.716

Consortium Publications / I.F.: 39.231

1. Wallace ZS; Zhang Y; Perugino CA; Naden R; Choi HK; Stone JH; ACR/EULAR IgG4-RD Classification Criteria Committee ACR/EULAR IgG4-RD Classification Criteria Committee. **Clinical phenotypes of IgG4-related disease: an analysis of two international cross-sectional cohorts.** *ANNALS OF THE RHEUMATIC DISEASES.* 78(3):406-412. I.F.: 14.299

2. López-Isac E, Acosta-Herrera M, Kerick M, Assassi S, Satpathy AT, Granja J, Mumbach MR, Beretta L, Simeón CP, Carreira P, Ortego-Centeno N, Castellvi I, Bossini-Castillo L, Carmona FD, Orozco G, Hunzelmann N, Distler JHW, Franke A, Lunardi C, Moroncini G, Gabrielli A, de Vries-Bouwstra J, Wijmenga C, Koeleman BPC, Nordin A, Padyukov L, Hoffmann-Vold AM, Lie B,, Proudman S, Stevens W, Nikpour M, Vyse T, Herrick AL, Worthington J, Denton CP, Allanore Y, Brown MA, Radstake TRDJ, Fonseca C, Chang HY, Mayes MD, Martin J European Scleroderma Group†, Australian Scleroderma Interest Group (ASIG). **GWAS for systemic sclerosis identifies multiple risk loci and highlights fibrotic and vasculopathy pathways.** *NATURE COMMUNICATIONS.* 10(1):4955. I.F.: 11.878

3. Radin M, Sciascia S, Erkan D, Pengo V, Tektonidou MG, Ugarte A, Meroni P, Ji L, Belmont HM, Cohen H, Ramires de Jesús G, Branch DW, Fortin PR, Andreoli L, Petri M, Rodriguez E, Rodriguez-Pinto I, Knight JS, Atsumi T, Willis R, Gonzalez E, Lopez-Pedrera R, Rossi Gandara AP, Borges Gualhardo Vendramini M, Banzato A, Sevim E, Barbhaiya M, Efthymiou M, Mackie I, Bertolaccini ML, Andrade D, APS ACTION. **The adjusted global antiphospholipid syndrome score (aGAPSS) and the risk of recurrent thrombosis: Results from the APS ACTION**

cohort. *SEMINARS IN ARTHRITIS AND RHEUMATISM.* 49(3):464-468. I.F.: 5.072

4. Ruiz-Limon P; Ortega-Castro R; Barbarroja N; Perez-Sanchez C; Jamin C; Patiño-Trives AM; Luque-Tevar M; Ibáñez-Costa A; Perez-Sanchez L; de la Rosa IA; Abalos-Aguilera M; Jimenez-Gomez Y; Calvo-Gutierrez J; Font P; Escudero-Contreras A; Alarcon-Riquelme ME; Collantes-Estevez E; López-Pedrera C; PRECISESADS Clinical Consortium and Flow Cytometry Study Group PRECISESADS Clinical Consortium and Flow Cytometry Study Group. **Molecular Characterization of Monocyte Subsets Reveals Specific and Distinctive Molecular Signatures Associated With Cardiovascular Disease in Rheumatoid Arthritis.** *FRONTIERS IN IMMUNOLOGY.* 10(1111). I.F.: 4.716

5. Sciascia S, Willis R, Pengo V, Krilis S, Andrade D, Tektonidou MG, Ugarte A, Chighizola C, Branch DW, Levy RA, Nalli C, Fortin PR, Petri M, Rodriguez E, Rodriguez-Pinto I, Atsumi T, Nascimento I, Rosa R, Banzato A, Erkan D, Cohen H, Efthymiou M, Mackie I, Bertolaccini ML, APS ACTION. **The comparison of real world and core laboratory antiphospholipid antibody ELISA results from antiphospholipid syndrome alliance for clinical trials & international networking (APS ACTION) clinical database and repository analysis.** *THROMBOSIS RESEARCH.* 175:32-36. I.F.: 3.266

GRANTS FOR RESEARCH IN PROGRESS

Cervera R. **Molecular Reclassification to Find Clinically Useful Biomarkers for Systemic Autoimmune Diseases.**
Sponsored by: European Comission.
CE_IMI12_8th_1stg (115565)
Duration: 01/02/2014-31/01/2019

Cervera R. **Taxonomy, treatment, targets and remission-Identification of the molecular mechanisms of non-response to treatments, relapses and remission in autoimmune, inflammatory, and allergic conditions (3TR).**
Sponsored by: European Comission.
CE_IMI2-2018-14 (831434-2)
Duration: 01/10/2019-31/09/2026

Ramos Casals M. **HarmonicSS: Harmonization and integrative analysis of regional, national and international Cohorts on primary Sjögrens Syndrome towards improved stratification, treatment and health policy.**
Sponsored by: European Comission.
CE_H2020-SC1_16abr1s (731944)
Duration: 01/01/2017-30/06/2020

Ramos-Casals M. **New Clinical Endpoints in primary Sjögren#s Syndrome: an Interventional Trial based on stratifYing patients.**
Sponsored by: Institut National de la Sante et de Recherche Medicale (INSERM).
CE_IMI2_2017_12th (806975-2)
Duration: 01/01/2019-31/12/2024

Ramos Casals M. **Development of evidence-based and consensus-based eular recommendations on the therapeutic management of sjögren's syndrome.**
Sponsored by: European League Against Rheumatism. INT_EULAR_2014 (CLI074)
Duration: 01/05/2015-30/05/2019

DOCTORAL THESES

Casaroli Marano RP, Nadal G. **La vitrectomía en las complicaciones del segmento posterior en la osteoqueratoprótesis.**
PhD student: Ferran Vilaplana Mira

1.3 Systemic vasculitis

LOCATION
CELLEX building, floor 4B

KEYWORDS
1. **Vascular inflammation**
2. **Autoimmunity**
3. **Vascular remodelling and fibrosis**
4. **Biomarkers**
5. **Therapeutic targets**
6. **Innovative therapies**

RELATED DISEASES
1. **Systemic vasculitis**
2. **Autoimmune diseases**
3. **Autoinflammatory diseases**

GROUP INVOLVED IN
AGAUR_SGR17: 01592

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**5**	**52,13**	**10,43**	**80%**	**80%**



GROUP LEADER
Maria Cinta Cid (HCB)
T. 93 227 57 74
mccid@clinic.cat

RESEARCHERS
Georgina Espigol Frigolé (HCB-IDIBAPS)
José Hernández Rodríguez (HCB)

POST-DOCTORAL RESEARCHERS
Marco Antonio Alba (IDIBAPS)
Marc Corbera (IDIBAPS)
Sergio Prieto (HCB)
Nekane Terrades (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Roser Alba (IDIBAPS)
Javier Marco (HCB)
Michelle Villarreal (HCB)

PROBLEM

The systemic vasculitides encompass an heterogenous grup of rare diseases characterised by chronic inflammation of blood vessels. The inflammatory process leads to the occlusion, dilatation or rupture of the involved vasculature with the potential of severe complications. The vasculitides are relapsing disases and irreversible damage derived from the disease activity or treatments cumulate over the years with a deep impact on quality of life. 5-year mortality is still 15-20%.

APPROACH

The group's research focuses on
a) Investigating mechanisms involved in vascular inflammation and remodeling,
b) Identifiying biomarkers clinically useful for diagnosis, prognosis, assessment of disease activity and prediction of reponse to conventional and new therapies,
c) Development of functional models and pre-clinical testing of targeted therapies,
d) Design and performance of innovative clinical trials. The group studies pathogenic pathways related to the development of inflammation and vascular remodelling in samples (blood, tissue and primary cultures) from patients with vasculitis, using biochemical , cellular and molecular biology techniques, in vitro functional models (adhesion, migration, chemotaxis, angiogenesis) and ex-vivo tissue cultures. Both candidate molecule approach and omics are used for biomarker studies which are applied to carefully characterized prospective patient cohorts with defined clinical and imaging outcomes. The group has developd a wide network of national and international collaboration, essential for studies on rare diseases.

IMPACT

The group has contributed to:

- Improvement of the diagnostic accuracy of systemic vaculitis by identifying histopathologic and imaging findings with diagnostic potential

-Identification of clinical, biologic and immunopathologic (blood and tissue) biomarkers predictors of vascular complications or relapsing disease

- Contribution to large-scale genetic studies characterizing the genetic background of giant-cell arteritis and eosinophilic granulomatosis with polyangiitis.

-Development of original functional models (primary cells, co-cultures and ex-vivo 3D tissue culture). These have attracted the interest of companies leading to research agreements and are currently used by other reearchers.

- Identification of potential therapeutic targets ad pre-clinical testing of targeted therapies

-Participation in the design and performance of innovative clinical trials leading to the approval of new treatments.

- Contribution of the group have impacted national and international guidelines for the management of systemic vasculitis. Reflected in the most important national and international clinical guidelines.

RESEARCH LINES

SYSTEMIC VASCULITIS. MECHANISMS INVOLVED IN INFLAMMATION AND VASCULAR REMODELING AS A SOURCE OF BIOMARKERS OF CLINICAL UTILITY AND THERAPEUTIC TARGETS

- Accurate characterization of patient cohorts (systemic vasculitis and autoinflammatory diseases) according to relevant outcomes (disease extent, relapses, complications derived from vascular occlusion or dilatation, or reparative fibrosis, treatment toxicity) according to international consensus.

- Identification of biomarkers associated with specific phenotypes, prognosis or response to therapies (clinical or imaging data, genetic, epigenetic, immunopathological or molecular biomarkers in biologic fluids or tissues) through candidate biomarker approach or through multi-omic approaches, locally or through multi-centre collaboration.

- Funtional testing of candidate molecules/pathways in in vitro models including primary cell cultures and co-cultures, biologic models (adhesion, migration, angiogenesis), 3D- models, ex-vivo explants.

- Generation of pre-clinical data with targeted therapies in these models.

- Participation in the design and performance of innovative clinical trials with targeted therapies in patients with systemic vasculitis.

PUBLICATIONS

Originals / I.F.: 52.132

1. Jones RB, Hiemstra TF, Ballarin J, Blockmans DE, Brogan P, Bruchfeld A, Cid MC, Dahlsveen K, de Zoysa J, Espigol-Frigolé G, Lanyon P, Peh CA, Tesar V, Vaglio A, Walsh M, Walsh D, Walters G, Harper L, Jayne D; European Vasculitis Study Group (EUVAS). **Mycophenolate mofetil versus cyclophosphamide for remission induction in ANCA-associated vasculitis: a randomised, non-inferiority trial.** *ANNALS OF THE RHEUMATIC DISEASES.* 78(3):399-405. I.F.: 14.299

2. Steinfeld J, Bradford ES, Brown J, Mallett S, Yancey SW, Akuthota P, Cid MC, Gleich GJ, Jayne D, Khoury P, Langford CA, Merkel PA, Moosig F, Specks U, Weller PF, Wechsler ME . **Evaluation of clinical benefit from treatment with mepolizumab for patients with eosinophilic granulomatosis with polyangiitis.** *JOURNAL OF ALLERGY AND CLINICAL IMMUNOLOGY.* 143(6):2170-2177. I.F.: 14.110

3. Lyons, Paul A.; Peters, James E.; Alberici, Federico; Liley, James; Coulson, Richard M. R.; Astle, William; Baldini, Chiara; Bonatti, Francesco; Cid, Maria C.; Elding, Heather; Emmi, Giacomo; Epplen, Joerg; Guillevin, Loic; Jayne, David R. W.; Jiang, Tao; Gunnarsson, Iva; Lamprecht, Peter; Leslie, Stephen; Little, Mark A.; Martorana, Davide; Moosig, Frank; Neumann, Thomas; Ohlsson, Sophie; Quickert, Stefanie; Ramirez, Giuseppe A.; Rewerska, Barbara; Schett, Georg; Sinico, Renato A.; Szczeklik, Wojciech; Tesar, Vladimir; Vukcevic, Damjan; Akil, Mohammed; Barratt, Jonathan; Basu, Neil; Butterworth, Adam S.; Bruce, Ian; Clarkson, Michael; Conlon, Niall; DasGupta, Bhaskar; Doulton, Timothy W. R.; Espigol-Frigole, Georgina; Flossmann, Oliver; Gabrielli, Armando; Gasior, Jolanta; Gregorini, Gina; Guida, Giuseppe; Hernandez-Rodriguez, Jose; Hruskova, Zdenka; Hudson, Amy; Knight, Ann; Lanyon, Peter; Luqmani, Raashid; Magliano, Malgorzata; Manfredi, Angelo A.; Marguerie, Christopher; Maritati, Federica; Marvisi, Chiara; McHugh, Neil J.; Molloy, Eamonn; Motyer, Allan; Mukhtyar, Chetan; Padyukov, Leonid; Pesci, Alberto; Prieto-Gonzalez, Sergio; Ramentol-Sintas, Marc; Reis, Petra; Roccatello, Dario; Rovere-Querini, Patrizia; Salvarani, Carlo; Santarsia, Francesca; Solans-Laque, Roser; Soranzo, Nicole; Taylor, Jo; Wessels, Julie; Zwerina, Jochen; Terrier, Benjamin; Watts, Richard A.; Vaglio, Augusto; Holle, Julia U.; Wallace, Chris; Smith, Kenneth G. C. European Vasculitis Genetics. **Genome-wide association study of eosinophilic granulomatosis with polyangiitis reveals genomic loci stratified by ANCA status.** *NATURE COMMUNICATIONS.* 10(1):5120. I.F.: 11.878

4. Stone JH, Tuckwell K, Dimonaco S, Klearman M, Aringer M, Blockmans D, Brouwer E, Cid MC, Dasgupta B, Rech J, Salvarani C, Schulze-Koops H, Schett G, Spiera R, Unizony SH, Collinson N. **Glucocorticoid Doses and Acute-Phase Reactants at Giant Cell Arteritis Flare in a Randomized Trial of Tocilizumab.** *ARTHRITIS AND RHEUMATOLOGY.* 71(8):1329-1338. I.F.: 9.002

5. Miró Ò, Javaloyes P, Gil V, Martín-Sánchez FJ, Jacob J, Herrero P, Marco-Hernández J, Ríos J, Harjola VP, Torres-Gárate R, Alonso MI, Piñera P, Mecina AB, Escoda R, Müller C, Parissis J, Llorens P, ICA-SEMES Research Group researchers. **Comparative Analysis of Short-Term Outcomes of Patients With Heart Failure With a Mid-Range Ejection Fraction After Acute Decompensation.** *AMERICAN JOURNAL OF CARDIOLOGY.* 123(1):84-92. I.F.: 2.843

Review / I.F.: 4.072

1. Tomas X., Milisenda J., Garcia-Diez A., Prieto-Gonzalez S., Faruch M., Pomes J., Grau-Junyent J. **Whole-body MRI and pathological findings in adult patients with myopathies.** *SKELETAL RADIOLOGY.* 48(5):653-676. I.F.: 1.518

2. Braga BP, Prieto-González S, Hernández-Rodríguez J. **Pneumocystis jirovecii pneumonia prophylaxis in immunocompromised patients with systemic autoimmune diseases.** *MEDICINA CLINICA.* 152(12):502-507. I.F.: 1.277

3. Prieto-González S., Villarreal-Compagny M., Cid M. **Usefulness of imaging techniques in the management of giant cell arteritis.** *MEDICINA CLINICA.* 152(12):495-501. I.F.: 1.277

4. Águeda AF, Monti S, Luqmani RA, Buttgereit F, Cid M, Dasgupta B, Dejaco C, Mahr A, Ponte C, Salvarani C, Schmidt W, Hellmich B. **Management of Takayasu arteritis: a systematic literature review informing the 2018 update of the EULAR recommendation for the management of large vessel vasculitis.** *RMD OPEN.* 5(2):e001020.

5. Monti S, Águeda AF, Luqmani RA, Buttgereit F, Cid M, Dejaco C, Mahr A, Ponte C, Salvarani C, Schmidt W, Hellmich B. **Systematic literature review informing the 2018 update of the EULAR recommendation for the management of large vessel vasculitis: focus on giant cell arteritis.** *RMD OPEN.* 16;5(2):e001003

Letters / I.F.: 3.238

1. Laurent C, Marçal AL, Prieto-González S, Balagué O, Morales X, Darnell A, Ripoll E, Cid MC, Hernández-Rodríguez J. **HIV- associated vasculitis. Part II: histologic and angiographic diagnostic reconfirmation after an uncontrolled HIV infection and fatal outcome.** *CLINICAL AND EXPERIMENTAL RHEUMATOLOGY.* 37(2):151-152. I.F.: 3.238

Editorial / I.F.: 1.277

1. Marco-Hernández J, Prieto-González S. **Classification in systemic vasculitis: Time for an update.** *MEDICINA CLINICA.* 153(10):391-393. I.F.: 1.277

Case Reports / I.F.: 10.88

1. Marco-Hernández J, Camprubí D, Aylagas C, Gupta H, Castro P. **Failure of intravenous artesunate treatment for Plasmodium falciparum malaria in a splenectomized traveller: A diagnostic challenge.** *TRAVEL MEDICINE AND INFECTIOUS DISEASE.* 30(142):143. I.F.: 4.868

2. Capdevila-Reniu A; Rodríguez-Garcia SDLC; Grafia I; Sanchez M; Martínez D; Navarro-López M; Prieto-González S. **Localised granulomatosis with polyangiitis in an older patient with rheumatoid arthritis.** *AGE AND AGEING.* 49(1):146-148. I.F.: 4.511

3. Hermida-Lama E., Marco-Hernández J., Medaglia A., Pagès M., Vollmer I., Ramírez J., Martínez D., Mallolas J., García F. **Cholangitis and pulmonary nodules in a clinical presentation of syphilis in an HIV-infected patient.** *INTERNATIONAL JOURNAL OF STD & AIDS.* 30(8):820-824. I.F.: 1.501

Clinical Guidelines / I.F.: 14.299

1. Ehlers L, Askling J, Bijlsma HW, Cid MC, Cutolo M, Dasgupta B, Dejaco C, Dixon WG, Feltelius N, Finckh A, Gilbert K, Mackie SL, Mahr A, Matteson EL, Neill L, Salvarani C, Schmidt WA, Strangfeld A, van Vollenhoven RF, Buttgereit F . **2018 EULAR recommendations for a core data set to support observational research and clinical care in giant cell arteritis.** *ANNALS OF THE RHEUMATIC DISEASES.* 78(9):1160-1166. I.F.: 14.299

Consortium Publications / I.F.: 9.002

1. Jayne D; Blockmans D; Luqmani R; Moiseev S; Ji B; Green Y; Hall L; Roth D; Henderson RB; Merkel PA; BREVAS Study Collaborators BREVAS Study Collaborators. **Efficacy and Safety of Belimumab and Azathioprine for Maintenance of Remission in Antineutrophil Cytoplasmic Antibody-Associated Vasculitis: A Randomized Controlled Study.** *ARTHRITIS & RHEUMATOLOGY.* 71(6):952-963. I.F.: 9.002

GRANTS FOR RESEARCH IN PROGRESS

Cid MC. **Dilatació d'aorta ascendent i aneurismes coronaris en pacients amb vasculitis sistèmiques (arteritis de cèlules gegants i malaltia de Kawasaki). Rol de la via HIF en remodelatge/inflamació vascular.**
Sponsored by: Fundació la Marató de TV3.
TV3_Cor_15
Duration: 10/05/2016-31/01/2020

Cid MC. **Interacciones multi-celulares en la progresión de las enfermedades inflamatorias crónicas y síndromes linfoproliferativos: modelos 3D para investigar inmunoterapias dirigidas.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
SAF2017-88275-R
Duration: 01/01/2018-31/12/2020

Cid MC. **HEalth data LInkage for ClinicAL benefit.**
Sponsored by: European Comission.
CE_H2020-MSCA-ITN-18 (813545)
Duration: 01/01/2019-12/31/2022

Cid MC. **Effects of blocking IL-6 receptor with tocilizumab on ex-vivo cultured arteries from patients with giant-cell arteritis. Searching for predictors of response.**
Sponsored by: Vasculitis Foundation.
VASCFOUND_RG_18_01
Duration: 06/01/2019-30/11/2020

Espígol G. **Vasculitis de pequeño vaso rodeando a una arteria temporal preservada: significado clínico y búsqueda de biomarcadores de utilidad diagnóstica.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00092
Duration: 01/01/2016-30/04/2019

Espígol G. **Perfil de expresión génica en linfocitos T CD4 + de pacientes con Granulomatosis Eosinofilica con Eosinofílica con Poliangeitis o Síndrome de Churg-Strauss.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00461
Duration: 01/01/2019-31/12/2021

1.4 Molecular and cellular bases of inflammation. Structural and biological mass spectrometry

LOCATION
IIBB-CSIC labs

KEYWORDS
1. **Inflammation**
2. **Fibrosis**
3. **Proteomics**
4. **Macrophages**
5. **Exosomes**

RELATED DISEASES
1. **Pancreatitis**
2. **Lung fibrosis**
3. **Pancreatic cancer**

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**5**	**17,96**	**3,59**	**60%**	**20%**



GROUP LEADER
Daniel Closa (IIBB-CSIC)
T. 93 363 83 43
daniel.closa@iibb.csic.es

RESEARCHERS
Joaquín Abian (IIBB-CSIC)
Montserrat Carrascal (IIBB-CSIC)
Anna Serrano (IIBB-CSIC)

TECHNICIANS
Luis Ignacio Sánchez López (IIBB-CSIC)

PROBLEM

Many diseases involve alterations of the body's defence mechanisms and tissue-repair mechanisms. This leads to inflammatory modifications and fibrous tissue that sometimes becomes the disease's main problem.

This group researches inflammatory and fibrotic processes in respiratory and digestive diseases, such as idiopathic pulmonary fibrosis, pancreatic cancer, and acute pancreatitis, and in autoimmune processes associated with lymphocyte activation.

APPROACH

The group studies intercellular signalling mechanisms based on the exchange of soluble molecules and on those transported by extracellular vesicles, the phenotypic changes associated with these diseases, and the alteration of different markers at the molecular level. It also develops techniques for analysing biomolecules using mass spectrometry and, more especially for proteomic studies, analysing changes in patterns of phosphorylation or acetylation, and other protein modifications.

IMPACT

The group aims to discover innovative strategies that, by altering the communication between cells, will make it possible to develop new therapeutic applications for different diseases.

The group has already developed a new therapy for treating idiopathic pulmonary fibrosis, based on the transplantation of alveolar cells. It was also a pioneer in describing the role of exosomes (groups of proteins) in the progression of inflammation in different tissues during the course of pancreatitis.

Finally, it has published the first database of phosphorylation sites for the human lymphocyte, with over 2,000 modification sites.

RESEARCH LINES

- Molecular and cellular bases of inflammation and remodeling.

- Structural and biological mass spectrometry.

PUBLICATIONS

Originals / I.F.: 17.961

1. Casanovas A, Gallardo Ó, Carrascal M, Abian J. **TCellXTalk facilitates the detection of co-modified peptides for the study of protein post-translational modification cross-talk in T cells.** *BIOINFORMATICS*. 35(8):1404-1413. IF.: 4.531

2. Jiménez-Alesanco A, Marcuello M, Pastor-Jiménez M, López-Puerto L, Bonjoch L, Gironella M, Carrascal M, Abian J, de-Madaria E, Closa D. **Acute pancreatitis promotes the generation of two different exosome populations**. *SCIENTIFIC REPORTS*. 9(1):19887. I.F.: 4.011

3. Izquierdo I, Barrachina MN, Hermida-Nogueira L, Casas V, Eble JA, Carrascal M, Abián J, García Á. **Platelet membrane lipid rafts protein composition varies following GPVI and CLEC-2 receptors activation.** *JOURNAL OF PROTEOMICS*. 195:88-97. I.F.: 3.537

4. Barrachina MN, Sueiro AM, Casas V, Izquierdo I, Hermida-Nogueira L, Guitián E, Casanueva FF, Abián J, Carrascal M, Pardo M, García Á. **A Combination of Proteomic Approaches Identifies A Panel of Circulating Extracellular Vesicle Proteins Related to the Risk of Suffering Cardiovascular Disease in Obese Patients.** *PROTEOMICS.* 19(1-2):e1800248. I.F.: 3.106

5. Bellmunt À, López-Puerto L, Lorente J, Closa D. **Involvement of extracellular vesicles in the macrophage-tumor cell communication in head and neck squamous cell carcinoma.** *PLOS ONE.* 14(11). I.F.: 2.776

GRANTS FOR RESEARCH IN PROGRESS

Abian J. **Plataforma de recursos biomoleculares PRB3 (Plataforma de proteomica, genotipado y lineas celulares)**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PT17/0019/0008
Duration: 01/01/2018-31/12/2020

Closa D. **Exosomas como mediadores de la progresion sistemica en la pancreatitis aguda; Papel fisiopatologico y potencial como marcadores pronostico.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00060
Duration: 01/01/2017-31/12/2019

Closa D. **Importancia de los microRNAs transportados por exosomas en la progresión de la inflamación sistémica durante la pancreatitis aguda.**
Sponsored by: Asociación Española de Gastroenterología. AEG_BecaGonMiño_17
Duration 01/03/2017-

1.5 Immunogenetics and immunotherapy in autoinflammatory and immune responses

LOCATION
CELLEX building, floor 4B
CEK building, floor 2

KEYWORDS
1. **Autoinflammation**
2. **Immunogenetics**
3. **Inflammasome**
4. **Immunotherapy**
5. **Immunodeficiencies**
6. **Adoptive cell therapy**

RELATED DISEASES
1. **Immunodeficiencies**
2. **Autoinflammatory diseases**
3. **Cancer**
4. **Autoimmunity**
5. **Transplantation**

GROUP INVOLVED IN
AGAUR_SGR17: 01539

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**12**	**82,64**	**6,89**	**83%**	**25%**



GROUP LEADER
Manel Juan (HCB)
T. 93 227 54 63
mjuan@clinic.cat

RESEARCHERS
Juan Ignacio Aróstegui (HCB)
Daniel Benítez (HCB)
Jordi Yagüe (HCB)

POST-DOCTORAL RESEARCHERS
Anna Mensa (HCB)

PRE-DOCTORAL RESEARCHERS
Europa Azucena González-Navarro (HCB)
Berta Marzal (IDIBAPS)

COLLABORATOR
Raquel Cabezón (HCB)
Eva González Roca (HCB)
Eduard Palou (HCB)
Mireia Uribe (FCRB)

PROBLEM

Genes define the immune system as any biological cell system and, therefore, most human diseases. Immunogenetics is the basis for different treatments that are valid for many diseases, from autoinflammatory disorders to cancer.

The group uses immunogenetics to better understand and diagnose immune-mediated diseases, and particularly to generate its own cellular drugs in order to treat many of these diseases, starting with cancer using dendritic cells, TILs and CAR T cells.

APPROACH

The group's research involves defining the molecular bases of certain diseases (especially problems at the genetic level), proposing a better diagnosis, and developing cellular immunotherapy strategies (the use of cells as treatment) in order to solve the abnormal functioning of patients' immune systems.

In the case of cancer, the immunotherapy developed by the group aims to restore the patients' antitumor response, which makes it possible to control and even cure certain tumours. Some of our proposals use gene therapy to improve the function of these cancer cell therapies, being CAR T-cells the main example.

IMPACT

After thousands of patients with genetic diseases have been diagnosed and hundreds treated with cellular immunotherapy, the aim of the group is to provide the hospital with therapeutic tools for patients who have no other options.

Specifically, the group develops and presents clinical trials based on cell therapy to the Spanish Agency for Medicine and Medical Devices (AEMPS) for authorizing the use of these cellular drugs in the treatment of patients in whom their efficacy has been suggested or shown.

RESEARCH LINES

- Cellular and genetic immunotherapy for the treatment of cancer and other immune-mediated diseases.

- Genetic and epigenetic diagnosis of autoinflammatory disease.

- Molecular determination of the T-cell specific immune response.

PUBLICATIONS

Originals / I.F.: 82.642

1. Gattorno M, Hofer M, Federici S, Vanoni F, Bovis F, Aksentijevich I, Anton J, Arostegui J, Barron K, Ben-Cherit E, Brogan P, Cantarini L, Ceccherini I, De Benedetti F, Dedeoglu F, Demirkaya E, Frenkel J, Goldbach-Mansky R, Gul A, Hentgen V, Hoffman H, Kallinich T,

Kone-Paut I, Kuemmerle-Deschner J, Lachmann H, Laxer R, Livneh A, Obici L, Ozen S, Rowczenio D, Russo R, Shinar Y, Simon A, Toplak N, Touitou I, Uziel Y, Van Gijn M, Foell D, Garassino C, Kastner D. **Classification criteria for autoinflammatory recurrent fevers.** *ANNALS OF THE RHEUMATIC DISEASES.* 78(8):1025-1032. I.F.: 14.299

2. Mensa-Vilaró A, Bravo García-Morato M, de la Calle-Martin O, Franco-Jarava C, Martínez-Saavedra MT, González-Granado LI, González-Roca E, Fuster JL, Alsina L, Mutchinick OM, Balderrama-Rodríguez A, Ramos E, Modesto C, Mesa-Del-Castillo P, Ortego-Centeno N, Clemente D, Souto A, Palmou N, Remesal A, Leslie KS, Gómez de la Fuente E, Yadira Bravo Gallego L, Campistol JM, Dhouib NG, Bejaoui M, Dutra LA, Terreri MT, Mosquera C, González T, Cañellas J, García-Ruiz de Morales JM, Wouters CH, Bosque MT, Cham WT, Jiménez-Treviño S, de Inocencio J, Bloomfield M, Pérez de Diego R, Martínez-Pomar N, Rodríguez-Pena R, González-Santesteban C, Soler-Palacín P, Casals F, Yagüe J, Allende LM, Rodríguez-Gallego JC, Colobran R, Martínez-Martínez L, López-Granados E, Aróstegui J. **Unexpected Relevant Role of Gene Mosaicism in Primary Immunodeficiency Diseases.** *JOURNAL OF ALLERGY AND CLINICAL IMMUNOLOGY.* 143(1):359-368. I.F.: 14.110

3. Tapia-Abellán A, Angosto-Bazarra D, Martínez-Banaclocha H, de Torre-Minguela C, Cerón-Carrasco JP, Pérez-Sánchez H, Arostegui JI, Pelegrin P. **MCC950 closes the active conformation of NLRP3 to an inactive state.** *NATURE CHEMICAL BIOLOGY.* 15(6):560-564. I.F.: 12.154

4. Zubizarreta I, Flórez-Grau G, Vila G, Cabezón R, España C, Andorra M, Saiz A, Llufriu S, Sepulveda M, Sola-Valls N, Martinez-Lapiscina EH, Pulido-Valdeolivas I, Casanova B, Martinez Gines M, Tellez N, Oreja-Guevara C, Español M, Trias E, Cid J, Juan M, Lozano M, Blanco Y, Steinman L, Benitez-Ribas D, Villoslada P. **Immune tolerance in multiple sclerosis and neuromyelitis optica with peptide-loaded tolerogenic dendritic cells in a phase 1b trial.** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA.* 116(17):8463-8470. I.F.: 9.580

5. Requena J, Alvarez-Palomo AB, Codina-Pascual M, Delgado-Morales R, Moran S, Esteller M, Sal M, Juan M, Boronat Barado A, Consiglio A, Bogle OA, Wolvetang E, Ovchinnikov D, Alvarez I, Jaraquemada D, Mezquita-Pla J, Oliva R, Edel MJ. **Global Proteomic and Methylome Analysis in Human Induced Pluripotent Stem Cells Reveals Overexpression of a Human TLR3 Affecting Proper Innate Immune Response Signaling.** *STEM CELLS.* 37(4):476-488. I.F.: 5.614

6. Castella M, Boronat A, Martín-Ibáñez R, Rodríguez V, Suñé G, Caballero M, Marzal B, Pérez-Amill L, Martín-Antonio B, Castaño J, Bueno C, Balagué O, González-Navarro EA, Serra-Pages C, Engel P, Vilella R, Benitez-Ribas D, Ortiz-Maldonado V, Cid J, Tabera J, Canals JM, Lozano M, Baumann T, Vilarrodona A, Trias E, Campo E, Menendez P, Urbano-Ispizua Á, Yagüe J, Pérez-Galán P, Rives S, Delgado J, Juan M . **Development of a Novel Anti-CD19 Chimeric Antigen Receptor: A Paradigm for an Affordable CAR T Cell Production at Academic Institutions.** *MOLECULAR THERAPY-METHODS & CLINICAL DEVELOPMENT.* 12:134-144. I.F.: 4.875

7. Kant B, Carbo EC, Kokmeijer I, Oosterman JJM, Frenkel J, Swertz MA, Ploos van Amstel JK, Aróstegui JI, Koudijs MJ, van Gijn ME . **Gene Mosaicism Screening Using Single-Molecule Molecular Inversion Probes in Routine Diagnostics for Systemic Autoinflammatory Diseases.** *JOURNAL OF MOLECULAR DIAGNOSTICS.* 21(6):943-950. I.F.: 4.426

8. Rabionet R, Remesal A, Mensa-Vilaró A, Murías S, Alcobendas R, González-Roca E, Ruiz-Ortiz E, Antón J, Iglesias E, Modesto C, Comas D, Puig A, Drechsel O, Ossowski S, Yagüe J, Merino R, Estivill X, Arostegui JI. **Biallelic loss-of-function LACC1/FAMIN Mutations Presenting as Rheumatoid Factor-Negative Polyarticular Juvenile Idiopathic Arthritis.** *SCIENTIFIC REPORTS.* 9(1):4579. I.F.: 4.011

9. Herrera L, Santos S, Vesga M, Anguita J, Martin-Ruiz I, Carrascosa T, Juan M, Eguizabal C. **Adult peripheral blood and umbilical cord blood NK cells are good sources for effective CAR therapy against CD19 positive leukemic cells.** *SCIENTIFIC REPORTS.* 9(1):18729. I.F.: 4.011

10. Cruz T., López-Giraldo A., Noell G., Casas-Recasens S., Garcia T., Molins L., Juan M., Fernandez M.A., Agustí A., Faner R. **Multi-level immune response network in mild-moderate Chronic Obstructive Pulmonary Disease (COPD).** *RESPIRATORY RESEARCH.* 20(1):152. I.F.: 3.829

11. Deza, Gustavo; Mensa-Vilaro, Anna; March-Rodriguez, Alvaro; Sanchez, Silvia; Pujol, Ramon M; Arostegui, Juan I; Gimenez-Arnau, Ana M. **Acquired Cold Urticaria vs. Autoinflammatory Diseases, Genetic and Clinical Profile and Differential Diagnosis: Study of a Cohort of Patients in a Tertiary Reference Centre.** *ACTA DERMATO-VENEREOLOGICA.* 99(12):1071-1077. I.F.: 3.531

12. Creary L, Guerra S, Chong W, Brown C, Turner T, Robinson J, Bultitude W, Mayor N, Marsh S, Saito K, Lam K, Duke J, Mosbruger T, Ferriola D, Monos D, Willis A, Askar M, Fischer G, Saw C, Ragoussis J, Petrek M, Serra-Pagés C, Juan M, Stavropoulos-Giokas C, Dinou A, Ameen R, Al Shemmari S, Spierings E, Gendzekhadze K, Morris G, Zhang Q, Kashi Z, Hsu S, Gangavarapu S, Mallempati K, Yamamoto F, Osoegawa K, Vayntrub T, Chang C, Hansen J. **Next-generation HLA typing of 382 International Histocompatibility Working Group reference B-lymphoblastoid cell lines: Report from the 17th International HLA and Immunogenetics Workshop.** *HUMAN IMMUNOLOGY.* 80(7):449-460. I.F.: 2.202

Case Reports / I.F.: 15.172

1. Armangue T, Baucells BJ, Vlagea A, Petit-Pedrol M, Esteve-Solé A, Deyà-Martínez A, Ruiz-García R, Juan M, Pérez de Diego R, Dalmau J, Alsina L. **Toll-like receptor 3 deficiency in autoimmune encephalitis post-herpes simplex encephalitis.** *NEUROLOGY-NEUROIMMUNOLOGY & NEUROINFLAMMATION.* 6(6):e611. I.F.: 7.353

2. Morán-Villaseñor E; Saez-de-Ocariz M; Torrelo A; Arostegui J; Yamazaki-Nakashimada M; Alcántara-Ortigoza M; González-del-Angel A; Velázquez-Aragón J; López-Herrera G; Berrón-Ruiz L; García-Romero M. **Expanding the clinical features of autoinflammation and phospholipase C gamma 2-associated antibody deficiency and immune dysregulation by description of a novel patient.** *JOURNAL OF THE EUROPEAN ACADEMY OF DERMATOLOGY AND VENEREOLOGY.* 33(12):2334-2339. I.F.: 5.113

3. Shoman W, El Chazli Y, ElSawy I, Aróstegui J. **First Egyptian patient with STING-associated vasculopathy with onset in infancy.** *SCANDINAVIAN JOURNAL OF RHEUMATOLOGY.* 48(4):338-339. I.F.: 2.706

GRANTS FOR RESEARCH IN PROGRESS

Arostegui Jl. **A comprehensive clinical and experimental approach to personalized molecular medicine in patient autoinflammatory disorders.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). AC15/00027
Duration: 01/01/2016-30/06/2019

Arostegui Jl. **Contribución de nuevos mecanismos genéticos a la fisiopatología de las inmunodeficiencias primarias.**
Sponsored by: Ministerio de Economia y Competitividad (MINECO).
SAF2015-68472-C2-1-R
Duration: 01/01/2016-30/11/2019

Aróstegui Ji. **Identificación de nuevos mecanismos moleculares en enfermedades autoinflamatorias.**
Sponsored by: Ministerio de Ciencia Innovacion y Universidades (MICIU).
RTI2018-096824-B-C21
Duration: 01/01/2019-31/12/2021

Benítez D. **Inmunoterapia de cáncer de colon mediante la combinación de anticuerpos bloqueantes de la vía inhibidora PD-1-PD-L1 y células dendríticas autólogas.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00732
Duration: 01/01/2018-31/12/2020

Juan M. **Acceleradora pel desenvolupament de Teràpies Avançades a Catalunya.**
Sponsored by: Universitat de Barcelona.
COMRDI15-1-0013-13
Duration: 01/02/2016-31/01/2019

Juan M. **Nanoparticulas Cationicas de Oro mediadas por ARNm Citoplasmático Dirigido a la Producción de Linfocitos CART para Inmunoterapia de Leucemia Linfoide Crónica.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). AC18/00072
Duration: 01/01/2019-31/12/2021

Juan M. **Desarrollo de mejoras de la eficacia en nuestra propuesta académica de CART19 propio para síndromes linfoproliferativos B: modificaciones imprescindibles para mejorar resultados.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00775
Duration: 01/01/2019-31/12/2021

1.6 Immune receptors of the innate and adaptive system

LOCATION
CEK building, floor 1

KEYWORDS
1. **Innate and adaptive immune response**
2. **Immune receptor-lig and interactions**
3. **Immunomodulation and immunotherapy**
4. **Host-pathogen interaction**
5. **Immunevasion**

GROUP INVOLVED IN
AGAUR_SGR17:1582
Infect-ERA

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**14**	**68,86**	**4,92**	**50%**	**29%**



GROUP LEADER
Francisco Lozano (HCB-UB)
T. 93 227 42 17
flozano@clinic.cat

RESEARCHERS
Ana Angulo (UB)
Pablo Engel (UB)
Carles Serra (HCB-UB)

POST-DOCTORAL RESEARCHERS
Fernando Aranda (IDIBAPS)
Pablo Martinez Vicente (UB)

PRE-DOCTORAL RESEARCHERS
Guillem Angulo (UB)
Sergi Casadó (IDIBAPS)
Cristina Català (IDIBAPS)
Rebeca Gutiérrez Cózar (UB)
Alejandra Elizabeth Leyton (CONICYT-ANID)
Francesc Poblador (UB)
Joan Puñet (UB)
Manuel Sáez (UB)
María Velasco (IDIBAPS)

PROBLEM

The malfunctioning of the immune system is a factor in a wide number of incurable diseases such as autoimmune disorders, cancer, and certain serious infection processes, which pose a huge challenge for public health.

The development of novel immunotherapeutic strategies to treat these diseases requires a precise knowledge of the immune receptors that regulate innate and adaptive immune responses.

APPROACH

We aim to identify and understand the function of the molecules that regulate immune responses in health and disease. We particularly focus on the molecular interactions involved in the intercommunication and coordination of immune cells during physiological and pathological processes. This approach will allow the development of new approaches and biological tools (recombinant proteins and monoclonal antibodies) for the treatment of immune-mediated disorders (e.g., systemic autoimmune and infectious diseases, graft rejection, allergy, or cancer).

IMPACT

We aim to develop novel therapeutic strategies, disseminate our results in high-impact international journals and transfer the knowledge generated to biomedical companies. Over the last 5 years, we have published over 50 research papers, created a new spin-off company, and filed 2 patents.

RESEARCH LINES

- Study of citomegalovirus (CMV) modulation of the immune response and viral immune evasion strategies.

- Study of the structure and function of scavenger-like receptors and their role as Inmunomodulators in infection, autoimmunity and cancer.

- Study of the structure and function of the slam leukocyte molecules and their role in autoimmunity and cancer.

PUBLICATIONS

Originals / I.F.: 68.855

1. Martín-Antonio B., Suñe G., Najjar A., Perez-Amill L., Antonaña-Vildosola A., Castella M., León S., Velasco-De Andrés M., Lozano F., Lozano E., Bueno C., Estanyol J., Munõz-Pinedo C., Robinson S., Urbano-Ispizua A. **Extracellular NK histones promote immune cell anti-tumor activity by inducing cell clusters through binding to CD138 receptor.** *JOURNAL FOR*

IMMUNOTHERAPY OF CANCER. 7(1):259. I.F.: 8.676

2. Yigit B; Wang N; Hacken E; Chen S; Bhan A; Suarez-Fueyo A; Katsuyama E; Tsokos G; Chiorazzi N; Wu C; Burger J; Herzog R; Engel P; Terhorst C. **SLAMF6 as a regulator of exhausted CD8+ T cells in cancer.** *CANCER IMMUNOLOGY RESEARCH*. 7(9):1485-1496. I.F.: 8.619

3. Martínez-Vicente P, Farré D, Sánchez C, Alcamí A, Engel P, Angulo A. **Subversion of natural killer cell responses by a cytomegalovirus-encoded soluble CD48 decoy receptor.** *PLOS PATHOGENS*. 15(4):e1007658. I.F.: 6.463

4. Rodríguez N, Morer A, González-Navarro EA, Serra-Pages C, Boloc D, Torres T, Martinez-Pinteño A, Mas S, Lafuente A, Gassó P, Lázaro L. **Altered frequencies of Th17 and Treg cells in children and adolescents with obsessive-compulsive disorder.** *BRAIN BEHAVIOR AND IMMUNITY*. 81:608-616. I.F.: 6.170

5. Castella M, Boronat A, Martín-Ibáñez R, Rodríguez V, Suñé G, Caballero M, Marzal B, Pérez-Amill L, Martín-Antonio B, Castaño J, Bueno C, Balagué O, González-Navarro EA, Serra-Pages C, Engel P, Vilella R, Benitez-Ribas D, Ortiz-Maldonado V, Cid J, Tabera J, Canals JM, Lozano M, Baumann T, Vilarrodona A, Trias E, Campo E, Menendez P, Urbano-Ispizua Á, Yagüe J, Pérez-Galán P, Rives S, Delgado J, Juan M. **Development of a Novel Anti-CD19 Chimeric Antigen Receptor: A Paradigm for an Affordable CAR T Cell Production at Academic Institutions.** *MOL THER METHODS CLIN DEV*. 12:134-144. I.F.: 4.875

6. Vasquez M, Consuegra-Fernández M, Aranda F, Jimenez A, Tenesaca S, Fernández M, Gomar C, Ardaiz N, Casares N, Lasarte JJ, Lozano F, Berraondo P. **Treatment of Experimental Autoimmune Encephalomyelitis by Sustained Delivery of Low-Dose IFN-alpha.** *JOURNAL OF IMMUNOLOGY*. 203(3):696-704. I.F.: 4.718

7. Wang N; Yigit B; Van Der Poel C; Cuenca M; Carroll M; Herzog R; Engel P; Terhorst C. **The checkpoint regulator SLAMF3 preferentially prevents expansion of auto-reactive B cells generated by Graft-vs.-Host disease.** *FRONTIERS IN IMMUNOLOGY*. 10:831. I.F.: 5.085

8. Sanchez LR; Godoy GJ; Serrán MG; Breser ML; Vernengo FF; Engel P; Motrich RD; Gruppi A; Rivero VE. **IL-10 producing B cells dampen protective T cell response and allow chlamydia muridarum infection of the male genital tract.** *FRONTIERS IN IMMUNOLOGY*. 10:356. I.F.: 5.085

9. Kalina T; Fišer K; Pérez-Andrés M; Kužílková D; Cuenca M; Bartol S; Blanco E; Engel P; van Zelm M. **CD maps-dynamic profiling of CD1–CD100 surface expression on human leukocyte and lymphocyte subsets.** *FRONTIERS IN IMMUNOLOGY*. 10:2434. I.F.: 5.085

10. Carreras E, Velasco de Andrés M, Orta-Mascaró M, Simões IT, Català C, Zaragoza O, Lozano F. **Discordant susceptibility of inbred C57BL/6 versus outbred CD1 mice to experimental fungal sepsis.** *CELLULAR MICROBIOLOGY*. 21(5):e12995. I.F.: 4.288

11. Rodriguez N, Morer A, González-Navarro EA, Gassó P, Boloc D, Serra-Pagès C, Lafuente A, Lazaro L, Mas S. **Human-leukocyte antigen class II genes in early-onset obsessive-compulsive disorder.** *WORLD JOURNAL OF BIOLOGICAL PSYCHIATRY*. 20(5):352-358. I.F.: 4.040

12. Ojeda R, Arias-Guillén M, Gómez M, Vera M, Fontseré N, Rodas L, Filella X, Reverter J, Lozano F., Villamor N, Maduell F. **Study of Biocompatibility of Membranes in Online Hemodiafiltration.** *BLOOD PURIFICATION*. 19:1-9. I.F.: 2.363

13. Gariup M, Lera-Miguel S, Torres F, Varela E, Serra-Pagès C, González-Navarro A, Espinosa G, Lázaro L, Cervera R, Morer A. **Autoantibodies, elevated cytokines, and neurocognitive abnormalities in offspring of women with systemic lupus erythematosus: comparison with healthy controls.** *CLINICAL RHEUMATOLOGY*. 38(9):2529-2539. I.F.: 2.293

14. Creary L, Guerra S, Chong W, Brown C, Turner T, Robinson J, Bultitude W, Mayor N, Marsh S, Saito K, Lam K, Duke J, Mosbruger T, Ferriola D, Monos D, Willis A, Askar M, Fischer G, Saw C, Ragoussis J, Petrek M, Serra-Pagés C, Juan M, Stavropoulos-Giokas C, Dinou A, Ameen R, Al Shemmari S, Spierings E, Gendzekhadze K, Morris G, Zhang Q, Kashi Z, Hsu S, Gangavarapu S, Mallempati K, Yamamoto F, Osoegawa K, Vayntrub T, Chang C, Hansen J. **Next-generation HLA typing of 382 International Histocompatibility Working Group reference B-lymphoblastoid cell lines: Report from the 17th International HLA and Immunogenetics Workshop.** *HUMAN IMMUNOLOGY*. 80(7):449-460. I.F.: 2.202

Review / I.F.: 9.762

1. Angulo, Ana; Cuenca, Marta; Martinez-Vicente, Pablo; Engel, Pablo. **Viral CD229 (Ly9) homologs as new manipulators of host immunity.** *JOURNAL OF LEUKOCYTE BIOLOGY*. 105(5):947-954. I.F.: 4.012

2. Cuenca M, Sintes J, Lányi Á, Engel P. **CD84 cell surface signaling molecule: An emerging biomarker and target for cancer and autoimmune disorders.** *CLINICAL IMMUNOLOGY*. 204:43-49. I.F.: 3.548

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GRANTS FOR RESEARCH IN PROGRESS

Lozano F. **Combined CD6 therapy for treatment of infectious diseases and related inflammatory processes.**
Sponsored by: Fundació Institució Centres de Recerca de Catalunya (CERCA). 2017-03-14
Duration: 18/04/2017-17/04/2022

Lozano F. **Proteínas SRCR como receptores reconocedores de microorganismos: un amplio rastreo de interacciones con bacterias patogénicas.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO). PCIN-2015-070
Duration: 01/12/2015- 31/05/2019

Lozano F. **Aproximaciones experimentales al estudio de las propiedades inmunomoduladores de receptores linfocitarios tipo scavenger en patología inmunomediada.**
Sponsored by: Ministerio de Economia y Competitividad (MINECO).
SAF2016-80535-R
Duration: 30/12/2016-29/06/2020

Angulo A. **Manipulación de inmunoreceptores de la superficie celular por citomegalovirus.**
Sponsored by: Ministerio de Economia y Competitividad (MINECO).
SAF2017-87688-R
Duration: 01/01/2018-31/12/2020

DOCTORAL THESES

Angulo A. **Estudio de la interferencia de ICOSL (CD275) como una nueva estrategia de inmunoevasión viral.**
PhD student: Guillem Angulo Montserrat

Lozano F, Mascaro JM. **Receptores del sistema inmunitario innato (Toll-like receptors y receptores de la Fc-gamma) y adaptativo (CD5 y CD6) como factores de susceptibilidad, modificadores de la enfermedad y respuesta al tratamiento biológico en psoriasis.**
PhD student: Marc Julià Manresa

1.7 AIDS and HIV infection

LOCATION
CELLEX building, floor 4A

KEYWORDS
1. **HIV infection**
2. **AIDS**
3. **Antiretroviral treatment**
4. **PrEP**
5. **PEP**
6. **Co-infection**

RELATED DISEASES
1. **VHC**
2. **VPH**
3. **STD**

GROUP INVOLVED IN
ERANET
RIS

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**38**	**168,19**	**4,43**	**58%**	**21%**



GROUP LEADER
Josep Mallolas (HCB)
T. 93 227 54 00 (Ext.: 3312)
mallolas@clinic.cat

RESEARCHERS
José Alcamí (FCRB)
José Luis Blanco (HCB)
Felipe García Alcaide (HCB)
Montserrat Laguno (HCB)
Esteban Martinez Chamorro (HCB)
Josep Maria Miró (HCB)
Montserrat Plana (IDIBAPS)

POST-DOCTORAL RESEARCHERS
Juan Carlos Enrique Ambrosioni (HCB)
Núria Climent (IDIBAPS)
Ross Cranston (HCB)
Fran Diez Fuertes (FCRB)
Maria Florencia Etcheverry (IDIBAPS-FCRB)
Ana González-Cordón (FCRB)
Lorna Anabel Leal (IDIBAPS)
María Martínez-Rebollar (HCB)
Jhon Fredy Rojas (FCRB)
Maria Sonsoles Sanchez Palomino (FCRB)
Berta Torres (FCRB)
Lorena Usero (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Wein Chun (FCRB)
Lorena de la Mora (HCB)
Elisa de Lazzari (FCRB)
Csaba Fehér (IDIBAPS)
Alexy Junior Inciarte (IDIBAPS)
Ainoa Ugarte (HCB)

TECHNICIANS
Manuel Enric Bargalló (IDIBAPS)
Pilar Callau (FCRB)
Tania Gonzalez Jimenez (FCRB)
Carmen Hurtado (FCRB)
M. José Maleno (FCRB)
Laia Miralles (IDIBAPS)
Cristina Rovira (IDIBAPS)

NURSING STAFF
Emma Fernández González (HCB)
Mª Carmen Ligero (HCB)
Isabel Montaño (HCB-FCRB)
Margarita Robau (HCB)
Ana Rodriguez Serna (HCB)
Mª Amparo Tricas (HCB)

ADMINISTRATIVE STAFF
Raquel Aguiló (HCB)
Laura Novell (FCRB)
Mª Antònia Rodríguez Jové (HCB)

PROBLEM

HIV infection and AIDS are among the most important avoidable causes of death in the world. In Spain, there are some 140,000 infected individuals, of whom 100,000 are receiving antiretroviral treatment. Every year, some 3,000 new infections are diagnosed, 800 of which are in Catalonia.

To stop this epidemic, it is necessary to address our efforts at all aspects of the infection: clinical (ageing of those infected and new comorbidities), diagnosis (early identification), therapeutics (search for new treatments) and preventive (studies of the immunopathology of infection and development of vaccines). Only by optimising all of this research can there be any real control of the disease.

APPROACH

The HIV-AIDS unit serves 6.000 people infected with HIV, most of whom receive antiretroviral treatment. The group also conducts a wide range of research activities, divided into two parts: firstly, clinical research focusing on antiretroviral efficacy and tolerance, resistance mechanisms, and opportunistic infections and coinfection. Secondly, it performs basic research in Retrovirology and Viral Immunopathology, which includes the development of vaccines.

IMPACT

Our research has played a key role in the development of strategies for the treatment and prevention of HIV and opportunistic infections and coinfection, both nationally and internationally. The impact of our research

activity can be quantified through over 600 international publications in peer-review journals with an impact factor of over 4,000, approximately 20,000 citations and over 50 manuscripts cited more than 50 times.

RESEARCH LINES

- Basic and translational research.
- Clinical and diagnostic aspects.
- Epidemiological research and public health.
- Therapeutic aspects.

PUBLICATIONS

Originals / I.F.: 168.19

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12. Couto E, Diaz-Brito V, Mothe B, Guardo AC, Fernandez I, Ugarte A, Etcheverry F, Gómez CE, Esteban M, Pich J, Arnaiz JA, López Bernaldo de Quirós JC, Brander C, Plana M, García F, Leal L. **Comparison of Safety and Vector-Specific Immune Responses in Healthy and HIV-Infected Populations Vaccinated with MVA-B.** *VACCINES.* 7(4). I.F.: 4.760

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Vanham G., van Gorp E., Brander C., Allard S., Thielemans K., Martinez-Picado J., Plana M., García F., Gruters R.A. **Therapeutic vaccine in chronically Hiv-1-infected patients: A randomized, double-blind, placebocontrolled phase IIa trial with HTI-Trimix.** *VACCINES.* 7(4). I.F.: 4.760

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16. Ambrosioni J, Rico JÁF, Nicolás D, Mosquera MM, de Lazzari E, Marcos MÁ, García F, Miró JM, Hospital Clinic Acute/Recent HIV infection Study Group. **E157Q integrase strand-transfer inhibitor substitution in patients with acute/recent HIV infection.** *AIDS.* 33(10):1613-1617. I.F.: 4.499

17. Ceausu A, Rodríguez-Gallego E, Peraire J, López-Dupla M, Domingo P, Viladés C, Vidal-Gonzalez J, Peraire M, Perpiñán C, Pacheco YM, Veloso S, Alba V, Vargas M, Castellano AJ, Ruiz-Mateos E, Mallolas J, Vidal F, Rull A. **IL-7/IL-7R gene variants impact circulating IL-7/IL-7R homeostasis and ART-associated immune recovery status.** *SCIENTIFIC REPORTS.* 9(1):15722. I.F.: 4.011

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20. Johnson M, Kumar P, Molina JM, Rizzardini G, Cahn P, Bickel M, Mallolas J, Zhou Y, Morais C, Kumar S, Sklar P, Hanna GJ, Hwang C, Greaves W, DRIVE-SHIFT Study Group. **Switching to Doravirine/ Lamivudine/ Tenofovir Disoproxil Fumarate (DOR/3TC/TDF) Maintains HIV-1 Virologic Suppression Through 48 Weeks: Results of the DRIVE-SHIFT Trial.** *JOURNAL OF ACQUIRED IMMUNE DEFICIENCY SYNDROMES.* 81(4):463-472. I.F.: 3.863

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Susana; Lao, Yolanda; Luis Vicario, Jose; Garcia, Felipe; Gonzalez-Garcia, Juan; Pulido, Federico; Gutierrez-Rodero, Felix; Moreno, Santiago; Antonio Iribarren, Jose; Viciana, Pompeyo; Vilches, Carlos; Ramos, Manuel; Capa, Laura; Alcami, Jose; Del Val, Margarita. **Novel association of five HLA alleles with HIV-1 progression in Spanish long-term non progressor patients.** *PLOS ONE.* 14(8):e0220459. I.F.: 2.776

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7. Martínez-Rebollar M, Pascual PP, de la Mora L, Londoño MC, Llovet LP, Forns X, Mallolas J, Laguno M. **Contributing awareness of autoimmune hepatitis in HIV patients.** *AIDS.* 33(13):2103-2105. I.F.: 4.499

Editorial / I.F.: 18.967

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1. AIDS Study Group (GeSIDA) of the Spanish Society of Infectious Diseases and Clinical Microbiology and the National AIDS Plan. **Executive summary of the GeSIDA/National AIDS Plan consensus document on antiretroviral therapy in adults infected by the human immunodeficiency virus (updated January 2018).** *ENFERMEDADES INFECCIOSAS Y MICROBIOLOGIA CLINICA.* 37(3):195-202. I.F.: 1.685

Consortium Publications / I.F.: 96.275

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GRANTS FOR RESEARCH IN PROGRESS

Blanco JL. **Papel de la determinación de resistencias en PMBC mediante secuenciación masica del DNA proviral integrado en sujetos VIH+ con fracaso virológico con viremias bajas (50-200 copias/mL).**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/01562
Duration: 01/01/2018-31/12/2020

Blanco JI. **NEAT22 - EACS.**
Sponsored by: European AIDS Clinical Society CHU Saint Pierre. 16/524
Duration: 14/09/2016-

García F. **Utilización de medicina de sistemas para la predicción de la inmunogenicidad y eficacia de vacunas terapéuticas frente a VIH.**
Sponsored by: Ministerio de Economia y Competitividad (MINECO).
SAF2015-66193-R
Duration: 01/01/2016-31/12/2020

García F. **Red Temática de Investigación Cooperativa en Salud - SIDA.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). RD16/0025/0002
Duration: 01/01/2017-31/12/2021

García F. **Desarrollo preclínico de una innovadora vacuna ARNm contra el VIH.**
Sponsored by: Ministerio de Ciencia Innovacion y Universidades (MICIU).
RTI2018-096309-B-I00
Duration: 01/01/2019-31/12/2021

García F. **Impact of a supplemented Mediterranean diet on the microbial translocation, intestinal microbiota, immune activation and HIV reservoirs in successful treated HIV infected patients.**
Sponsored by: Gilead Sciences.
GLD18/00141
Duration: 01/03/2019-28/02/2021

García F. **EmERGE: Evaluating mHealth technology in HIV to improve Empowerment and healthcare utilisation: Research and innovation to Generate Evidence for personalised care.**
Sponsored by: European Comission.
CE_H2020-PHC-2014-1s (643736)
Duration: 01/05/2015-30/04/2020

Garcia F. **EHVA: European HIV Vaccine Alliance: a EU platform for the discovery and evaluation of novel prophylactic and therapeutic vaccine candidates.**
Sponsored by: European Comission.
CE_H2020-PHCRTD-15 (681032)
Duration: 01/01/2016-31/12/2020

García F**. HIVACAR: Evaluating a Combination of Immune-based Therapies to Achieve a Functional Cure of HIV Infection.**
Sponsored by: European Comission.
H2020-SC1-16abr1s. (731626)
Duration: 01/09/2017-31/08/2021

García F, Mallolas J. **INTEGRATE: Joint Action on integrating prevention, testing and linkage to care strategies acros HIV, viral hepatitis, TB and STIs in Europe.**
Sponsored by: European Comission.
CE_HP-JA-2016 (761319)
Duration:01/01/2017-31/08/2020

Laguno M. **Micro-eliminación de la infección por el VHC en el colectivo de HSH/VIH+ en Barcelona.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00583
Duration: 01/01/2019-31/12/2021

Mallolas J. **Grup de Recerca VIH/SIDA.**
Sponsored by: Generalitat de Catalunya.
AGAUR_SGR17_00615
Duration: 01/01/2017-31/12/2020

Mallolas J. **Evaluación clínica y de consumo sanitario del seguimiento telemático de una cohorte de pacientes infectados por el VIH.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00726
Duration: 01/01/2018-31/12/2020

Martínez EJ. **Predictive Metabolomics biomarkers for cardiovascular disease risk in ART-HIV+ population.**
Sponsored by: Gilead Sciences.
GLD16/00104
Duration: 14/12/2016-

Martínez EJ. **Seguridad, tolerabilidad y eficacia de dos estrategias de simplificación basadas en dolutegravir en pacientes infectados por VIH con supresión virológica sostenida.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/01085
Duration: 01/01/2017-31/12/2020

Plana M. **Desarrollo de una vacuna terapéutica frente al VIH basada en una nueva formulación de mRNA con nanopartículas.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00480
Duration: 01/01/2016-31/06/2020

Plana M. **Diseño de vacunas frente a la gripe humana mediante micelas multifuncionales capaces de utilizar la inmunidad innata.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). AC16/00051
Duration: 01/01/2017-31/12/2020

Plana M. **Estudio preclínico de la eficacia de una nueva vacuna terapéutica frente al VIH-1 basada en mRNA.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00699
Duration: 01/01/2019-31/12/2021

DOCTORAL THESES

Martínez Chamorro E. **Enfermedad cardiovascular en la infección por el virus de la inmunodeficiencia humana. Factores implicados, tratamiento antirretroviral y utilidad de marcadores de ateromatosis subclínica.**
PhD student: Ana Gonzalez Cordon

Martínez Chamorro E. **Homeòstasi del colesterol en pacients infectats per VIH que reben tractament antiretroviral.**
PhD student: Pere Leyes Garcia

Martinez Chamorro E. **Nuevas estratégias para mejorar la tolerabilidad del tratamiento antirretroviral y disminuir su impacto sobre las comorbilidades.**
PhD student: Jhon Fredy Rojas Lievano

1.8 Endocarditis. Cardiovascular infections. Experimental model

LOCATION
CELLEX building, floor 4A

KEYWORDS
1. **Endocarditis**
2. **Native valve endocarditis**
3. **Prosthetic valve endocarditis**
4. **Cardiac Implantable Electronic Device (CIED) Infection**
5. **Vascular infections**
6. **Experimental endocarditis**

RELATED DISEASES
1. **Bacteremia**
2. **Sepsis**
3. **Heart failure**
4. **Stroke**
5. **Bone and joint infections**
6. **Cardiac surgery**
7. **Cardiac implantable electronic devices**

GROUP INVOLVED IN
REIPI

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**13**	**74,37**	**5,72**	**62%**	**15%**



GROUP LEADER
José M. Miró (HCB)
T. 93 227 54 00 (Ext.: 2765)
jmmiro@clinic.cat

RESEARCHERS
Cristina García de la Maria (FCRB)

POST-DOCTORAL RESEARCHERS
Juan Carlos Enrique Ambrosioni (HCB)
Maria Alexandra Cañas (FCRB)
Eduardo Quintana (HCB)
Elena Sandoval (HCB)

PRE-DOCTORAL RESEARCHERS
Javier Garcia Gonzalez (FCRB)
Delia Garcia Pares (FCRB)
Marta Hernández Meneses (FCRB)
Adrián Tellez (FCRB)

ADMINISTRATIVE STAFF
Eva Ariza (IDIBAPS)

PROBLEM

Cardiovascular infections in general and infective endocarditis in particular are diseases that have severe effects on patients quality of life. They have high morbidity and mortality rates, as it affects the heart and the vessels as well as other organs such as the brain. Surgical treatment is necessary in more than fifty per cent of cases.

APPROACH

Our principal objective is to transfer basic scientific knowledge to daily clinical practice. Making progress in the study of IE requires an interdisciplinary and translational approach, from basic in vitro and in vivo laboratory research in an experimental endocarditis model to clinical studies. This is achieved by a close collaboration between experts in infectious disease, microbiology, cardiology, cardiac and electrophysiological imaging, heart surgery, nuclear medicine, neurology and anatomical pathology. The aspects of IE addressed covered all the clinical spectrum of IE: prevention strategies; optimising drug monitoring; improving clinical imaging and laboratory diagnostic techniques; developing new, effective treatment strategies; and studying improved surgical approaches.

IMPACT

The results of our studies can have an important impact on society, as they can lead to: earlier diagnosis of these diseases; the identification of new antibiotics, antibiotic combinations and therapeutic strategies that are effective for treating cardiovascular infections; better determination of the best time for heart surgery in diseases involving cardiovascular infections; and the prevention of post-operative cardiovascular infections and those that develop in patients with heart disease.

The conclusions of the studies that we have conducted may be incorporated into national and international clinical guidelines.

RESEARCH LINES

- Clinical research.
- Translational research.
- Experimental endocarditis studies.

PUBLICATIONS

Originals / I.F.: 74.369

1. Fosbøl EL, Park LP, Chu VH, Athan E, Delahaye F, Freiberger T, Lamas C, Miro JM, Strahilevitz J, Tribouilloy C, Durante-Mangoni E, Pericas JM, Fernández-Hidalgo N, Nacinovich F, Rizk H, Barsic B, Giannitsioti E, Hurley JP, Hannan MM, Wang A, ICE-PLUS Investigators. **The association between vegetation size and surgical treatment on 6-month mortality in left-sided infective endocarditis.** *EUROPEAN HEART JOURNAL.* 40(27):2243-2251. I.F.: 23.239

2. Pericà S JM, Llopis J, González-Ramallo V, Goenaga MÁ, Muñoz P, García-Leoni ME, Fariñas MC, Pajarón M, Ambrosioni J, Luque R, Goikoetxea J, Oteo JA, Carrizo E, Bodro M, Reguera-Iglesias JM, Navas E, Hidalgo-Tenorio C, Miró JM, Spanish Collaboration on Endocarditis-Grupo de Apoyo al Manejo de la Endocarditis Infecciosa en España (GAMES) investigators . **Outpatient Parenteral Antibiotic Treatment (OPAT) for Infective Endocarditis: a Prospective Cohort Study From the GAMES Cohort**. *CLINICAL INFECTIOUS DISEASES*. 69(10):1690-1700. I.F.: 9.055

3. Castella, Manuel; Kotecha, Dipak; van Laar, Charlotte; Wintgens, Lisette; Castillo, Yakir; Kelder, Johannes; Aragon, David; Nunez, Maria; Sandoval, Elena; Casellas, Aina; Mont, Lluis; van Boven, Wim Jan; Boersma, Lucas V. A.; van Putte, Bart P. **Thoracoscopic vs. catheter ablation for atrial fibrillation: long-term follow-up of the FAST randomized trial.** *EUROPACE*. 21(5):746-753. I.F.: 6.100

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5. Tran TT, Mishra NN, Seepersaud R, Diaz L, Rios R, Dinh AQ, Garcia-de-la-Maria C, Rybak MJ, Miro JM, Shelburne SA, Sullam PM, Bayer AS, Arias CA. **Mutations in cdsA and pgsA Correlate With Daptomycin Resistance in S.** *ANTIMICROBIAL AGENTS AND CHEMOTHERAPY*. 63(2). I.F.: 4.715

6. Kebriaei R, Rice SA, Stamper KC, Seepersaud R, Garcia-de-la-Maria C, Mishra NN, Miro JM, Arias CA, Tran TT, Sullam PM, Bayer AS, Rybak MJ. **Daptomycin Dose-Ranging Evaluation with Single-Dose versus Multidose Ceftriaxone Combinations against Streptococcus mitis/oralis in an Ex Vivo Simulated Endocarditis Vegetation Model.** *ANTIMICROBIAL AGENTS AND CHEMOTHERAPY*. 63(6). I.F.: 4.715

7. Wang A, Chu VH, Athan E, Delahaye F, Freiberger T, Lamas C, Miro JM, Strahilevitz J, Tribouilloy C, Durante-Mangoni E, Pericas JM, Fernández-Hidalgo N, Nacinovich F, Barsic B, Giannitsioti E, Hurley JP, Hannan MM, Park LP, ICE-PLUS Investigators. **Association between the timing of surgery for complicated, left-sided infective endocarditis and survival.** *AMERICAN HEART JOURNAL*. 210:108-116. I.F.: 4.023

8. Mestres CA, Quintana E, Kopjar T, Ambrosioni J, Almela M, Fuster D, Ninot S, Miró JM, Hospital Clinic Infective Endocarditis Investigators. **Twenty-year experience with cryopreserved arterial allografts for vascular infections.** *EUROPEAN JOURNAL OF CARDIO-THORACIC SURGERY*. 55(2):358-365. I.F.: 3.847

9. Armiñanzas C, Fariñas-Alvarez C, Zarauza J, Muñoz P, González Ramallo V, Martínez Sellés M, Miró JM, Pericás JM, Goenaga MÁ, Ojeda Burgos G, Rodríguez Álvarez R, Castelo Corral L, Gálvez-Acebal J, Martínez Marcos FJ, Fariñas MC, Spanish Collaboration on Endocarditis - Grupo de Apoyo al Manejo de la Endocarditis Infecciosa en Espana Study Group. **Role of age and comorbidities in mortality of patients with infective endocarditis.** *EUROPEAN JOURNAL OF INTERNAL MEDICINE*. 64:63-71. I.F.: 3.660

10. Ramos-Martínez A, Calderón-Parra J, Miró JM, Muñoz P, Rodríguez-Abella H, Valerio M, de Alarcón A, Luque R, Ambrosioni J, Fariñas MC, Goenaga MÁ, Oteo JA, Martínez Marcos FJ, Vinuesa D, Domínguez F, Spanish Collaboration on Endocarditis-Grupo de Apoyo al Manejo de la Endocarditis Infecciosa en España (GAMES) (see Appendix). **Effect of the type of surgical indication on mortality in patients with infective endocarditis who are rejected for surgical intervention.** *INTERNATIONAL JOURNAL OF CARDIOLOGY*. 282:24-30. I.F.: 3.471

11. Hidalgo-Tenorio C., Vinuesa D., Plata A., Martin Dávila P., Iftimie S., Sequera S., Loeches B., Lopez-Cortés L.E., Fariñas M.C., Fernández-Roldan C., Javier-Martinez R., Muñoz P., Arenas-Miras M.D.M., Martínez-Marcos F.J., Miró J.M., Herrero C., Bereciartua E., De Jesus S.E., Pasquau J. **DALBACEN cohort: Dalbavancin as consolidation therapy in patients with endocarditis and/or bloodstream infection produced by gram-positive cocci.** *ANNALS OF CLINICAL MICROBIOLOGY AND ANTIMICROBIALS*. 18(1):30. I.F.: 2.924

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Sponsored by: Instituto de Salud Carlos III (ISCIII). PI19/00861
Duration: 01/01/2019-31/12/2022

García de la Maria C. **Prevention of vascular catheter-related infections by the FUNctionalization of CATHeters with thermically activated hydrogels with antimicrobial agents of broad spectrum.**
Sponsored by: Fundació la Marató de TV3. TV3_Infeccioses_18
Duration: 21/06/2019-20/06/2022

Miró JM. **Estudi clínic i experimental de la relació entre la CMI a la vancomicina en Staphylococcus aureus sensibles a la meticil·lina (MSSA) i el pronòstic de la endocarditis infecciosa esquerra per MSSA.**
Sponsored by: Fundació la Marató de TV3. TV3_Cor_15
Duration: 03/06/2016-31/12/2019

Miro JM. **Estudio clínico y experimental de la asociación entre la CMI de vancomicina en Staphylococcus aureus sensible a meticilina (SASM) y el pronóstico de la endocarditis infecciona (EI) izquierda causada por dicho microorganismo.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI14/00603
Duration: 01/01/2015- 31/03/2019

Miro JM. **Eficacia de nuevas pautas de tratamiento antibiótico de la andocarditis enterocòcica evaluadas in vitro y en el modelo de endocarditis experimental.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/01251
Duration: 01/01/2018-31/12/2020

1.9 Emergencies: processes and pathologies

LOCATION
HCB building

KEYWORDS
1. **Emergency department**
2. **Organization**
3. **Toxicology**
4. **Chest pain**
5. **Arrhythmia**
6. **Acute heart failure**

RELATED DISEASES
1. **Quality**
2. **Drug consumption and emergencies**
3. **Atrial fibrillation**
4. **Ischaemic cariomyopathy**
5. **Cariopulmonar ressuscitation**
6. **Risk scores**

GROUP INVOLVED IN
AGAUR_SGR17: 01424

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**46**	**266,91**	**5,80**	**74%**	**26%**



GROUP LEADER
Òscar Miró (HCB)
T. 93 227 54 00 (Ext. 3153)
omiro@clinic.cat

RESEARCHERS
Blanca Coll-Vinent (HCB)
Miguel Galicia (HCB)
Victor Gil (HCB)
Sònia Jiménez (HCB)
Santiago Nogué (HCB)
Mar Ortega-Romero (HCB)
Rafael Perelló (HCB)
Miguel Sánchez Sánchez (HCB)

POST-DOCTORAL RESEARCHERS
Josep Ramon Alonso (HCB)
Montserrat Amigó (HCB)
Albert Antolín (HCB)
Ernest Bragulat (HCB)
Rosa Escoda (HCB)
Carolina Fuenzalida Inostoza (HCB)
Ana García Martínez (HCB)
Elisenda Gómez Angelat (HCB)
Francesc Xavier Jiménez (UB)
Beatriz López Barbeito (HCB)
Emilio Salgado (HCB)

PRE-DOCTORAL RESEARCHERS
Sira Aguiló (HCB)
Pablo Burbano (UB)
Javier Dario Cabrera (UB)
Francesc Xavier Escalada (UB)
Inés María Fernández Guerrero (UB)
Lluís Llauger (UB)
Javier López Piedra (UB)
Patricia Javaloyes (UB)

NURSING STAFF
Sofía Calderón (HCB)
Beatriz Gil (HCB)
Helena Morera (HCB)

PROBLEM

Emergency medicine has the principal mission of acting on any health condition during the acute phase. This initial care is uniquely and exclusively provided by emergency care professionals and has important implications in terms of patient survival and prognosis, especially in time-dependent conditions such as sepsis, acute myocardial infarctions, stroke, and heart failure, among others. Improved knowledge about emergency care processes is leading to continuous progress, which has a major care and organisational impact on the health system in both the short and long term.

APPROACH

The continuous cross-disciplinary nature of disease mean that the emergency services sequentially share care with other specialist areas. In other words, after the initial emergency care, the patient is referred to each of the different hospital specialist areas, depending on their illness.

Consolidating research (basically clinical research) in emergency processes (particularly the most prevalent ones) makes it possible to improve our knowledge of them and generate new research lines. This improves patient care and promotes the optimisation and the continuity of the medical process.

IMPACT

In recent years, the group has exponentially increased its research activity, with its global impact factor rising from 37.46 in 2016, to 235.95 in 2017. This upwards trend has continued during the past year.

As a result of this research work, modifications have been made in certain areas of care practice such as heart failure, chest pain, and intoxicated patient care. Furthermore, the group has promoted the creation of national and international work networks, which are especially relevant in a world where multidisciplinary working and teamwork are of fundamental importance.

RESEARCH LINES

- Acute heart failure.

- Attention to infectious diseases in emergency departments.

- Clinical aspects of intoxicated patients and medical care for problems caused by drug abuse.

- Diffusion of the teaching of cardiopulmonary resuscitation maneuvers among the general population.

- Dynamics of teaching and research in emergency medicine.

- Evaluation of chest pain in the emergency department.

- Functional aspects of the hospital emergency departments.

PUBLICATIONS

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GRANTS FOR RESEARCH IN PROGRESS

Alonso JR. **International impact of TALK©: a simple and practical approach to multi-professional structured feedback and debriefing, to be used after unplanned learning events in clinical environments.**
Sponsored by: European Comission. CE_H2020_MSCA_RISE16 (734753)
Duration: 01/06/2017-31/05/2020

Miró O. **Identificació a urgències dels pacients amb insuficiència cardiaca aguda de baix risc i desenvolupament d'una escala per identificar-los i millorar l'evolució dels que són donats d'alta des d'urgències.**
Sponsored by: Fundació la Marató de TV3. TV3_Cor_15
Duration: 09/03/2016-31/12/2019

Miró O. **Diseño de programas de intervención y escalas de riesgo con marcadores y biológicos de fragilidad para la insuficiencia cardiaca aguda en los servicios de urgencia españoles.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/01019
Duration: 01/01/2016-30/06/2020

Miró O. **Evaluación de la capacidad de la escala MEESSI-AHF para mejorar la toma de decisión y el pronóstico en pacientes diagnosticados de insuficiencia cardíaca aguda en urgencias: Estudio observacional, cuasiexperimental y ensayo clínico.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00393
Duration: 01/01/2019-31/12/2021

DOCTORAL THESES

Amigo M, Jimenez X. **Indicadores de calidad en la exposición a monóxido de carbono, humo de incendios, gases y otros tóxicos: del conocimiento a la práctica multidisciplinar en la asistencia prehospitalaria.**
PhD student: Vicenç Ferres Padro

Miró Ò, Martin FJ. **Actividad investigadora de los médicos españoles de urgencias y emergencias. Análisis de la productividad y calidad de ponencias a congresos, artículos científicos y tesis doctorales.**
PhD student: Inés María Fernández Guerrero

Ortega-Romero M. **Maneig de la sepsia en un servei d'urgències d'un hospital de tercer nivel. Oportunitats de millora.**
PhD student: Ester Monclús Cols

1.10 Infections in solid-organ transplant recipients

LOCATION
HCB building

KEYWORDS
1. **HIV**
2. **AIDS**
3. **Endocarditis**
4. **Nosocomial infections**
5. **Immune suppressed patients**

RELATED DISEASES
1. **Infections in transplant patients**
2. **Donor-to-recipient transmitted infections**
3. **Recipient antibiotic prophylaxis**
4. **Preventive measures**
5. **Innate and adaptive immunity**
6. **Epidemiology of infections**

GROUP INVOLVED IN
REIPI
RIS

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**9**	**39,40**	**4,38**	**56%**	**22%**



GROUP LEADER
Asunción Moreno (HCB)
T. 93 227 54 00 (Ext.: 2657)
amoreno@clinic.cat

RESEARCHERS
Marta Bodro (HCB)

POST-DOCTORAL RESEARCHERS
Laura Linares (IDIBAPS)

PROBLEM

Transplant patients require immunosuppressive treatment to prevent graft rejection. However, this causes immunodepression (lowering of defences), which makes the patient more prone to infections. For this reason, it is very important to be familiar with the most common infections and prevent them using antimicrobial and other prophylactic measures.

Infections differ over time, and so specialists must know how to request the pertinent tests and apply the most appropriate treatment in order to reduce patient morbidity and mortality.

APPROACH

The group is made up of specialists in infectious diseases, microbiology, immunology, as well as experts in diverse organ specialities (nephrology, gastroenterology, cardiology, endocrinology and surgery, among others) and in transplant coordination. Almost fifty per cent of transplant patients will develop an infection during the postoperative phase.

The group's objective is to reduce the number of infections and minimise their severity, and to achieve this they develop and apply prophylactic, diagnostic and antimicrobial therapy protocols.

IMPACT

These preventive, diagnostic and therapeutic measures have a positive effect on the solid-organ transplant population and on immunosuppressed patients. Antimicrobial prophylaxis and other prevention measures are applied and developed (vaccines, colonisation by multi-drug resistant bacteria, etc.).

Protocols are applied for the study and early detection of diverse infections, as are highly effective antimicrobial treatment guidelines for use in opportunistic and nosocomial (hospital-acquired) infections. In addition, isolation measures are applied in cases when the micro-organism detected makes this necessary.

Many of the results of the studies published by the group in biomedical journals have been included in national and international clinical practice guidelines.

RESEARCH LINES

- Epidemiological evolution of pulmonary infections in immunosuppressed patients (SOT, HIV, others).

- Evolution of the epidemiology of infection in SOT (including HIV-infected patients and donors) and role of the immunosuppressors. Evaluation of the sensitivity and specificity of diagnostic techniques and biological markers and prognostic factors of oppor.

- Multicenter research projects within the reipi. Clinical trials in the area of infections in SOT recipients.

- Role of innate and adaptive immunity (including genetic markers) in the risk of infections in SOT.

PUBLICATIONS

Originals / I.F.: 39.404

1. Pericà S JM, Llopis J, González-Ramallo V, Goenaga MÁ, Muñoz P, García-Leoni ME, Fariñas MC, Pajarón M, Ambrosioni J, Luque R, Goikoetxea J, Oteo JA, Carrizo E, Bodro M, Reguera-Iglesias JM, Navas E, Hidalgo-Tenorio C, Miró JM, Spanish Collaboration on Endocarditis-Grupo de Apoyo al Manejo de la Endocarditis Infecciosa en España (GAMES) investigators. **Outpatient Parenteral Antibiotic Treatment (OPAT) for Infective Endocarditis: a Prospective Cohort Study From the GAMES Cohort.** *CLINICAL INFECTIOUS DISEASES.* 69(10):1690-1700. I.F.: 9.055

2. Pérez-Nadales E, Gutiérrez-Gutiérrez B, Natera AM, Abdala E, Reina Magalhães M, Mularoni A, Monaco F, Camera Pierrotti L, Pinheiro Freire M, Iyer RN, Mehta Steinke S, Grazia Calvi E, Tumbarello M, Falcone M, Fernández-Ruiz M, María Costa-Mateo J, Rana MM, Mara Varejão Strabelli T, Paul M, Carmen Fariñas M, Clemente WT, Roilides E, Muñoz P, Dewispelaere L, Loeches B, Lowman W, Hock Tan B, Escudero-Sánchez R, Bodro M, Antonio Grossi P, Soldani F, Gunseren F, Nestorova N, Pascual Á, Martínez-Martínez L, Aguado JM, Rodríguez-Baño J, Torre-Cisneros J, REIPI/INCREMENT-SOT Investigators. **Predictors of mortality in solid-organ transplant recipients with bloodstream infections due to carbapenemase-producing Enterobacterales: the impact of cytomegalovirus disease and lymphopenia.** *AMERICAN JOURNAL OF TRANSPLANTATION.* I.F.: 7.163

3. Pericàs JM, Nathavitharana R, Garcia-de-la-Mària C, Falces C, Ambrosioni J, Almela M, García-González J, Quintana E, Marco F, Moreno A, Bayer AS, Miró JM, Karchmer AW, Hospital Clínic Endocarditis Study Group. **Endocarditis Caused by Highly Penicillin-Resistant Viridans Group Streptococci: Still Room for Vancomycin-Based Regimens.** *ANTIMICROBIAL AGENTS AND CHEMOTHERAPY.* 63(8). I.F.: 4.715

4. Ramos-Vivas J, Chapartegui-González I, Fernández-Martínez M, González-Rico C, Fortún J, Escudero R, Marco F, Linares L, Montejo M, Aranzamendi M, Muñoz P, Valerio M, Aguado JM, Resino E, Ahufinger IG, Vega AP, Martínez L, Fariñas MC, ENTHERE Study Group, the Group for Study of Infection in Transplantation of the Spanish Society of Infectious Diseases and Clinical Microbiology (GESITRA-SEIMC) and the Spanish Network for Research in Infectious Diseases (REIPI). **Biofilm formation by multidrug resistant Enterobacteriaceae strains isolated from solid organ transplant recipients.** *SCIENTIFIC REPORTS.* 9(1):8928. I.F.: 4.011

5. Armiñanzas C, Fariñas-Alvarez C, Zarauza J, Muñoz P, González Ramallo V, Martínez Sellés M, Miró Meda JM, Pericás JM, Goenaga MÁ, Ojeda Burgos G, Rodríguez Álvarez R, Castelo Corral L, Gálvez-Acebal J, Martínez Marcos FJ, Fariñas MC, Fernández Sánchez F, Noureddine M, Rosas G, de la Torre Lima J, Aramendi J, Bereciartua E, Blanco MJ, Blanco R, Boado MV, Campaña Lázaro M, Crespo A, Goikoetxea J, Iruretagoyena JR, Irurzun Zuazabal J, López-Soria L, Montejo M, Nieto J, Rodrigo D, Rodríguez D, Rodríguez R, Vitoria Y, Voces R, García López MV, Georgieva RI, Ojeda G, Rodríguez Bailón I, Ruiz Morales J, Cuende AM, Echeverría T, Fuerte A, Gaminde E, Idígoras P, Iribarren JA, Izaguirre Yarza A, Kortajarena Urkola X, Reviejo C, Carrasco R, Climent V, Llamas P, Merino E, Plazas J, Reus S, Álvarez N, Bravo-Ferrer JM, Castelo L, Cuenca J, Llinares P, Miguez Rey E, Rodríguez Mayo M, Sánchez E, Sousa Regueiro D, Martínez FJ, Alonso MDM, Castro B, García Rosado D, Durán MDC, Miguel Gómez MA, Lacalzada J, Nassar I, Plata Ciezar A, Reguera Iglesias JM, Asensi Álvarez V, Costas C, de la Hera J, Fernández Suárez J, Iglesias Fraile L, León Arguero V, López Menéndez J, Mencia Bajo P, Morales C, Moreno Torrico A, Palomo C, Paya Martínez B, Rodríguez Esteban Á, Rodríguez García R, Telenti Asensio M, Almela M, Ambrosioni J, Azqueta M, Brunet M, Bodro M, Cartañá R, Falces C, Fita G, Fuster D, García de la Mària C, Hernández-Meneses M, Llopis Pérez J, Marco F, Miró JM, Moreno A, Tercero Martínez A, Segura Luque JC Spanish Collaboration on Endocarditis — Grupo de Apoyo al Manejo de la Endocarditis Infecciosa en Espana Study Group. **Role of age and comorbidities in mortality of patients with infective endocarditis**. *EUROPEAN JOURNAL OF INTERNAL MEDICINE.* 64:63-71. I.F.: 3.660

6. Oriol I., Sabe N., Càmara J., Berbel D., Ballesteros M., Escudero R., Lopez-Medrano F., Linares L., Len O., Silva J., Oliver E., Soldevila L., Pérez-Recio S., Guillem L., Camprubí D., Lladó L., Manonelles A., González-Costello J., Domínguez M., Fariñas M., Lavid N., González-Rico C., Garcia-Cuello L., Arnaiz De Las Revillas F., Fortun J., Aguado J., Jimenez-Romero C., Bodro M., Almela M., Paredes D., Moreno A., Pérez-Cameo C., Muñoz-Sanz A., Blanco-Fernández G., Cabo-González J., García-López J., Nuño E., Carratalà J. **The impact of culturing the organ preservation fluid on solid organ transplantation: A prospective multicenter cohort study.** *OPEN FORUM INFECTIOUS DISEASES.* 6(6):ofz180. I.F.: 3.371

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8. Perello R, Vergara A, Monclus E, Jimenez S, Montero M, Saubi N, Moreno A, Eto Y, Inciarte A, Mallolas J, Martínez E, Marcos MA. **Cytomegalovirus infection in HIV-infected patients in the era of combination antiretroviral therapy.** *BMC INFECTIOUS DISEASES.* 19(1):1030. I.F.: 2.565

9. Sanclemente, Gemma; Bodro, Marta; Cervera, Carlos; Linares, Laura; Cofan, Frederic; Marco, Francesc; Bosch, Jordi; Oppenheimer, Federico; Dieckmann, Fritz; Moreno, Asuncion. **Perioperative prophylaxis with ertapenem reduced infections caused by extended-spectrum betalactamase-producing Enterobacteriaceae after kidney transplantation.** *BMC NEPHROLOGY.* 20(1):274. I.F.: 2.088

Review / I.F.: 3.090

1. Cilloniz, C; Dominedo, C; Alvarez-Martinez, MJ; Moreno, A; Garcia, F; Torres, A; Miro, JM. **Pneumocystis pneumonia in the twenty-first century: HIV-infected versus HIV-uninfected patients.** *EXPERT REVIEW OF ANTI-INFECTIVE THERAPY.* 17(10):787-801. I.F.: 3.090

Case Reports / I.F.: 1.685

1. Fernandez-Pittol M, Bosch J, Muñoz J, Bodro M. **Skin infection by Corynebacterium diphtheriae and Streptococcus pyogenes: an unusual association.** *ENFERMEDADES INFECCIOSAS Y MICROBIOLOGIA CLINICA.* 37(10):678-679. I.F.: 1.685

Clinical Guidelines / I.F.: 1.685

1. Len O., Los-Arcos I., Aguado J., Blanes M., Bodro M., Carratalà J., Cordero E., Fariñas M., Fernández-Ruiz M., Fortún J., Gavaldà J., López-Medrano F., López-Vélez R., Lumbreras C., Mahillo B., Marcos M., Martin-Dávila P., Montejo J., Moreno A., Muñoz P., Norman F., Pérez-Sáenz J., Pumarola T., Sabé N., San-Juan R., Vidal E., Domínguez-Gil B. **Executive summary of the Consensus Statement of the Transplant Infection Study Group (GESITRA) of the Spanish Society of Infectious Diseases and Clinical Microbiology (SEIMC) and the National Transplant Organization (ONT) on the Selection Criteria of Donors of Solid Organs in relation to Infectious Diseases [Resumen ejecutivo de la Declaración de consenso del Grupo de Estudio de la Infección en el Trasplante (GESITRA) de la Sociedad Española de Enfermedades Infecciosas y Microbiología Clínica (SEIMC) y la Organización Nacional de Trasplantes (ONT) sobre los criterios de selección de donantes de órganos sólidos en relación con las enfermedades infecciosas].** *ENFERMEDADES INFECCIOSAS Y MICROBIOLOGIA CLINICA.* I.F.: 1.685

Consortium Publications / I.F.: 11.853

1. Hirzel C, Ferreira VH, L'Huillier AG, Hoschler K, Cordero E, Limaye AP, Englund JA, Reid G, Humar A, Kumar D, Influenza in Transplant Study Group. **Humoral response to natural influenza infection in solid organ transplant recipients**. *AMERICAN JOURNAL OF TRANSPLANTATION.* 19(8):2318-2328. I.F.: 7.163

2. Ramos-Martínez A, Calderón-Parra J, Miró JM, Muñoz P, Rodríguez-Abella H, Valerio M, de Alarcón A, Luque R, Ambrosioni J, Fariñas MC, Goenaga MÁ, Oteo JA, Martínez Marcos FJ, Vinuesa D, Domínguez F, Spanish Collaboration on Endocarditis-Grupo de Apoyo al Manejo de la Endocarditis Infecciosa en España (GAMES) (see Appendix). **Effect of the type of surgical indication on mortality in patients with infective endocarditis who are rejected for surgical intervention.** *INTERNATIONAL JOURNAL OF CARDIOLOGY.* 282:24-30 I.F.: 3.471

3. Cuerpo GP, Valerio M, Pedraz A, Rodríguez-Abella H, Mestres CA, Obrador EQ, González-Calle A, Rodríguez Álvarez R, García PM, Bouza E, GAMEs Study Group. **Mitral valve repair in infective endocarditis is not inferior to valve replacement: results from a Spanish nationwide prospective registry.** *GENERAL THORACIC AND CARDIOVASCULAR SURGERY.* 67(7):585-593. I.F.: 1.219

1.11 Inflammatory joint diseases (IJDs)

LOCATION
HCB building

KEYWORDS
1. **Rheumatoid arthritis**
2. **Psoriatic arthritis**
3. **Pathogenesis**
4. **Biomarkers**
5. **Targeted therapies**
6. **Synovial immunopathology**

RELATED DISEASES
1. **Rheumatoid arthritis**
2. **Psoriatic arthritis**
3. **Spondyloarthritis**
4. **Palindromic rheumatism**

GROUP INVOLVED IN
RIER

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**18**	**118,15**	**6,56**	**56%**	**33%**



GROUP LEADER
Raimon Sanmartí (HCB)
T. 93 227 54 00 (Ext.: 2236/2604)
sanmarti@clinic.cat

RESEARCHERS
Juan de Dios Cañete (HCB)

POST-DOCTORAL RESEARCHERS
Maria Raquel Celis (FCRB)
María Victoria Hernández Miguel (HCB)
Felipe Julio Ramirez (FCRB)
Virginia Ruiz Esquide (FCRB)

PRE-DOCTORAL RESEARCHERS
Raul Antonio Castellanos (HCB)
Andrea Cuervo (FCRB)

PROBLEM

The various forms of chronic arthritis (rheumatoid arthritis, psoriatic arthritis and, spondylarthritis) affect nearly 2% of the population. They have a major social and health impact, due to the incapacity and loss of quality of life that they can cause.

Although there are currently no effective treatments that cure them, in recent years the mechanisms that cause inflammation and the destruction of the joints have become better known, and new drugs and therapeutic targets have been developed. However, not all patients respond favourably, so the challenge remains: new treatments and new biomarkers need to be developed to be able to treat each person with the most appropriate therapy.

APPROACH

This research group aims to increase its knowledge of the different prognostic factors that can determine a better evolution of arthritis and which treatment can be most effective for each patient.

It studies biomarkers present in the blood of patients with arthritis at the initial stages of the disease (especially autoantibodies) and is a pioneer in the field of immunopathological study of the synovial membrane in different forms of arthritis, including those that do not have an initial diagnosis, in order to improve the diagnostic and prognostic process. The group also participates in strategic studies working towards the advancement of personalised medicine.

IMPACT

The group's objectives are to improve the diagnosis of rheumatoid arthritis, gain insight into the immune mechanisms involved, and identify biomarkers that could help to obtain a personalised therapy.

To do this, research is carried out in collaboration with other European groups. It is making advances in identifying individuals at risk of rheumatoid arthritis with a view to conducting clinical trials for therapies that regulate the adaptive immune response and thus prevent the onset of the disease.

RESEARCH LINES

- Clinical and sonographic characterization of clinical remission.

- Immunopathology of synovitis in chronic arthritis.

- Pharmacogenomics of chronic arthritis.

- Prognostic factors in early arthritis.

- The gut-joint axis in rheumatoid arthritis patients: role of microbiota-induced intestinal t follicular helper cells and innate immune cells in the pathogenesis of the disease.

PUBLICATIONS

Originals / I.F.: 118.152

1. Gorlier C., Orbai A., Puyraimond-Zemmour D., Coates L., Kiltz U., Leung Y., Palominos P., Cañete J., Scrivo R., Balanescu A., Dernis E., Tälli S., Ruyssen-Witrand A., Soubrier M., Aydin S., Eder L., Gaydukova I., Lubrano E., Kalyoncu U., Richette P., Husni M., De Wit M., Smolen J., Gossec L. **Comparing patient-perceived and physician-perceived remission and low disease activity in psoriatic arthritis: An analysis of 410 patients from 14 countries.** *ANNALS OF THE RHEUMATIC DISEASES.* 78(2):201-208. I.F.: 14.299

2. Aterido A, Cañete JD, Tornero J, Ferrándiz C, Pinto JA, Gratacós J, Queiró R, Montilla C, Torre-Alonso JC, Pérez-Venegas JJ, Fernández Nebro A, Muñoz-Fernández S, González CM, Roig D, Zarco P, Erra A, Rodríguez J, Castañeda S, Rubio E, Salvador G, Díaz-Torné C, Blanco R, Willisch Domínguez A, Mosquera JA, Vela P, Sánchez-Fernández SA, Corominas H, Ramírez J, de la Cueva P, Fonseca E, Fernández E, Puig L, Dauden E, Sánchez-Carazo JL, López-Estebaranz JL, Moreno D, Vanaclocha F, Herrera E, Blanco F, Fernández-Gutiérrez B, González A, Pérez-García C, Alperi-López M, Olivé Marques A, Martínez-Taboada V, González-Álvaro I, Sanmartí R, Tomás Roura C, García-Montero AC, Bonàs-Guarch S, Mercader JM, Torrents D, Codó L, Gelpí JL, López-Corbeto M, Pluma A, López-Lasanta M, Tortosa R, Palau N, Absher D, Myers R, Marsal S, Julià A . **Genetic variation at the glycosaminoglycan metabolism pathway contributes to the risk of psoriatic arthritis but not psoriasis.** *ANNALS OF THE RHEUMATIC DISEASES.* 78(3):355-364. I.F.: 14.299

3. Rodríguez-Ubreva J., De La Calle-Fabregat C., Li T., Ciudad L., Ballestar M., Català-Moll F., Morante-Palacios O., Garcia-Gomez A., Celis R., Humby F., Nerviani A., Martin J., Pitzalis C., Cañete J., Ballestar E. **Inflammatory cytokines shape a changing DNA methylome in monocytes mirroring disease activity in rheumatoid arthritis.** *ANNALS OF THE RHEUMATIC DISEASES.* 78(11):1505-1516. I.F.: 14.299

4. Hannemann N, Cao S, Eriksson D, Schnelzer A, Jordan J, Eberhardt M, Schleicher U, Rech J, Ramming A, Uebe S, Ekici A, Cañete JD, Chen X, Bäuerle T, Vera J, Bogdan C, Schett G, Bozec A. **Transcription factor Fra-1 targets arginase-1 to enhance macrophage-mediated inflammation in arthritis.** *JOURNAL OF CLINICAL INVESTIGATION.* 129(7):2669-2684. I.F.: 12.282

5. Atienza-Mateo B, Martín-Varillas JL, Calvo-Río V, Demetrio-Pablo R, Beltrán E, Sánchez-Bursón J, Mesquida M, Adan A, Hernández MV, Hernández-Garfella M, Valls-Pascual E, Martínez-Costa L, Sellas-Fernández A, Cordero-Coma M, Díaz-Llopis M, Gallego R, García-Serrano JL, Ortego-Centeno N, Herreras JM, Fonollosa A, Garcia-Aparicio ÁM, Maíz-Alonso O, Blanco A, Torre-Salaberri I, Fernandez-Espartero C, Jovaní V, Peiteado D, Pato E, Cruz J, Férnandez-Cid C, Aurrecoechea E, García-Arias M, Castañeda S, Caracuel-Ruiz MA, Montilla-Morales CA, Atanes-Sandoval A, Francisco F, Insua S, González-Suárez S, Sanchez-Andrade A, Gamero F, Linares Ferrando LF, Romero-Bueno F, García-González AJ, González RA, Muro EM, Carrasco-Cubero C, Olive A, Prior Á, Vázquez J, Ruiz-Moreno O, Jiménez-Zorzo F, Manero J, Muñoz Fernandez S, Fernández-Carballido C, Rubio-Romero E, Pages FA, Toyos-Sáenz de Miera FJ, Martinez MG, Díaz-Valle D, López Longo FJ, Nolla JM, Álvarez ER, Martínez MR, González-López JJ, Rodríguez-Cundin P, Hernández JL, González-Gay MA, Blanco R. **Comparative Study of Infliximab Versus Adalimumab in Refractory Uveitis due to Behçet's Disease: National Multicenter Study of 177 Cases.** *ARTHRITIS & RHEUMATOLOGY.* 71(12):2081-2089. I.F.: 9.002

6. Sanmarti R, Veale DJ, Martin-Mola E, Escudero-Contreras A, González C, Ercole L, Alonso R, Fonseca JE, ToSpace Study group. **Reducing or maintaining the dose of subcutaneous tocilizumab in patients with rheumatoid arthritis in clinical remission: a randomized, open-label trial.** *ARTHRITIS & RHEUMATOLOGY.* 71(10):1616-1625. I.F.: 9.002

7. Choy E., Caporali R., Xavier R., Fautrel B., Sanmarti R., Bao M., Devenport J., Pethö-Schramm A. **Effects of concomitant glucocorticoids in TOZURA, a common-framework study programme of subcutaneous tocilizumab in rheumatoid arthritis.** *RHEUMATOLOGY.* 58(6):1056-1064. I.F.: 5.149

8. Chen S, Noordenbos T, Blijdorp I, van Mens L, Ambarus CA, Vogels E, Te Velde A, Alsina M, Cañete JD, Yeremenko N, Baeten D. **Histologic evidence that mast cells contribute to local tissue inflammation in peripheral spondyloarthritis by regulating interleukin-17A content.** *RHEUMATOLOGY.* 58(4):617-627. I.F.: 5.149

9. Del Rey M, Valín Á, Usategui A, Ergueta S, Martín E, Municio C, Cañete J, Blanco F, Criado G, Pablos J. **Senescent synovial fibroblasts accumulate prematurely in rheumatoid arthritis tissues and display an enhanced inflammatory phenotype.** *IMMUNITY & AGEING.* 16(29). I.F.: 4.250

10. Gratacos, Jordi; Pontes, Caridad; Juanola, Xavier; Sanz, Jesus; Torres, Ferran; Avendano, Cristina; Vallano, Antoni; Calvo, Gonzalo; de Miguel, Eugenio; Sanmarti, Raimon; Almirall, Miriam; Aparicio, Maria; Sellas, Agusti; Vives, Roser; Albinana, Nestor; Moreno, Mireia; Clavaguera, Teresa; Carlos Torre-Alonso, Juan; Veroz, Raul; Rodriguez-Lozano, Carlos; Francisco Linares, Luis; Urruticoechea, Ana; Collantes, Eduardo; Maria Morla, Rosa; Reina, Delia; Cuende, Eduardo; Zarco, Pedro; Cruz Fernandez-Espartero, Maria; Garcia-Vicuna, Rosario; Alberto Montilla, Carlos; Villalba, Alejandro; Pascual, Dora; Campos, Cristina; Juan, Antonio; Ariza, Rafael; Diaz-Miguel, Consuelo; Maqueda, Manuel; Pilar Fernandez-Dapica, Maria; Fernandez-Prada, Manuel; Batlle, Enrique; Gonzalez-Fernandez, Carlos; Queiro, Ruben;REDES-TNF Investigators. **Non-inferiority of dose reduction versus standard dosing of TNF-inhibitors in axial spondyloarthritis.** *ARTHRITIS RESEARCH & THERAPY.* 21(1):11. I.F.: 4.148

11. Moreno M, Gratacós J, Torrente-Segarra V, Sanmarti R, Morlà R, Pontes C, Llop M, Juanola X, REMINEA study Group. **Withdrawal of infliximab therapy in ankylosing spondylitis in persistent clinical remission, results from the REMINEA study.** *ARTHRITIS RESEARCH & THERAPY.* 21(1):88. I.F.: 4.148

12. Bastida C., Soy D., Ruiz-Esquide V., Sanmartí R., Huitema A. **Exposure-response modeling of tocilizumab in rheumatoid arthritis using continuous composite measures and their individual components.** *BRITISH JOURNAL OF CLINICAL PHARMACOLOGY.* 85(8):1710-1718. I.F.: 3.867

13. Castellanos-Moreira R, Rodriguez-Garcia SC, Gómez-Puerta JA, Ruiz-Esquide V, Camacho O, Ramírez J, Cuervo A, Morla R, Cañete JD, Haro I, Sanmarti R. **Rheumatoid Arthritis Initiating as Palindromic Rheumatism: A Distinct Clinical Phenotype?** *JOURNAL OF RHEUMATOLOGY.* I.F.: 3.634

14. Queiro R, Cañete JD, Montilla C, Abad MA, Montoro M, Gómez S, Cábez A, MAAPS Study Group. **Very Low Disease Activity, DAPSA Remission, and Impact of Disease in a Spanish Population with Psoriatic Arthritis.** *JOURNAL OF RHEUMATOLOGY.* 46(7):710-715. I.F.: 3.634

15. García-Gómez C, Martín-Martínez MA, Fernández-Carballido C, Castañeda S, González-Juanatey C, Sanchez-Alonso F, González-Fernández MJ, Sanmartí R, García-Vadillo JA, Fernández-Gutiérrez B, García-Arias M, Manero FJ, Senabre JM, Rueda-Cid A, Ros-Expósito S, Pina-Salvador JM, Erra-Durán A, Möller-Parera I, Llorca J, González-Gay MA, CARMA Project Collaborative Group. **Hyperlipoproteinaemia(a) in patients with spondyloarthritis: results of the Cardiovascular in Rheumatology (CARMA) project.** *CLINICAL AND EXPERIMENTAL RHEUMATOLOGY.* 37(5):774-782. I.F.: 3.238

16. Garcia-Moreno, Cristina; Jose Gomara, Maria; Jose Bleda, Maria; Sanmarti, Raimon; Haro, Isabel. **Development of a multiplex assay based on chimeric citrullinated peptides as proof of concept for diagnosis of rheumatoid arthritis.** *PLOS ONE.* 14(5):e0215927. I.F.: 2.776

17. Ferreiro-Iglesias A, Montes A, Perez-Pampin E, Cañete JD, Raya E, Magro-Checa C, Vasilopoulos Y, Caliz R, Ferrer MA, Joven B, Carreira P, Balsa A, Pascual-Salcedo D, Blanco FJ, Moreno-Ramos MJ, Manrique-Arija S, Ordoñez MDC, Alegre-Sancho JJ, Narvaez J, Navarro-Sarabia F, Moreira V, Valor L, Garcia-Portales R, Marquez A, Gomez-Reino JJ, Martin J, Gonzalez A. **Evaluation of 12 GWAS-drawn SNPs as biomarkers of rheumatoid arthritis response to TNF inhibitors. A potential SNP association with response to etanercept.** *PLOS ONE.* 14(2):e0213073. I.F.: 2.776

18. de Agustín JJ, Erra A, Ponce A, Moragues C, Díaz-Torné C, Reina D, Moreno E, Ramírez J, Mateo L, Pujol Busquets M, Moya P, Santo-Panero P, Ros-Expósito S, Narváez J, Sanmartí R, García de Yébenes MJ, Carmona L. **Measuring inflammation in rheumatoid arthritis with a new clinical and ultrasound index: development and initial validation.** *RHEUMATOLOGY INTERNATIONAL.* 39(12):2137-2145. I.F.: 2.200

Review / I.F.: 3.113

1. Celis R, Cuervo A, Ramírez J, Cañete JD. **Psoriatic Synovitis: Singularity and Potential Clinical Implications.** *FRONTIERS OF MEDICINE.* 6:14. I.F.: 3.113

GRANTS FOR RESEARCH IN PROGRESS

Cañete JD. **Biomarcadores sinoviales para la clasificación diagnóstica de las artritis indiferenciadas. Estudio prospectivo basado en patrones vasculares, inmunohistoquímica y expresión génica.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI14/00785
Duration: 01/01/2015-30/09/2019

Cañete JD. **REMRABIT: Clinical validation of genetic markers to predict persistent remission in rheumatoid arthritis patients treated with biological therapy.**
Sponsored by: Fundación Profesor Novoa Santos. FIS_PMP15 (PMP15/00032)
Duration: 01/01/2016-31/12/2019

Cañete JD. **Red Temática de Investigación Cooperativa en Salud - Inflamación y enfermedades reumáticas.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). RD16/0012/0010
Duration: 01/01/2017 - 31/12/2021

Cañete JD. **Biomarcadores sinoviales y séricos de mal pronóstico en Artritis Indeferenciadas de inicio. Un estudio longitudinal, prospectivo, de 18 meses de seguimiento.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00993
Duration: 01/01/2018-31/12/2020

Castellanos RA. **Estudi dels autoanticossos en malaltia pulmonar intersticial difusa Associada a artritis reumatoide.**
Sponsored by: Societat Catalana de Reumatologia. SCR_19_01
Duration: 07/06/2019-06/06/2020

DOCTORAL THESES

Sanmarti R, Soy D. **Dose optimization of intravenous tocilizumab in rheumatoid arthritis patients.**
PhD student: Carla Bastida Fernández

1.12 Nosocomial infection

LOCATION
CELLEX building, floor 4A

KEYWORDS
1. **Nosocomial infection**
2. **Bacteremia**
3. **Inmunosuppresed patients**
4. **Bone and joint infection**

RELATED DISEASES
1. **Infectious diseases**

GROUP INVOLVED IN
RIS
AGAUR_SGR17:1432, 1067

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**24**	**112,19**	**4,67**	**71%**	**38%**



GROUP LEADER
Alex Soriano (HCB)
T. 93 227 54 00 (Ext.: 5708)
asoriano@clinic.cat

EMERITUS
Josep Mensa (HCB)

RESEARCHERS
Ana del Río (HCB)
Carolina García Vidal (HCB)
Jose Antonio Martinez Martinez (FCRB)

POST-DOCTORAL RESEARCHERS
Laura Morata (HCB)

PRE-DOCTORAL RESEARCHERS
Andrea Aira (FCRB)
Celia Cardozo (HCB)
Mariana Chumbita (FCRB)
Pedro Puerta (HCB)
Verónica Rico (HCB)

TECHNICIANS
Antonio Moreno (FCRB)

NURSING STAFF
Montserrat Solà (FCRB)

ADMINISTRATIVE STAFF
Maria Carmen Mensa (FCRB)

PROBLEM

Eight per cent of patients admitted have a nosocomial infection (infection acquired in the hospital) and approximately 20-30% of cases are due to multi-drug resistant organisms.

This has direct consequences for the health of patients, prolonging their stay in hospital and can lead to death.

APPROACH

This group is a multidisciplinary team in which doctors specialising in infectious diseases, microbiology and preventive medicine along with pharmacists cooperate in the study of the causes of nosocomial infections, in order to prevent them or treat them when they appear.

IMPACT

The research carried out by the group may help to reduce the number of healthcare-associated infections, promote the rational use of antibiotics and reduce the rate of multi-drug resistant organisms.

RESEARCH LINES

- Bacteremia.
- Bone and joint infections.
- Immunocompromised patients.
- Intestinal microbiota.

PUBLICATIONS

Originals / I.F.: 112.192

1. Ceccato A, Cilloniz C, Martin-Loeches I, Ranzani OT, Gabarrus A, Bueno L, Garcia-Vidal C, Ferrer M, Niederman MS, Torres A. **Effect of Combined beta-Lactam/Macrolide Therapy on Mortality According to the Microbial Etiology and Inflammatory Status of Patients With Community-Acquired Pneumonia.** *CHEST.* 155(4):795-804. I.F.: 9.657

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GRANTS FOR RESEARCH IN PROGRESS

García-Vidal C. **Impacto de un paquete de intervenciones basadas en la evidencia en la calidad de la atención y el pronóstico de la candidemia.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00744
Duration: 05/07/2016-31/12/2019

García-Vidal C. **Uso del aprendizaje automático (machine learning) y la inteligencia artificial para mejorar el tratamiento antibiótico empírico de los pacientes hematológicos con neutropenia febril.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/01061
Duration: 01/01/2019-31/12/2021

Soriano A. **Estudio de estabilidad y viabilidad de la microbiota intestinal liofilizada y su utilidad en el tratamiento de la infección por Clostridium difficile.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/01023
Duration: 01/01/2017-31/12/2019

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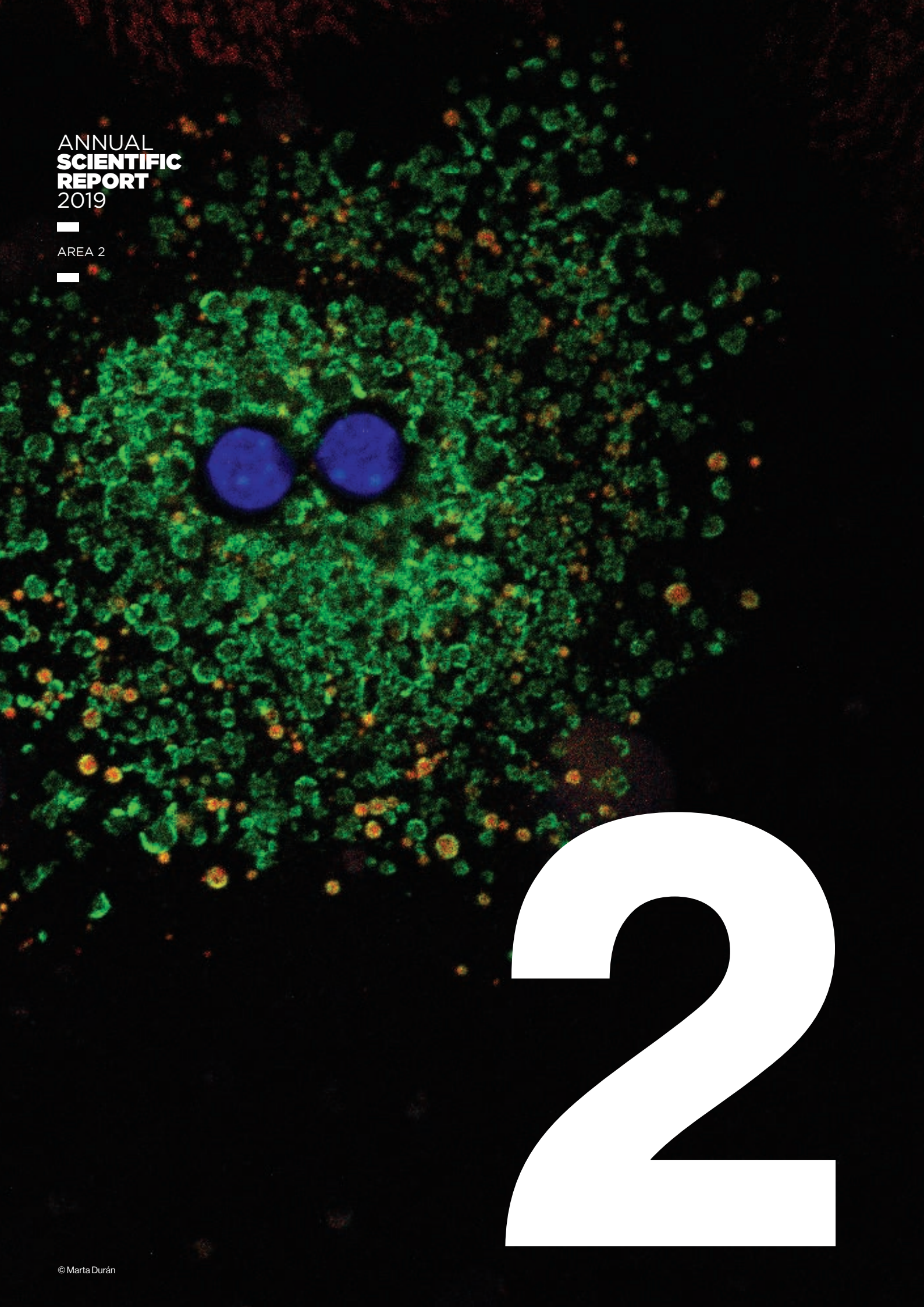
AREA 2



2

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AREA 2

RESPIRATORY, CARDIOVASCULAR AND RENAL PATHOBIOLOGY AND BIOENGINEERING

2.1 **Inflammation and repair in respiratory diseases**
Alvar Agustí

2.2 **Genetics and urological tumours**
Antonio Alcaraz

2.3 **Physiopathological mechanisms of respiratory illnesses**
Joan Albert Barberà

2.4 **Translational computing in cardiology**
Bart Bijnens

2.5 **Translational research in pulmonary vascular diseases cell proliferation and apoptotic mechanisms in pulmonary arterial hypertension**
Isabel Blanco

2.6 **Familial cardiompathies and sudden death syndromes**
Josep Brugada

2.7 **Nephro-urological diseases and kidney transplantation**
Fritz Diekmann

2.8 **Vascular cell biology**
Gustavo Egea

2.9 **Cardiovascular risk nutrition and aging**
Ramon Estruch

2.10 **Respiratory biophysics and bioengineering**
Ramon Farré

2.11 **Arrhythmias and physical activity**
Eduard Guasch

2.12 **Atrial fibrillation biopathology and therapy**
Lluís Mont

2.13 **Breathing disturbances in sleep**
Josep Maria Montserrat

2.14 **Clinical and experimental respiratory immunoallergy**
Joaquim Mullol

2.15 **Translational research in post-transplant neoplasia**
Ignacio Revuelta

2.16 **Atherosclerosis, coronary disease and heart failure**
Manel Sabaté

2.17 **Cardiac imaging**
Marta Sitges

2.18 **Applied research in infectious respiratory diseases and critically ill patients**
Antoni Torres

2.1 Inflammation and repair in respiratory diseases

LOCATION
CELLEX building, floor 2A

KEYWORDS
1. **COPD**
2. **Emphysema**
3. **Inflammation**
4. **Networks**
5. **Systems biology**

RELATED DISEASES
1. **Lung cancer**
2. **Interstitial lung diseases**
3. **Fibrosis**

GROUP INVOLVED IN
CIBERES
CADSET

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	21	165,06	7,86	57%	19%



GROUP LEADER
Alvar Agustí (HCB)
T. 93 227 17 01
aagusti@clinic.cat

RESEARCHERS
Eugenio Ballester (HCB)
Maria Rosa Faner (CIBER)
Abel Gómez-Caro (HCB)
Ramón Marrades (HCB)
Jacobo Sellarés (HCB)

POST-DOCTORAL RESEARCHERS
Angela Guirao (HCB)
Alejandra Lopez Giraldo (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Sandra Casas (CIBER)
Sandra Cuerpo (HCB)
Fernanda Hernández Gonzalez (IDIBAPS)
Núria Mendoza (IDIBAPS)

TECHNICIANS
Tamara Garcia Sanchez (CIBER)
Gemma Sunyer (CIBER)

PROBLEM

Chronic obstructive pulmonary disease (COPD) – also known as pulmonary emphysema or chronic bronchitis – pulmonary fibrosis, and lung cancer, are common and potentially serious respiratory diseases. And they are all the result of everyday interactions between environmental factors and genetic factors.

This group's research focuses on the study of those interactions and potential translation to clinical practice, with the aim of improving the diagnosis and treatment of patients who suffer from them.

APPROACH

To meet these goals, the group uses a combined research strategy that includes clinical information and knowledge; pulmonary function variables; quantitative thoracic imaging techniques; cellular and molecular analysis of biological samples; and analysis of the composition of exhaled air.

Ultimately, it combines this information with advanced bioinformatic methods (systems biology, network analysis and artificial intelligence) in healthy volunteers or patients who have given their informed consent to be part of each specific research project.

IMPACT

Thanks to its research, the group has shown that there are people whose lungs (and other organs) do not develop correctly, which favours the onset of chronic diseases in adults. These observations open up new possibilities for prevention, early diagnosis and treatment. The group has also found ways of improving the diagnosis of lung cancer based on tumour markers in blood and trained dogs that can be used that identify affected patients by their breath.

Finally, thanks to its research, it has found that an abnormal immune response is a key mechanism in many respiratory diseases.

RESEARCH LINES

- Lung development and ageing as key pathogenic determinants of adulthood respiratory diseases.

- Early lung cancer (lc) diagnosis.

PUBLICATIONS

Originals / I.F.: 165.064

1. Criner GJ, Celli BR, Brightling CE, Agusti A, Papi A, Singh D, Sin DD, Vogelmeier CF, Sciurba FC, Bafadhel M, Backer V, Kato M, Ramírez-Venegas A, Wei YF, Bjermer L, Shih VH, Jison M, O'Quinn S, Makulova N, Newbold P, Goldman M, Martin UJ, GALATHEA Study Investigators, TERRA-NOVA Study Investigators. **Benralizumab for the Prevention of COPD Exacerbations.** *NEW ENGLAND JOURNAL OF MEDICINE.* 381(11):1023-1034. I.F.: 70.670

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4. Navarro A, Molins L, Marrades RM, Moises J, Viñolas N, Morales S, Canals J, Castellano JJ, Ramírez J, Monzo M. **Exosome Analysis in Tumor-Draining Pulmonary Vein Identifies NSCLC Patients with Higher Risk of Relapse after Curative Surgery.** *CANCERS.* 11(2):E249. I.F.: 6.162

5. Guirao A, Molins L, Ramón I, Sunyer G, Viñolas N, Marrades R, Sánchez D, Fibla JJ, Boada M, Hernández J, Guzmán R, Libreros A, Gómez-Caro A, Guerrero C, Agustí A. **Trained dogs can identify malignant solitary pulmonary nodules in exhaled gas.** *LUNG CANCER.* 135:230-233. I.F.: 4.599

6. Boada M., Guzmán R., Montesinos M., Libreros A., Guirao A., Sánchez-Lorente D., Gimferrer J.M., Agustí A., Molins L. **Upstaging, centrality and survival in early stage non-small cell lung cancer video-assisted surgery.** *LUNG CANCER.* 134:254-258. I.F.: 4.599

7. Demeyer H, Donaire-Gonzalez D, Gimeno-Santos E, Ramon MA, DE Battle J, Benet M, Serra I, Guerra S, Farrero E, Rodriguez E, Ferrer J, Sauleda J, Monso E, Gea J, Rodriguez-Roisin R, Agusti A, Antó JM, Garcia-Aymerich J. **Physical Activity Is Associated with Attenuated Disease Progression in Chronic Obstructive Pulmonary Disease.** *MEDICINE AND SCIENCE IN SPORTS AND EXERCISE.* 51(5):833-840. I.F.: 4.478

8. Cruz T, López-Giraldo A, Noell G, Guirao A, Casas-Recasens S, Garcia T, Saco A, Sellares J, Agusti A, Faner R. **Smoking Impairs the Immunomodulatory Capacity of Lung Resident Mesenchymal Stem Cells in COPD.** *AMERICAN JOURNAL OF RESPIRATORY CELL AND MOLECULAR BIOLOGY.* 61(5):575-583. I.F.: 4.340

9. Sellares J, Veraldi KL, Thiel KJ, Cárdenes N, Alvarez D, Schneider F, Pilewski JM, Rojas M, Feghali-Bostwick CA. **Intracellular Heat Shock Protein 70 Deficiency in Pulmonary Fibrosis.** *AMERICAN JOURNAL OF RESPIRATORY CELL AND MOLECULAR BIOLOGY.* 60(6):629-636. I.F.: 4.340

10. Borràs-Santos A, Garcia-Aymerich J, Soler-Cataluña JJ, Vigil Giménez L, Gea Guiral J, Rodríguez Chiaradía D, Pascual-Guardia S, Marcos Rodríguez PJ, Alvarez Martinez CJ, Casanova Macario C, López-Campos JL, Carrasco Hernández L, Martínez-González C, Santos-Pérez S, Peces-Barba G, Molina Paris J, Román Rodríguez M, Barberà JA, Faner R, Agustí A, Cosío BG, en representación del Grupo Investigador del estudio EARLY COPD. **Determinants of the Appearance and Progression of Early-Onset Chronic Obstructive Pulmonary Disease in Young Adults. A Case-Control Study with Follow-up.** *ARCHIVOS DE BRONCONEUMOLOGIA.* 55(6):312-318. I.F.: 4.214

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13. Faner R, Morrow JD, Casas-Recasens S, Cloonan SM, Noell G, López-Giraldo A, Tal-Singer R, Miller BE, Silverman EK, Agustí A, Hersh CP. **Do sputum or circulating blood samples reflect the pulmonary transcriptomic differences of COPD patients? A multi-tissue transcriptomic network META-analysis.** *RESPIRATORY RESEARCH.* 20(1):5. I.F.: 3.829

14. McDonald, Merry-Lynn N.; Wouters, Emiel F. M.; Rutten, Erica; Casaburi, Richard; Rennard, Stephen, I; Lomas, David A.; Bamman, Marcas; Celli, Bartolome; Agusti, Alvar; Tal-Singer, Ruth; Hersh, Craig P.; Dransfield, Mark; Silverman, Edwin K. **It's more than low BMI: prevalence of cachexia and associated mortality in COPD.** *RESPIRATORY RESEARCH.* 20(100):100. I.F.: 3.829

15. Breyer-Kohansal R, Hartl S, Burghuber OC, Urban M, Schrott A, Agusti A, Sigsgaard T, Vogelmeier C, Wouters E, Studnicka M, Breyer MK. **The LEAD (Lung, Heart, Social, Body) Study: Objectives, Methodology, and External Validity of the Population-Based Cohort Study.**

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Review / I.F.: 161.712

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2. Martinez-Garcia M.A., Campos-Rodriguez F., Barbé F., Gozal D., Agustí A. **Precision medicine in obstructive sleep apnoea.** *THE LANCET. RESPIRATORY MEDICINE.* 7(5):456-464. I.F.: 22.992

3. Agusti A, Faner R. **Lung function trajectories in health and disease.** *THE LANCET. RESPIRATORY MEDICINE.* 7(4):358-364. I.F.: 22.992

4. Singh D., Agusti A., Anzueto A., Barnes P.J., Bourbeau J., Celli B.R., Criner G.J., Frith P., Halpin D.M.G., Han M., López Varela M.V., Martinez F., Montes de Oca M., Papi A., Pavord I.D., Roche N., Sin D.D., Stockley R., Vestbo J., Wedzicha J.A., Vogelmeier C. **Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Lung Disease: the GOLD science committee report 2019.** *EUROPEAN RESPIRATORY JOURNAL.* 53(5):1900164. I.F.: 11.807

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2. Agusti A. **Lessons from a Life: The Manuel Tapia Lecture 2018.** *ARCHIVOS DE BRONCONEUMOLOGIA.* 55(3):177-180. I.F.: 4.214

Editorial / I.F.: 83.96

1. Faner R., Rojas M. **Building strong neighborhoods in the lung with a little help from my mesenchymal stem cells.** *AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE.* 199(10):1176-1178. I.F.: 16.494

2. Faner R., Agusti A. **Global lung health: the dangers of mild lung function impairment.** *THE LANCET GLOBAL HEALTH.* 7(5):e542-e543. I.F.: 15.873

3. Agusti A., Faner R., Donaldson G., Heuvelin E., Breyer-Kohansal R., Melén E., Maitland-van der Zee A.H., Vestbo J., Allinson J.P., Vanfleteren L.E.G.W., van den Berge M., Adcock I.M., Lahousse L., Brusselle G., Wedzicha J.A., Alter P., Barbe F., Brightling C.E., Breyer M.K., Burghuber O.C., Casas M., Chung K.F., Cosío B.G., Crispi F., Batlle J., Fitting J.W., Garcia J., Hallberg J., Hartl S., Jarvis D., Mathioudakis A., Nicod L., Papi A., Ritchie A., Sigsgaard T., Sterk P.J., Ullman A., Vellvé K., Vogelmeier C., Wheelock A.M., Agusti A., Faner R. **Chronic airway diseases Early stratification (CADSET): A new ERS clinical research collaboration.** *EUROPEAN RESPIRATORY JOURNAL.* 53(3):1900217. I.F.: 11.807

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6. Sellarés J, Rojas M. **Quercetin in Idiopathic Pulmonary Fibrosis: Another Brick in the Senolytic Wall.** *AMERICAN JOURNAL OF RESPIRATORY CELL AND MOLECULAR BIOLOGY.* 60(1):3-4. I.F.: 4.340

7. Martinez-Garcia M., Agustí A. **Heterogeneity and Complexity in Bronchiectasis: A Pending Challenge.** *ARCHIVOS DE BRONCONEUMOLOGIA.* 55(4):187-188. I.F.: 4.214

8. Sellarés J., Molina-Molina M. **Serum Biomarkers in Diffuse Interstitial Lung Diseases [Biomarcadores séricos en las enfermedades pulmonares intersticiales difusas].** *ARCHIVOS DE BRONCONEUMOLOGIA.* 56(6):349-350. I.F.: 4.214

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11. Agusti, Alvar; Zhang, Jing. **Chronic obstructive pulmonary disease at the beginning of the XXI Century.** *JOURNAL OF THORACIC DISEASE.* 11(11):E210-E213. I.F.: 2.027

Consortium Publications / I.F.: 25.455

1. Sakornsakolpat P., Prokopenko D., Lamontagne M., Reeve N.F., Guyatt A.L., Jackson V.E., Shrine N., Qiao D., Bartz T.M., Kim D.K., Lee M.K., Latourelle J.C., Li X., Morrow J.D., Obeidat M., Wyss A.B., Bakke P., Barr R.G., Beaty T.H., Belinsky S.A., Brusselle G.G., Crapo J.D., de Jong K., DeMeo D.L., Fingerlin T.E., Gharib S.A., Gulsvik A., Hall I.P., Hokanson J.E., Kim W.J., Lomas D.A., London S.J., Meyers D.A., O'Connor G.T., Rennard S.I., Schwartz D.A., Sliwinski P., Sparrow D., Strachan D.P., Tal-Singer R., Sakornsakolpat P., Prokopenko D., Lamontagne M., Reeve N.F., Guyatt A.L., Jackson V.E., Shrine N., Qiao D., Bartz T.M., Kim D.K., Lee M.K., Latourelle J.C., Li X., Morrow J.D., Obeidat M., Wyss A.B., Bakke P., Barr R.G., Beaty T.H., Belinsky S.A., Brusselle G.G., Crapo J.D., de Jong K., DeMeo D.L., Fingerlin T.E., Gharib S.A., Gulsvik A., Hall I.P., Hokanson J.E., Kim W.J., Lomas D.A., London S.J., Meyers D.A., O'Connor G.T., Rennard S.I., Schwartz D.A., Sliwinski P., Sparrow D., Strachan D.P., Tal-Singer R., Sakornsakolpat P., Prokopenko D., Lamontagne M., Reeve N.F., Guyatt A.L., Jackson V.E., Shrine N., Qiao D., Bartz T.M., Kim D.K., Lee M.K., Latourelle J.C., Li X., Morrow J.D., Obeidat M., Wyss A.B., Bakke P., Barr R.G., Beaty T.H., Belinsky S.A. **Genetic landscape of chronic obstructive pulmonary disease identifies heterogeneous cell-type and phenotype associations.** *NATURE GENETICS.* 51(3):494-505. I.F.: 25.455

GRANTS FOR RESEARCH IN PROGRESS

Agustí A. **Análisis multinivel en red de las similitudes y diferencias moleculares entre enfisema y cáncer de pulmón en pacientes con enfermedad pulmonar obstructiva crónica: papel de la respuesta inmune y de las células madre mesenquimales pulmonares.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00799
Duration: 01/01/2016-31/12/2019

Agustí A. **Determinantes genético-ambientales del desarrollo de la función pulmonar en la infancia y adolescencia: CATCH-UP.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/01008
Duration: 01/01/2019-31/12/2021

Agustí A. **Valoración de la heterogeneidad y progresión de la EPOC en base a biomarcadores moleculares y de imagen.**
Sponsored by: Sociedad Española de Neumología y Cirugía Torácica (SEPAR). 405/2017
Duration: 01/01/2018-31/06/2020

Agustí A, Faner R. **3TR.**
Sponsored by: European Comission. 831434
Duration: 01/09/2019-03/08/2026

Faner R. **Abnormal lung development vs.Accelerated aging in COPD: a multilevel network analysis approach.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/000369
Duration: 01/01/2018-31/12/2020

Hernández F. **Integrative network genomics approach to address molecular differences and commonalities in COPD and IPF.**
Sponsored by: Sociedad Española de Neumología y Cirugía Torácica (SEPAR). 004-2017
Duration: 01/12/2017-30/06/2019

Sellarés J. **Mejorando la oxigenoterapia domiciliaria en pacientes con neumopatía intersticial: monitorización de la saturación de oxigeno domiciliaria.**
Sponsored by: Fundació Catalana de Pneumologia (FUCAP)
Duration: 01/05/2017 - 01/05/2020

Sellarés J. **Caracterización de las enfermedades pulmonares instersticiales difusas asociadas al tabaquismo mediante la biología de sistemas: estudio del radio-transcripto-proteoma.**
Sponsored by: Fundació Catalana de Pneumologia (FUCAP)
Duration: 01/01/2018-31/12/2021

Sellarés J. **Papel de las células progenitoras mesenquimales residentes en el pulmón en la progresión de la fibrosis pulmonar idiopática: una aproximación desde la biología de sistemas.**
Sponsored by: Sociedad Española de Neumología y Cirugía Torácica (SEPAR). 562/2017
Duration: 01/01/2016-30/06/2021

Sellarés J. **Caracterización clínica y radiotranscriptómica de la sarcoidosis pulmonar en España.**
Sponsored by: Sociedad Española de Neumología y Cirugía Torácica (SEPAR). 792/2018
Duration: 01/01/2019-30/06/2022

Sellarés J. **Caracterización y uso terapéutico de las células progenitoras mesenquimales residentes en el pulmón en la fibrosis pulmonar.**
Sponsored by: Sociedad Española de Neumología y Cirugía Torácica (SEPAR). 792/2019
Duration: 01/06/2018-30/06/2022

DOCTORAL THESES

Agustí A, Faner R. **Multi-level integrated analysis of Chronic Obstruc tive Pulmonary Disease (COPD) Heterogeneity.**
PhD student: Guillaume Noel

Agusti A, Faner R. **New approaches for the study of COPD pathobiology: from abnormal repair to systemic manifestations.**
PhD Student: Alejandra López Giraldo

Agustí A, Molins L. **The dog as a tool for early diagnosis of lung carcer using exhaled breath biomarkers.**
PhD student: Angela Guirao Montes

Navarro A, Molins L. **Impacto pronóstico del lincRNA-p21 en tejido tumoral y exosomas de cáncer de pulmón de célula no pequeña.**
PhD student: Joan Josep Castellano Pérez

2.2 Genetics and urological tumours

LOCATION
CELLEX building, floor 2B

KEYWORDS
1. **Urothelial carcinoma**
2. **Prostate neoplasia**
3. **Renal tumors**
4. **Biomarkers for diagnosis, prognosis and treatment response**
5. **Gene profiles**
6. **DNA methylation**
7. **DNA mutations**
8. **Liquid biopsy**
9. **Radiogenomics**

RELATED DISEASES
1. **Bladder cancer**
2. **Kidney cancer**
3. **Prostate cancer**
4. **Upper tract urothelial carcinoma**

GROUP INVOLVED IN
AGAUR_SGR17: 01801

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**11**	**62,55**	**5,69**	**45%**	**27%**



GROUP LEADER
Antonio Alcaraz (HCB)
T. 93 227 55 45
aalcaraz@clinic.cat

RESEARCHERS
Laura Izquierdo (HCB-IDIBAPS)
Lourdes Mengual (IDIBAPS-FCRB)
Mireia Musquera (HCB-IDIBAPS)
María José Ribal (HCB-IDIBAPS

PRE-DOCTORAL RESEARCHERS
Raquel Carrasco (FCRB)
Maria Mercedes Ingelmo (FCRB)
Fiorella Lizzeth Roldán (HCB)

ADMINISTRATIVE STAFF
Maria Teresa Dalet (FCRB)

COLLABORATOR
Clàudia Mercader (HCB)
Antoni Vilaseca (HCB)

PROBLEM

Prostate, bladder and kidney cancers are the three most common urological tumours suffered by society today. Existing diagnostic techniques are invasive.

In addition, current prognostic factors make no distinction between those patients with tumour recurrence and those patients cured by surgery who require no adjuvant therapy. Therefore, if the group is able to identify non-invasive biomarkers with high diagnostic precision that can also predict disease outcome and treatment response, this would be a great step forward in clinical practice.

APPROACH

Technological breakthroughs in molecular biology over the last twenty years and the development of bioinformatics tools have enabled the group to make progress in the study of the genetic changes that take place in diverse urological cancers. The group uses these new approaches to identify changes in the genetic material of bladder, prostate and kidney tumours and thus develop the diagnostic, prognostic and treatment-response biomarkers required to improve current urological clinical practice.

IMPACT

The group has identified various biomarkers in urine in order to monitor patients with bladder cancer, thus avoiding (or lengthening the time between) invasive diagnostic techniques such as cystoscopies. In relation to this disease, the group has also identified tumour dissemination that is detectable in the blood, using non-invasive sampling techniques that are very useful for monitoring first tumour recurrences.

In prostate cancer, this group has identified diagnostic biomarkers in urine that might make it unnecessary to perform a prostatic biopsy and, lastly, in renal carcinoma, the group is working on the identification of biomarkers to predict the evolution of the disease after tumour removal.

RESEARCH LINES

- Urine-based diagnostic and prognostic biomarkers for bladder and prostate tumors.

- Liquid biopsy analysis for monitoring disease relapse and therapeutic response in bladder cancer .

- Predictive biomarkers of response to neoadjuvant chemotherapy in bladder cancer.

- Prognostic biomarkers for upper urinary tract tumors and renal cell carcinoma.

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GRANTS FOR RESEARCH IN PROGRESS

Mengual L, Izquierdo L. **Identificación de biomarcadores pronósticos del tumor vesical músculo invasivo y su inferencia en la biopsia líquida.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/01343
Duration: 01/01/2018-31/12/2020

2.3 Physiopathological mechanisms of respiratory illnesses

LOCATION
CELLEX building, floor 2A

KEYWORDS
1. **Pulmonary hypertension**
2. **COPD**
3. **Systems medicine**
4. **Endothelium**
5. **Stem cells**

RELATED DISEASES
1. **Pulmonary hypertension**
2. **Chronic thromboembolic pulmonary hypertension**

GROUP INVOLVED IN
CIBERES
RETIC Biobancos
AGAUR_SGR17: 617

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**27**	**151,75**	**5,62**	**63%**	**33%**



GROUP LEADER
Joan Albert Barberà (HCB)
T. 93 227 57 79
barbera@clinic.cat

EMERITUS
Felip Burgos (HCB)
Roberto Rodríguez Roisín (HCB)

RESEARCHERS
Carlos Ferrando (HCB)
Carme Hernandez Carcereny (HCB)
Graciela Martínez Pallí (HCB)
Josep Roca (HCB)
Olga Tura (IDIBAPS)
Elizabeth Zavala (HCB)

POST-DOCTORAL RESEARCHERS
Mª José Arguis (HCB)
Anael Barberan (UB)
Isaac Cano (IDIBAPS)
Ivan Guillermo Dueñas (IDIBAPS)
Víctor Ivo Peinado (CIBER)
Akos Tenyi (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Eric Baltaxe (IDIBAPS)
Adelaida Bosacoma (IDIBAPS)
Xiao Hu (IDIBAPS)
Jorge Moisés (HCB)
Valerie Smolders (UB)
Yolanda Torralba (HCB)

TECHNICIANS
Cristina Rodríguez Gutiérrez (IDIBAPS)

NURSING STAFF
María Palomo (HCB)

ADMINISTRATIVE STAFF
Julio Tomas Mas (FCRB)
Mària Sánchez Moreno (IDIBAPS)

COLLABORATOR
Albert Alonso (HCB)
Xavier Borrat (HCB)
Marta Cascante (UB)
Jordi Vilaró (FCRB)

PROBLEM

The group's research focuses on three major areas: alterations of pulmonary circulation in respiratory diseases, complications associated with surgical interventions, and the development and evaluation of integrated patient-care systems for the follow-up and treatment of patients with respiratory diseases.

APPROACH

The group's research on pulmonary circulation disorders in respiratory diseases uses a translational approach, i.e., it works closely with advances in the laboratory and in clinical practice.

The goal is to identify the mechanisms that affect the development of pulmonary hypertension and to identify potential therapeutic targets to treat it.

Its research on perioperative medicine evaluates prehabilitation as a preoperative intervention aimed at reducing complications. With regard to the postoperative period, it evaluates strategies for minimizing complications derived from mechanical ventilation and other therapeutic interventions.

Its research area on the development and evaluation of integrated patient-care systems for the follow-up and treatment of patients with respiratory diseases uses an approach based on digital health and systems medicine.

IMPACT

Abnormal pulmonary circulation is highly prevalent in chronic respiratory diseases and affects survival and the clinical course of the disease.

The group's research focuses on the mechanisms that cause these abnormalities in pulmonary circulation and will make it possible to identify potential diagnostic markers and therapeutic targets.

Prehabilitation, the improvement of a patient's physical condition before surgery, is a preventive strategy that reduces postoperative complications, such as the use of ventilator support, which will contribute to improving the treatment of postoperative complications.

Information and communication technologies (ICT) provide a useful tool for implementing integrated healthcare systems that prevent discontinuity in the care process of patients with chronic respiratory disease and facilitate patient access to the healthcare system.

RESEARCH LINES

- Deep phenotyping of pulmonary hypertension in chronic respiratory diseases.

- Metabolic profiling of pulmonary vascular cells in chronic thromboembolic pulmonary hypertension.

- Assessing prehabilitation as preventive intervention to reduce postoperative complications.

- Evaluating modalities of perioperative ventilatory support.

- Implementation of integrated care services with a digital health and systems medicine approach.

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1. Nathan SD, Barbera JA, Gaine SP, Harari S, Martinez FJ, Olschewski H, Olsson KM, Peacock AJ, Pepke-Zaba J, Provencher S, Weissmann N, Seeger W. **Pulmonary hypertension in chronic lung disease and hypoxia.** *EUROPEAN RESPIRATORY JOURNAL.* 53(1). I.F.: 11.807

2. Roca J, Tenyi A, Cano I. **Paradigm changes for diagnosis: using big data for prediction.** *CLINICAL CHEMISTRY AND LABORATORY MEDICINE.* 57(3):317-327. I.F.: 3.638

3. Smolders VF, Zodda E, Quax PHA, Carini M, Barberà JA, Thomson TM, Tura-Ceide O, Cascante M. **Metabolic Alterations in Cardiopulmonary Vascular Dysfunction.** *FRONTIERS IN MOLECULAR BIOSCIENCES.* 5(120):120. I.F.: 3.565

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1. Ferrando C, Tusman G, Suarez-Sipmann F. **Intraoperative Ventilation Strategies to Reduce Pulmonary Complications in Obese Patients.** *JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.* 322(18):1828-1828. I.F.: 51.273

2. Fujisawa, Takeshi; Tura-Ceide, Olga; Hunter, Amanda; Mitchell, Andrew; Vesey, Alex; Medine, Claire; Gallogly, Susan; Hadoke, Patrick W F; Keith, Charlotte; Sproul, Anne; Roddie, Huw; McQuaker, Grant; Wilmut, Ian; Mills, Nicholas L; Brittan, Mairi. **Endothelial Progenitor Cells Do Not Originate From the Bone Marrow.** *CIRCULATION.* 140(18):1524-1526. I.F.: 23.054

3. Gimeno-Santos E, Coca-Martinez M, Arguis MJ, Navarro R, Lopez-Hernandez A, Castel MA, Romano B, Lopez-Baamonde M, Sandoval E, Farrero M, Sanz M, Bofill A, Martinez-Palli G. **Multimodal prehabilitation as a promising strategy for preventing physical deconditioning on the heart transplant waiting list.** *EUROPEAN JOURNAL OF PREVENTIVE CARDIOLOGY.* (25):2047487319889709. I.F.: 5.640

Editorial / I.F.: 18.738

1. Rodriguez-Roisin R., Celli B. **Enriched Systemic Biomarkers in Symptomatic Unobstructed Smokers: Moving Forward?** *CHEST.* 155(5):886-887. I.F.: 9.657

2. Martínez Llorens J, Burgos F, Galdiz JB. **Lung Function is Not Outdated.** *ARCHIVOS DE BRONCONEUMOLOGIA.* S0300-2896(19):30329-1. I.F.: 4.214

3. Ferrando, Carlos Mellado, Ricard Belda, Francisco J. **The quest for the perfect Weaning Index.** *MINERVA ANESTESIOLOGICA.* 85(4):336-337. I.F.: 2.840

4. Suarez-Sipmann, Fernando Ferrando, Carlos Villar, Jesus. **PEEP titration guided by transpulmonary pressure: lessons from a negative trial.** *JOURNAL OF THORACIC DISEASE.* 11(15):S1957-S1962. I.F.: 2.027

Clinical Guidelines / I.F.: 11.807

1. Grünig E, Eichstaedt C, Barberà JA, Benjamin N, Blanco I, Bossone E, Cittadini A, Coghlan G, Corris P, D'Alto M, D'Andrea A, Delcroix M, de Man F, Gaine S, Ghio S, Gibbs S, Gumbiene L, Howard LS, Johnson M, Jurevi?ien? E, Kiely DG, Kovacs G, MacKenzie A, Marra AM, McCaffrey N, McCaughey P, Naeije R,

Olschewski H, Pepke-Zaba J, Reis A, Santos M, Saxer S, Tulloh RM, Ulrich S, Vonk Noordegraaf A, Peacock AJ. **ERS statement on exercise training and rehabilitation in patients with severe chronic pulmonary hypertension.** *EUROPEAN RESPIRATORY JOURNAL.* 53(2):1800332. I.F.: 11.807

GRANTS FOR RESEARCH IN PROGRESS

Barberà JA. **Caracterització de la hipertensió pulmonar greu a les malalties respiratòries cròniques.**
Sponsored by: Fundació Acadèmia de les Ciències Mèdiques. SOCAP_TemaLliure16
Duration: 01/09/2016-

Barberà JA. **Recerca traslacional en malalties pulmonars.**
Sponsored by: Generalitat de Catalunya.
AGAUR_SGR17_00617
Duration: 01/01/2017-31/12/2020

Barberà JA. GERAR: **Gestión en red de pacientes con Enfermedades Raras: la Hipertensión Pulmonar como caso de uso.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
RTC-2015-4137-1
Duration: 01/09/2015-31/08/2019

Barberà JA. **Proliferación celular en la hipertensión pulmonar: detección y mecanismos de regulación epigenética.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00582
Duration: 01/01/2016-31/12/2019

Barberà JA. **Caracterización fenotípica de la hipertensión pulmonar en las enfermedades respiratorias.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00383
Duration: 01/01/2019-31/12/2021

Barberán A. **Cost-efectivitat d'un programa de prehabilitació multimodal en pacients d'alt risc candidats a cirurgia de resecció de parènquima pulmonar: Assaig clínic aleatoritzat.**
Sponsored by: Fundació Catalana de Pneumologia (FUCAP).
FUCAP_MariaRava19
Duration: 05/04/2019-04/04/2022

Ferrando C. **Reducción de complicaciones postoperatorias pulmonares mediante una estrategia ventilatoria perioperatoria de apertura pulmonar individualizada en pacientes intervenidos de cirugía torácica.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/01611
Duration: 21/05/2019-31/12/2021

Martínez G. **Implementación de un programa de prehabilitación trimodal como estrategia de optimización prequirúrgica en cirugía cardíaca.**
Sponsored by Instituto de Salud Carlos III (ISCIII). PI17/00852
Duration: 01/01/2018-31/12/2020

Roca J. **Atenció personalitzada del malalt crònic en un marc de salut digital.**
Sponsored by: Fundació Eurecat.
COMRDI15-1-0016-08
Duration: 15/10/2016-15/01/2020

Roca J. **HEALTH-CIRCUIT: Smart and collaborative health management.**
Sponsored by: Barcelona Mobile Ventures.
MWCapital_Collider19
Duration: 9/1/2019 6/30/2020

Roca J. **Plataforma de innovación en telemedicina y e-salud: TIC para los retos de I+i en servicios de salud. PITES-TIiSS.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00576
Duration: 01/01/2016-30/06/2019

Roca J. **Smart PITeS: modelos predictivos para el soporte a la gestión de casos en un marco de salud digital.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00841
Duration: 01/01/2019-31/12/2021

Roca J. SELFIE: **Sustainable intEgrated care modeLs for multi-morbidity: delivery, FInancing and performance.**
Sponsored by: European commission.
H2020-PHC-2014-2s (634288)
Duration: 01/09/2015-31/08/2019

Roca J. **ACT-at-Scale: Advancing Care Coordination and Telehealth deployment at Scale.**
Sponsored by: European commission.
HP-PJ-2015 (709770)
Duration: 04/03/2016-03/03/2019

Roca J. **CONNECARE: Personalised Connected Care for Complex Chronic Patients.**
Sponsored by: European commission.
H2020-PHC-2015-1s (689802)
Duration: 01/04/2016-31/12/2019

Roca J. **KONFIDO: Secure and Trusted Paradigm for Interoperable eHealth Services.**
Sponsored by: European commission.
H2020-DS-16 (727528)
Duration: 01/11/2016-31/10/2019

Roca J. **Artificial Intelligence for Reinventing European Healthcare.**
Sponsored by: European commission.
CE_EIT_1stC19 (19689)
Duration: 01/01/2019-31/12/2019

Roca J. **Patient empowerment for major surgery preparation @home.**
Sponsored by: European commission.
CE_EIT_1stI19 (19365_1)
Duration: 01/01/2019-31/12/2021

Roca J. **Patient empowerment for major surgery preparation @home.**
Sponsored by: European commission.
CE_EIT_1stI19 (19365_2)
Duration: 01/01/2019-31/12/2021

Roca J. **Catalan open innovation hub - Twining.**
Sponsored by: European commission.
CE_EIPonAHA_19
Duration: 01/12/2019-31/01/2020

Tura O. **Estudio del metabolismo y de la función endotelial en pacientes con hipertensión pulmonar tromboembólica: efecto de la estimulación de Riociguat.**
Sponsored by: Fundació Acadèmia de les Ciències Mèdiques.
SOCAP_TLLIURE19_01
Duration: 04/05/2019-04/04/2021

Tura O. **Estudio del metabolismo y de la función endotelial en pacientes con hipertensión pulmonar tromboembólica: efecto de la estimulación de Riociguat.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00960
Duration: 01/01/2019-31/12/2021

2.4 Translational computing in cardiology

LOCATION
Mallorca 183

KEYWORDS
1. **Cardiovascular pathophysiology**
2. **Machine learning**
3. **Artificial intelligence**
4. **Computational modelling**
5. **Cardiac imaging**
6. **Image processing**

RELATED DISEASES
1. **Cardiovascular diseases**

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	1	5,64	5,64	100%	-



GROUP LEADER
Bart Bijnens (HCB)
T. 93 227 57 07
bart.bijnens@idibaps.org

POST-DOCTORAL RESEARCHERS
Patricia Garcia Cañadilla (IDIBAPS)
Sergio Sánchez Martínez (IDIBAPS)

PROBLEM

Cardiovascular diseases remain a major cause of death and loss of quality of life. While current prevention and treatment strategies have delayed symptoms and improved life expectancy, this has resulted in an increasing number of patients now requiring careful follow-up and subsequent therapy.

To optimally treat these chronic patients, a detailed assessment and a thorough understanding of how their heart is working is essential. Imaging is often used for this, but the images have to be analysed and summarised into relevant information to enable personal decision-making.

Given the wealth of available imaging and other diagnostic data, computational tools such as image processing, computational modelling and machine learning are required to enable processing of all the information for the treating clinician.

APPROACH

The group aims at developing and investigating computing for understanding each individual heart, in order to improve diagnosis, prognosis and therapy. We work in an interdisciplinary way combining biomedical engineering, physics, and mathematics with basic research, as well as clinical expertise, in order to link technological and theoretical science with physiological and clinical knowledge.

We combine medical imaging with computer models representing all relevant details of the working heart as well as with knowledge about therapies. Additionally, the wealth of information available from any single individual and groups of patients from routine practice and clinical trials can be integrated in an understandable way by using the latest machine learning and artificial intelligence methods.

IMPACT

Modern cardiology relies on the detailed (imaging) assessment of the function and structure of the heart for selecting targeted prevention and drug, device or surgical therapies. A wealth of data is available in clinical practice but integrating it into a consistent representation of an individuals' heart is highly challenging. However, this is crucial in order to choose the best personalised care and is also needed to improve our understanding of cardiovascular diseases and their impact in different groups of individuals.

We aim at providing computing approaches to help this data integration as well as interpretation for both individuals and populations alike. These methods include image analysis and interpretation and machine learning for data integration and decision-making, as well as tools for better and more targeted data acquisition.

RESEARCH LINES

- Cloud-based tools for data integration and analysis.

- Computational modelling of the cardiovascular system.

- Deformation and function analysis in different cardiovascular diseases.

- Machine learning for clinical diagnosis and decision making.

- Quantification of structural and shape remodelling of the heart.

- Synchrotron-based x-ray phase-contrast imaging.

PUBLICATIONS

Originals / I.F.: 5.640

1. Sanz-de la Garza M, Vaquer-Seguí A, Durán K, Blanco I, Burgos F, Alsina X, Prat-González S, Bijnens B, Sitges M. **Pulmonary transit of contrast during exercise is related to improved cardio-pulmonary performance in highly trained endurance athletes.** *EUROPEAN JOURNAL OF PREVENTIVE CARDIOLOGY.* :2047487319891779. I.F.: 5.640

GRANTS FOR RESEARCH IN PROGRESS

Bijnens B. **A Simplified, Effective, Labour Monitoring-to-Action (SELMA) tool, based on Interpretable Machine Learning.**
Sponsored by: World Health Organisation.
Duration: 16/11/2018-15/11/2019.

Bijnens B. **CardioFunXion: Towards a novel paradigm for cardiac function assessment from imaging.**
Sponsored by: EU H2020- MARIE Skłodowska-CURIE ACTIONS, Innovative Training Networks - European Industrial Doctorates.
Duration: 01/09/2015-31/08/2019

DOCTORAL THESES

Bijnens B. **Computational anatomy as a driver of understanding structural and functional cardiac remodelling.**
PhD student: Gabriel Bernardino Perez

2.5 Translational research in pulmonary vascular diseases: cell proliferation and apoptotic mechanisms in pulmonary arterial hypertension

LOCATION
CELLEX building, floor 2A

KEYWORDS
1. **Pulmonary hypertension**
2. **Proliferation-apoptosis pathway**
3. **Hypoxia**
4. **Animal models**

RELATED DISEASES
1. **Pulmonary arterial hypertension**
2. **Connective tissue diseases**
3. **Congenital heart diseases**
4. **Cronich thromboembolic pulmonary hypertension**

GROUP INVOLVED IN
CIBERES
AGAUR_SGR17: 617

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**11**	**45,57**	**4,14**	**55%**	**18%**



GROUP LEADER
Isabel Blanco (HCB-IDIBAPS)
T. 93 227 57 47
iblanco2@idibaps.org

POST-DOCTORAL RESEARCHERS
Elena Gimeno (IDIBAPS)
Maria Isabel Marquina (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Tanya Elisa Orizaga (FCRB)
Jeisson Osorio (CIBER)
Laura Sebastian (IDIBAPS)
Yolanda Torralba (HCB)

TECHNICIANS
Àngela Vea (IDIBAPS)

NURSING STAFF
Xavier Alsina (HCB)
María Palomo (HCB)
Ana Maria Ramírez (HCB)

ADMINISTRATIVE STAFF
Maria Dolores Sanz (FCRB)

PROBLEM

Pulmonary hypertension (PH) is a disease in which the blood pressure of the pulmonary arteries is abnormally high. It usually develops in association with pulmonary artery diseases, and also as a complication in more common lung and heart diseases.

The most significant clinical repercussion of PH is that it gives rise to an overload in the right ventricle, causing this to fail and resulting in death.

It is important to correctly diagnose and describe the mechanism that produces PH, as its treatment varies, depending on the type of hypertension.

Today, different drugs are available that offer enormous benefits to patients with pulmonary hypertension, but it is not yet possible to say that a cure exists for this disease. The group's goal is to gain deeper knowledge of the mechanisms responsible for PH and to find new activity biomarkers of the disease and new therapeutic lines to correct the underlying problem.

APPROACH

Pulmonary arterial hypertension is a disease of the small pulmonary arteries in which blood vessel diameter is gradually reduced due to an increase in the thickness of the vessel walls (vasoconstriction). This leads to an increase in pulmonary vascular resistance (PVR) which causes right ventricular failure and death.

Recent therapeutic advances have managed to increase survival and improve the quality of life of patients with PH, but the drugs available today are unable to alter the progression of the disease and the structural lesions of the pulmonary arteries, acting simply as vasodilators.

In the group's opinion, in addition to vasodilators, it is necessary to find new signalling pathways that could be more appropriate therapeutic targets. In this respect, it is proposed to not only work in the laboratory with animal and cell models, but also to work with blood and tissue samples from patients undergoing lung transplants.

The group's line of research consists of evaluating potential therapeutic targets and biomarkers of disease activity and progression, aimed at reversing the proliferative remodelling phenotype in PH.

IMPACT

Molecular study and clinical repercussions of pulmonary arterial hypertension and chronic pulmonary thromboembolic disease.

A pulmonary artery hypertension model has been set up in rodents consisting of exposure to hypoxia related to the administration of a VEGF inhibitor. This model reproduces the disease and identifies new potential therapeutic targets, in order to reverse the pro-proliferative and anti-apoptotic phenotype.

Various members of the group belong to the functional pulmonary hypertension unit at the Hospital Clínic, the most active unit in Catalonia and the second most active in Spain. The unit is accredited as an Expert Referral Unit by the Catalan Health Service (CatSalut), as a CSUR (referral centres, services and units) by the Spanish Ministry of Health and as a healthcare provider of the European Reference Network on Rare Lung Diseases (ERN-LUNG), established by the European Commission, thus increasing its capacity to take on translational research projects and participate in international clinical trials.

RESEARCH LINES

- Clinical research in pulmonary hypertension.

- Interventions on lifestyle: exercise and other non-pharmacological actions to improve ph.

- Proliferation and apoptosis in pulmonary arterial hypertension: biomarkers and new therapies.

PUBLICATIONS

Originals / I.F.: 45.565

1. Puigdevall P, Piccari L, Blanco I, Barberà JA, Geiger D, Badenas C, Milà M, Castelo R, Madrigal I. **Genetic linkage analysis of a large family identifies FIGN as a candidate modulator of reduced penetrance in heritable pulmonary arterial hypertension.** *JOURNAL OF MEDICAL GENETICS.* 56(7):481-490. I.F.: 5.899

2. Torres-Castro R, Vilaró J, Martí JD, Garmendia O, Gimeno-Santos E, Romano-Andrioni B, Embid C, Montserrat JM. **Effects of a Combined Community Exercise Program in Obstructive Sleep Apnea Syndrome: A Randomized Clinical Trial.** *J CLIN MED.* 8(3). I.F.: 5.688

3. Sanz-de la Garza M, Vaquer-Seguí A, Durán K, Blanco I, Burgos F, Alsina X, Prat-González S, Bijnens B, Sitges M. **Pulmonary transit of contrast during exercise is related to improved cardio-pulmonary performance in highly trained endurance athletes.** *EUROPEAN JOURNAL OF PREVENTIVE CARDIOLOGY.* :2047487319891779. I.F.: 5.640

4. Demeyer H, Donaire-Gonzalez D, Gimeno-Santos E, Ramon MA, DE Battle J, Benet M, Serra I, Guerra S, Farrero E, Rodriguez E, Ferrer J, Sauleda J, Monso E, Gea J, Rodriguez-Roisin R, Agusti A, Antó JM, Garcia-Aymerich J. **Physical Activity Is Associated with Attenuated Disease Progression in Chronic Obstructive Pulmonary Disease**. *MEDICINE AND SCIENCE IN SPORTS AND EXERCISE.* 51(5):833-840. I.F.: 4.478

5. Blanco I, Valeiro B, Torres-Castro R, Barberán-García A, Torralba Y, Moisés J, Sebastián L, Osorio J, Rios J, Gimeno-Santos E, Roca J, Barberà JA. **Effects of Pulmonary Hypertension on Exercise Capacity in Patients With Chronic Obstructive Pulmonary Disease.** *ARCHIVOS DE BRONCONEUMOLOGIA.* S0300-2896(19):30407-7. I.F.: 4.214

6. Paul T, Blanco I, Aguilar D, Tura-Ceide O, Bonjoch C, Smolders VF, Peinado VI, Barberà JA. **Therapeutic Effects of Soluble Guanylate Cyclase (sGC) Stimulation on Pulmonary Hemodynamics and Emphysema in Guinea Pigs Chronically Exposed to Cigarette Smoke**. *AMERICAN JOURNAL OF PHYSIOLOGY - LUNG CELLULAR AND MOLECULAR PHYSIOLOGY.* 317(2):L222-L234. I.F.: 4.060

7. Tura-Ceide, Olga; Pizarro, Sandra; Garcia-Lucio, Jessica; Ramirez, Josep; Molins, Laureano; Blanco, Isabel; Torralba, Yolanda; Sitges, Marta; Bonjoch, Cristina; Peinado, Victor I.; Albert Barbera, Joan. **Progenitor cell mobilisation and recruitment in pulmonary arteries in chronic obstructive pulmonary disease.** *RESPIRATORY RESEARCH.* 20(1):74-74. I.F.: 3.829

8. Del Pozo R., Blanco I., Hernández-González I., López-Meseguer M., López-Reyes R., Lázaro-Salvador M., Elías-Hernández T., Álvarez-Vega P., Pérez-Peñate G., Martínez-Meñaca A., Bedate P., Escribano-Subias P. **Real-life experience of inhaled iloprost for patients with pulmonary arterial hypertension: Insights from the Spanish REHAP registry.** *INTERNATIONAL JOURNAL OF CARDIOLOGY.* 275:158-164. I.F.: 3.471

9. Alcaraz-Serrano V; Fernández-Barat L; Scioscia G; Llorens-Llacuna J; Gimeno-Santos E; Herrero-Cortina B; Vàzquez N; Puig de la Bellacasa J; Gabarrús A; Amaro-Rodriguez R; Menéndez R; Torres A. **Mucoid Pseudomonas aeruginosa alters sputum viscoelasticity in patients with non-cystic fibrosis bronchiectasis.** *RESPIRATORY MEDICINE.* 154:40-46. I.F.: 3.237

10. Koreny M; Demeyer H; Arbillaga-Etxarri A; Gimeno-Santos E; Barberan-Garcia A; Benet M; Balcells E; Borrell E; Marin A; Chiaradía DAR; Vall-Casas P; Vilaró J; Rodríguez-Roisin R; Garcia-Aymerich J. **Determinants of study completion and response to a 12-month behavioral physical activity intervention in chronic obstructive pulmonary disease: A cohort study.** *PLOS ONE.* 14(5):e0217157. I.F.: 2.776

11. Barberan-Garcia A; Munoz P; Gimeno-Santos E; Burgos F; Torralba Y; Gistau C; Roca J; Rodriguez D. **Training-induced changes on quadriceps muscle oxygenation measured by near-infrared spectroscopy in healthy subjects and in chronic obstructive pulmonary disease patients.** *CLINICAL PHYSIOLOGY AND FUNCTIONAL IMAGING.* 39(4):284-290. I.F.: 2.273

Letters / I.F.: 5.64

1. Gimeno-Santos E, Coca-Martinez M, Arguis MJ, Navarro R, Lopez-Hernandez A, Castel MA, Romano B, Lopez-Baamonde M, Sandoval E, Farrero M, Sanz M, Bofill A, Martinez-Palli G. **Multimodal prehabilitation as a promising strategy for preventing physical deconditioning on the heart transplant waiting list.** *EUROPEAN JOURNAL OF PREVENTIVE CARDIOLOGY.* (25):2047487319889709. I.F.: 5.640

Editorial / I.F.: 8.97

1. Gimeno-Santos E. **Is there a common pattern in physical activity levels comparing diverse chronic airway diseases?** *RESPIROLOGY*. 24(4):298-299. I.F.: 4.756

2. Gimeno-Santos E. **Pulmonary Rehabilitation and Long-Term Physical Activity in the Chronic Obstructive Pulmonary Disease Patient.** *ARCHIVOS DE BRONCONEUMOLOGIA*. 55(12):615-616. I.F.: 4.214

Clinical Guidelines / I.F.: 11.807

1. Grünig E, Eichstaedt C, Barberà JA, Benjamin N, Blanco I, Bossone E, Cittadini A, Coghlan G, Corris P, D'Alto M, D'Andrea A, Delcroix M, de Man F, Gaine S, Ghio S, Gibbs S, Gumbiene L, Howard LS, Johnson M, Jurevičienė E, Kiely DG, Kovacs G, MacKenzie A, Marra AM, McCaffrey N, McCaughey P, Naeije R, Olschewski H, Pepke-Zaba J, Reis A, Santos M, Saxer S, Tulloh RM, Ulrich S, Vonk Noordegraaf A, Peacock AJ. **ERS statement on exercise training and rehabilitation in patients with severe chronic pulmonary hypertension.** *EUROPEAN RESPIRATORY JOURNAL.* 53(2):1800332. I.F.: 11.807

GRANTS FOR RESEARCH IN PROGRESS

Blanco I. **Efectos del entrenamiento físico sobre la función vascular como diana terapéutica en la hipertensión pulmonar.**
Sponsored by: Fundació Acadèmia de les Ciències Mèdiques. SOCAP_TemaLliure18
Duration: 19/06/2018-

Blanco I. **Efectos del entrenamiento físico sobre la función vascular como diana terapéutica en la hipertensión pulmonar.**
Sponsored by Instituto de Salud Carlos III (ISCIII). PI17/01515
Duration: 01/01/2018-31/12/2020

Gimeno-Santos E. **Ensayo clínico aleatorizado y controlado sobre los efectos de la electroestimulación neuromuscular en la capacidad de ejercicio en pacientes con patología respiratoria ingresados en la unidad de cuidados intensivos.**
Sponsored by: Fundació Acadèmia de les Ciències Mèdiques. SOCAP_ProjInfFisio17
Duration: 16/03/2017-31/12-

2.6 Familial cardiomyopathies and sudden death syndromes

LOCATION
HCB building

KEYWORDS
1. **Cardiogenetics**
2. **Familial cardiopmyopathy**
3. **Channelopathy**
4. **Sudden death**
5. **Brugada syndrome**
6. **Long QT syndrome**
7. **Short QT syndrome**
8. **Catecholaminergic polymorphic ventricular tachycardia**
9. **Early repolarisation syndrome**
10. **Idiopathic ventricular fibrillation**
11. **Arrhythmogenic cardiomyopathy**
12. **Hypertrophic cardiomyopathy**
13. **Dilated cardiomyopathy**
14. **Non-compacted cardiomyopathy**
15. **Atrial fibrillation**
16. **Genetic testing**
17. **Implantable cardiac defibrillator**

RELATED DISEASES
1. **Brugada syndrome**
2. **Long QT syndrome**
3. **Short QT syndrome**
4. **Catecholaminergic polymorphic ventricular tachycardia**
5. **Early repolarisation syndrome**
6. **Idiopathic ventricular fibrillation**
7. **Arrhythmogenic cardiomyopathy**
8. **Hypertrophic cardiomyopathy**
9. **Dilated cardiomyopathy**
10. **Non-compacted cardiomyopathy**
11. **Familial atrial fibrillation**

GROUP INVOLVED IN
CIBERCV
RIC

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**22**	**113,59**	**5,16**	**64%**	**14%**



GROUP LEADER
Josep Brugada (HCB)
T. 93 227 57 33
jbrugada@idibaps.org

RESEARCHERS
Elena Arbelo (HCB)
Oscar Campuzano (HCB)

PRE-DOCTORAL RESEARCHERS
Paloma Jorda (FCRB)

PROBLEM

Cardiac arrhythmias are responsible for nearly a million deaths each year in the West. They can lead to sudden death, which normally occurs without any prior symptoms and can affect men and women of all ethnicities and age groups, including babies. In people over the age of 50 years, sudden death is usually caused by coronary or ischemic diseases. In the population under the age of 50 years, familial cardiopathies caused by genetic abnormalities are the main cause of these fatal episodes.

In recent years, thanks to technological advances in the field of molecular biology, it has been possible to identify numerous genetic abnormalities responsible for diseases associated with sudden cardiac death. Modern gene-sequencing technology makes it possible to analyse a large number of genes (even exomes or genomes) in a cost-effective way and in a short time. In cases where familial disease is suspected, a thorough genetic study is carried out to identify the causes of the disease. Once this has been identified, a family genetic study is carried out to identify those members of the family who are at risk of suffering from the disease.

Genetics contributes to improving our understanding of the pathophysiological mechanisms of arrhythmias and this has made it possible to improve diagnosis and risk stratification of patients, and to focus on personalized treatment.

APPROACH

The group studies the clinical, electrical, structural, and genetic variables involved in the appearance, natural history and prognosis of these diseases, with the aim of identifying risk indicators for sudden death and preventing it. In the case of diseases that affect cardiac function, it works to prevent their progression.

The research group has a multidisciplinary team of IDIBAPS-HCB specialists and works closely with different centres in Catalonia that are pioneers at the national and international level. This makes it possible to provide a joint response for families affected by arrhythmogenic diseases associated with sudden death. Finally, the group also works in partnership with other centres around the world towards establishing an accurate diagnosis that makes it possible to adopt personalized measures in both the prevention and treatment of familial sudden death.

IMPACT

The group's scientific contributions in recent years have been based on clinical diagnosis, adopting personalized preventive measures, and research into the genetic causes of heart disease. The group is now a gold standard centre in sudden cardiac death at national level and is a key actor at international level in the field of familial heart disease.
Over the past 15 years, it has taken part in over 50 research projects on sudden death,

has participated in over 200 scientific publications focusing on familiar cardiomyopathies, and has been invited to over 300 lectures at congresses and courses on familiar cardiomyopathies and sudden death. It has been, and continues to be, a member of national and international networks in the field of malignant arrhythmias and sudden death.
As a result of the group's work, new diseases associated with sudden death in healthy people have been identified (for example Brugada syndrome or Short QT syndrome) and many genetic and clinical findings have been described that make it possible to adopt the most suitable treatment measures in each case.

RESEARCH LINES

- Clinical, electrical and genetic characteristics of brugada syndrome.

- Clinical, electrical and genetic characteristics of arrhythmogenic cardiomyopathy.

- Sudden cardiac death without an apparent cause: post-mortem genetic study.

- International collaboration for genome-wide association studies in brugada and long qt syndrome

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Originals / **I.F.: 113.585**

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11. Glover BM, Hong KL, Dagres N, Arbelo E, Laroche C, Riahi S, Bertini M, Mikhaylov EN, Galvin J, Kiliszek M, Pokushalov E, Kautzner J, Calvo N, Blomström-Lundqvist C, Brugada J, ESC-EHRA Atrial Fibrillation Ablation Long-Term Registry investigators. **Impact of body mass index on the outcome of catheter ablation of atrial fibrillation.** *HEART.* 105(3):244-250. I.F.: 5.082

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13. Campuzano O., Sarquella-Brugada G., Fernandez-Falgueras A., Cesar S., Coll M., Mates J., Arbelo E., Perez-Serra A., del Olmo B., Jordá P., Fiol V., Iglesias A., Puigmulé M., Lopez L., Pico F., Brugada J., Brugada R. **Genetic interpretation and clinical translation of minor genes related to Brugada syndrome.** *HUMAN MUTATION.* 40(6):749-764. I.F.: 4.453

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Influence of risk factors in the ESC-EHRA EORP atrial fibrillation ablation long-term registry. *PACE-PACING AND CLINICAL ELECTROPHYSIOLOGY.* 42(10):1365-1373. I.F.: 1.340

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Letters / I.F.: 1.413

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Clinical Guidelines / I.F.: 6.1

1. Goette A., Auricchio A., Boriani G., Braunschweig F., Terradellas J.B., Burri H., Camm A.J., Crijns H., Dagres N., Deharo J.C., Dobrev D., Hatala R., Hindricks G., Hohnloser S.H., Leclercq C., Lewalter T., Lip G.Y.H., Merino J.L., Mont L., Prinzen F., Proclemer A., Pürerfellner H., Savelieva I., Schilling R., Steffel J., Van Gelder I.C., Zeppenfeld K., Zupan I., Heidbüchel H., Boveda S., Defaye P., Brignole M., Chun J., Guerra Ramos J.M., Fauchier L., Svendsen J.H., Traykov V.B., Heinzel F.R. **EHRA White Paper: Knowledge gaps in arrhythmia management - Status 2019.** *EUROPACE.* 21(7):993-994. I.F.: 6.100

Consortium Publications / I.F.: 5.126

1. Ibáñez Criado JL, Quesada A, Cózar R, Spanish Catheter Ablation Registry collaborators, Appendix 1. REGISTRY COLLABORATORS. **Spanish Catheter Ablation Registry.** *REVISTA ESPANOLA DE CARDIOLOGIA.* 72(12):1031-1042. I.F.: 5.126

GRANTS FOR RESEARCH IN PROGRESS

Arbelo E. **Estudio ANVERSO: análisis continuo y automático de variables electrocardiográficas en relación al riesgo de muerte súbita en pacientes con síndrome de Brugada.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/01203
Duration: 01/01/2017-31/12/2020

Jordà P. **Caracterización del sustrato fisiopatológico y el impacto clínico de la fibrilación auricular en pacientes con miocardiopatía arritmogénica.**
Sponsored by: Fundacion Casa del Corazon. SEC_InvClinica19S
Duration: 18/10/2019-17/10/2020

2.7 Nephro-urological diseases and kidney transplantation

LOCATION
CELLEX building 2B

KEYWORDS
1. **Renal transplantation**
2. **Dialysis**
3. **Transplant immunology**
4. **Cell therapy**
5. **Renal regeneration**
6. **Pancreas transplantation**
7. **Transplant registries**

RELATED DISEASES
1. **Acute kidney injury**
2. **Chronic kidney disease**
3. **Glomerular diseases**
4. **Hereditary kidney diseases (poliquistosis; amyloidosis; hemolytic uremic syndrome; fabry; alport)**
5. **Renal transplantation**
6. **Pancreas transplantation**
7. **Hemodialysis**

GROUP INVOLVED IN
REDinREN
AGAUR_SGR17: 1331

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**27**	**237,30**	**8,79**	**78%**	**59%**



GROUP LEADER
Fritz Diekmann (HCB)
T. 93 227 54 00 (Ext.: 3428)
fdiekman@clinic.cat

RESEARCHERS
Josep M Campistol (HCB)
Aleix Cases (HCB)
Martí Manyalich (HCB)
Federico Oppenheimer (HCB)
Esteban Poch (HCB)
Luis F Quintana (HCB)
Jordi Rovira (IDIBAPS)

POST-DOCTORAL RESEARCHERS
Elisenda Bañon (FCRB)
Maria Jose Ramirez (FCRB)
Pedro Ventura (HCB)

PRE-DOCTORAL RESEARCHERS
Marta Arias (HCB)
Sergi Betriu (FCRB)
Miquel Blasco (HCB)
Miquel Gómez Umbert (FCRB)
Gastón Julio (HCB)
Manel Vera (HCB)

TECHNICIANS
Natalia Hierro (IDIBAPS)
Marta Lazo (IDIBAPS)

ADMINISTRATIVE STAFF
Mireia Collado (IDIBAPS)

PROBLEM

Terminal organ failure is a severe health problem often leading to a reduced quality of life or even death. Renal replacement therapy has become a routine procedure, however, still is associated with major complications and in many cases reduced life expectancy. To the same extent absence of insulin production as in diabetes type 1 is associated with a reduced quality of life and life expectancy.
Therefore, research is needed to improve these therapies and ultimately avoid them.

APPROACH

LENIT performs translational research of renal diseases. Our focus is pathophysiology of kidney diseases and optimization of renal replacement therapy (RT) (dialysis or transplantation) as well as pancreas transplantation; therefore, we do research on RT optimization; but we also focus on regenerative treatment in order to avoid or optimize RT.

IMPACT

Chronic kidney failure and diabetes mellitus type 1 are a major health problem and lead to important expenses un health care budgets. In addition, transplant organs are a scarce resource and unfortunalely not available in sufficient numbers. Thus, improvements in this field will lead not only to higher quality of life and life expectancy, but also to better and more sustainable utilization of resources.

RESEARCH LINES

- Transplant immunology and cell therapy.

- Biomarkers on Renal and Pancreatic transplantation.

- Transplant registries.

PUBLICATIONS

Originals / I.F.: 237.296

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25. Arrizabalaga P, Gómez M, Menacho I, Pallisa L, Jorge V, Poch E. **The contribution of outpatient nephrology to the control of demand: Analysis of the comprehensive Health Area of Barcelona Esquerra (AISBE).** *NEFROLOGIA.* 39(2):192-197. I.F.: 1.439

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Review / I.F.: 16.39

1. Kronbichler A, Brezina B, Gauckler P, Quintana LF, Jayne DRW . **Refractory lupus nephritis: When, why and how to treat.** *AUTOIMMUNITY REVIEWS.* 18(5):510-518. I.F.: 7.716

2. Cases A, Cigarrán-Guldrís S, Mas S, Gonzalez-Parra E. **Vegetable-Based Diets for Chronic Kidney Disease? It Is Time to Reconsider.** *NUTRIENTS.* 11(6):E1263. I.F.: 4.171

3. Quintana L., Kronbichler A., Blasco M., Zhao M., Jayne D. **ANCA associated vasculitis: The journey to complement-targeted therapies.** *MOLECULAR IMMUNOLOGY.* 112:394-398. I.F.: 3.064

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Letters / I.F.: 13.521

1. Ventura-Aguiar P, Ferrer J, Rovira J, Diekmann F. **Do we still need to demonstrate the survival benefit of pancreas transplantation?** *AMERICAN JOURNAL OF TRANSPLANTATION.* 19(4):1241-1242. I.F.: 7.163

2. Rodas L., Garcia-Herrera A., Ramirez Bajo M., Fernandez-Larrea C., Cibeira M., Blasco M., Rosiñol L., Solé M., Blade J., Campistol J., Quintana L. **Six-2 glomerular expression for the prediction of renal outcome in systemic amyloidosis.** *AMYLOID-JOURNAL OF PROTEIN FOLDING DISORDERS.* 26(1):97-98. I.F.: 4.919

3. Molina-Andújar A, Blasco M, Poch E. **Role of sustained low efficiency dialysis in the intensive care unit.** *NEFROLOGIA.* 39(1):98-99. I.F.: 1.439

Editorial / I.F.: 8.306

1. Montagud-Marrahi, Enrique Ventura-Aguiar, Pedro Diekmann, Fritz. **Persistent fever due to acute pancreatic graft rejection**. *KIDNEY INTERNATIONAL.* 96(5):1242. I.F.: 8.306

Case Reports / I.F.: 4.155

1. Camprubí D., Balerdi L., Quintana L., Almuedo-Riera A., Valls M., García-Herrera A., Rodriguez-Valero N., Alvarez-Martínez M., Luyi Muñoz J. **Post-splenectomy acute glomerulonephritis due to a chronic infection with Plasmodium falciparum and malariae.** *JOURNAL OF TRAVEL MEDICINE.* 26(4):taz029. I.F.: 4.155

Consortium Publications / I.F.: 2.088

1. Jose Perez-Saez, Maria; Lafuente Covarrubias, Omar; Hernandez, Domingo; Moreso, Francesc; Melilli, Edoardo; Juega, Javier; de Sousa, Erika; Lopez-Sanchez, Paula; Luisa Rodriguez-Ferrero, Maria; Maruri-Kareaga, Naroa; Dolores Navarro, Maria; Valero, Rosalia; Auxiliadora Mazuecos, Maria; Llamas, Francisco; Martin-Moreno, Paloma; Fernandez-Garcia, Anton; Espi, Jordi; Jimenez, Carlos; Ramos, Ana; Gavela, Eva; Pascual, Julio; Portoles, Jose M.; Sanchez-Sobrino, Beatriz; de Hierro, Puerta; Zapatero, Ana; Manonelles, Anna; Juega, Javier; Lauzurica, Ricardo; Diekmann, Fritz; Zarraga, Sofia; Rodriguez-Benot, Alberto; Ruiz, Juan Carlos; Alonso, Angel; Lopez-Oliva, Maria; Sancho-Calabuig, Asuncion; GEODAS Grp. **Early outcomes of kidney transplantation from elderly donors after circulatory death (GEODAS study).** *BMC NEPHROLOGY.* 20(1):233. I.F.: 2.088

GRANTS FOR RESEARCH IN PROGRESS

Campistol JM. **Targeting endothelial dysfunction in highly prevalent diseases: characterization and validation of prognostic biomarkers and identification of potential therapeutic strategies.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PIE15/00027
Duration: 01/01/2016-31/12/2019

Campistol JM. **Metabolismo del hierro en los receptores de aloinjerto de riñón añoso.**
Sponsored by: Sociedad Española de Nefrología (SEN). SENEFRO19_001
Duration: 04/12/2019-03/12/2021

Campistol JM. **A novel home healthcare platform for chronic kidney disease.**
Sponsored by: European Comission. CE_EIT_2ndI19 (19579)
Duration: 01/07/2019-31/12/2020

Diekmann F. **Laboratori Experimental de Nefrologia i Trasplantament Renal (LENIT).**
Sponsored by: Generalitat de Catalunya. AGAUR_SGR17 (01331)
Duration: 01/01/2017-31/12/2020

Diekmann F. **Red Temática de Investigación Cooperativa en Salud - Enfermedades renales. (REDinREN)**
Sponsored by: Instituto de Salud Carlos III (ISCIII). RD16/0009/0023
Duration: 01/01/2017-31/12/2021

Diekmann F, Palou E. **Inmunoterapia para el control del rechazo del riñon trasplantado: uso de células T modificadas genéticamente con receptores quiméricos del antígeno.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00078
Duration: 01/01/2018-31/12/2020

Manyalich M. **Evolución psicosocial del donante vivo renal. Estudio de cohortes.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI14/00693
Duration: 01/01/2015-30/06/2019

Manyalich M. **EDITH: The Effect of Differing Kidney Disease Treatment Modalities and Organ Donation and Transplantation Practices on Health Expenditure and Patient Outcomes.**

Sponsored by: European Commission.
HP-PP16 (739495)
Duration: 01/01/2017-30/06/2020

Oppenheimer F. **Papel de los exosomas de células inmunes de memoria (InmEx) en la activación del endotelio y desarrollo precoz del rechazo mediado por anticuerpos en el trasplante renal.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00115
Duration: 01/01/2017-31/12/2019

Quintana LF. **Papel de la patología digital y la Resonancia nuclear magnética en la detección precoz de la fibrosis intersticial en la enfermedad renal crónica.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00080
Duration: 01/01/2018-31/12/2020

DOCTORAL THESES

Campistol JM. **Donor-derived risk factors for graft failure in pancreas transplantation.**
PhD student: Pedro Ventura-Aguiar

Cases A, Pascual J. **Enfermedad cardiovascular en hemodiálisis: análisis de la prevalencia y relevancia de los factores de riesgo cardiovascular.**
PhD student: Silvia Collado Nieto

Ramírez-Bajo MJ, Revuelta I. **Efecto de la Ciclosporina A y la Rapamicina en miRNAs de vesículas extracelulares de cáncer colorectal y su influencia en el nicho premetastásico.**
PhD student: Valeria Tubita

2.8 Vascular cell biology

LOCATION
UB School of Medicine

KEYWORDS
1. **Marfan syndrome**
2. **Aortic aneurysm**
3. **TGF-β**
4. **Vascular diseases**
5. **Oxidative stress**
6. **Rare diseases**
7. **Connective tissue**
8. **Extracellular matrix**

RELATED DISEASES
1. **Loeys-Dietz syndrome**
2. **Williams-Beuren syndrome**
3. **Weill-Mrchesani syndrome**
4. **Ehlers-Danlos syndrome**

GROUP INVOLVED IN
AGAUR_SGR18: 188

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**1**	**4,328**	**4,33**	**100%**	**-**



GROUP LEADER
Gustavo Egea (UB)
T. 93 402 19 09
gegea@ub.edu

POST-DOCTORAL RESEARCHERS
Cristina Arce (UB)

PRE-DOCTORAL RESEARCHERS
Isaac Rodriguez Rovira (UB)

PROBLEM

The aorta is the main artery where blood circulates. In Marfan syndrome (MFS) or Loeys-Dietz (LDS) syndrome, patients develops aortic dilation (aneurysm) with the subsequent risk of its dissection and rupture, and therefore a of sudden death.

Marfan syndrome is a genetic disease severely affecting the connective tissue, which acts as a glue of other tissues and organs of the body. Undiagnosed patients affected with MFS have a reduced of life and life expectancy. MFS affects 1:5,000 people.

There are no effective pharmacological therapies that prevent or significantly delay the aortic damage, although there are promising results from studies being conducted in an attempt to reduce patients needing the operating theatre. At the moment, the only effective solution is surgery before the vessel breaks down.

APPROACH

The group uses samples from Marfan patients who have undergone aortic repair surgery and genetically modified Marfan mice that present various clinical features of the disease. In the laboratory, we use morphological techniques such as echocardiography and histology to observe structural changes of the aorta, and biochemistry and molecular biology to identify the molecules that are directly involved in the pathogenesis of this aortopathy. We also uses different drugs and gene therapy tools against these molecules to interfere with the formation and/or progression of aorta dilatation.

IMPACT

The group wants to stop or at least mitigate the progressive dilatation of the aorta (aneurysm) and, therefore, the risk of dissection and rupture. The final aim is to avoid the aorta reparatory surgery in patients and thus improve their quality of life.

It is important to point out that the progress the group achieves can be also applied to other diseases affecting the aorta (Loeys-Dietz syndrome, Ehlers-Danlos syndrome, Williams-Beuren syndrome) since they share many common molecular mechanisms that lead to the aortopathy.

RESEARCH LINES

- Develop new pharmacological and gene therapy approaches to interfere in the Marfan syndrome-associated aneurysm progression.

- To reveal the impact of oxidative stress in aortic aneurysm formation and progression in Marfan syndrome and related disorders.

PUBLICATIONS

Originals / **I.F.: 4.328**

1. Siegert A., García Díaz-Barriga G., Esteve-Codina A., Navas-Madroñal M., Gorbenko del Blanco D., Alberch J., Heath S., Galán M., Egea G. **A FBN1 3′UTR mutation variant is associated with endoplasmic reticulum stress in aortic aneurysm in Marfan syndrome.** *BIOCHIMICA ET BIOPHYSICA ACTA - MOLECULAR BASIS OF DISEASE.* 1865(1):107-114.
I.F.: 4.328

GRANTS FOR RESEARCH IN PROGRESS

Egea G. **Apolinker p144, a potential anti-tTGFgf-beta therapeutic tool to fight against aortic aneurysms in marfan syndrome.**
Sponsored by: The National Marfan Foundation. INT_NMarfanF_15 (NMARFANF_15_01)
Duration: 01/01/2016-31/12/2019

Egea G. **Impacto fisiopatológico de un péptido anti-TGF-beta, del ejercicio físico y del humo de los cigarrillos en la formación del anuerisma aórtico en elsíndrome de Marfan.**
Sopnsored by: Ministerio de Economía y Competitividad (MINECO).
SAF2017-83039-R
Duration: 01/01/2018-31/12/2020

2.9 Cardiovascular risk, nutrition and aging

LOCATION
CELLEX building, floor 4B

KEYWORDS
1. **Nutrition**
2. **Mediterranean diet**
3. **Cardiovascular disease**
4. **Cardiovascular risk factors**
5. **Cognition**

RELATED DISEASES
1. **Cardiovascular disease**
2. **Cancer**
3. **Hypertension**
4. **Dyslypdidemia**
5. **Type 2 diabetes**
6. **Neurodegenerative disease**

GROUP INVOLVED IN
CIBEROBN

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**60**	**332,75**	**5,55**	**82%**	**37%**



GROUP LEADER
Ramon Estruch (HCB)
T. 93 227 22 33
restruch@clinic.cat

EMERITUS
Emilio Ros (HCB)

RESEARCHERS
Ferran Masanès (HCB)
Emilio Sacanella (HCB)
Cristina Sierra (HCB)

POST-DOCTORAL RESEARCHERS
Miguel Camafort (HCB)
Rosa Casas (CIBEROBN)
Dolors Estrada (HCB)
Álvaro Hernáez (IDIBAPS)
Alfonso López Soto (HCB)
Margarita Navarro (HCB)

PRE-DOCTORAL RESEARCHERS
Sara Castro (UB)
Tania Freitas (IDIBAPS)
Ana Maria Ruiz (IDIBAPS)

NURSING STAFF
Karla Escobar (IDIBAPS)
Ana Jordán (HCB)
Rosa Soriano (HCB)

PROBLEM

The leading cause of premature death in industrialized countries is cardiovascular disease, which accounts for 30% of all deaths around the world (17.3 million deaths/year) and is considered a public-health priority. Evidence exists that indicates that lifestyle, and more specifically a healthy diet such as the Mediterranean diet, may play a key role in the prevention of this disease and in the management of associated risk factors, such as diabetes, obesity, hypertension and dyslipidemia.

APPROACH

To meet this 21st-century challenge, the group is conducting different clinical studies, such as PREDIMED (prevention with the Mediterranean diet), PREDIMED-PLUS (intervention with a hypocaloric Mediterranean diet, physical activity and behavioral therapy), MEDCARS (~14,000 employees at the SEAT factory), SI! (~1200 adolescents) and IMPACT (~1200 pregnant women with fetal growth restriction).

The aim of these studies is to find tools to prevent the onset of cardiovascular disease and its associated risk factors, such as diabetes, dyslipidemia, hypertension and obesity.

IMPACT

The results obtained in the studies conducted by the group make it possible to extrapolate nutritional recommendations for the whole of society because the group works with the highest standards of scientific evidence.
This has been shown by the PREDIMED study, which enabled the Mediterranean diet to be included in American and European nutritional guidelines because it is considered to be an effective and healthy diet for preventing chronic, non-communicable diseases such as cardiovascular disease, neurodegenerative diseases, and even some types of cancer.

RESEARCH LINES

- Protective effects of Mediterranean diet.
- Protective effects of alcohol (beer or wine).
- Effects of other diet components on healthy.
- Assessment on cardiovascular risk factors on primary prevention.
- Evaluation of the intima-media thickness (IMT) of the carotid artery and ultrasound plaque.
- Aging.
- Thrombosis.

PUBLICATIONS

Originals / I.F.: 332.75

1. Estruch R, Martínez-González MA, Corella D, Salas-Salvadó J, Fitó M, Chiva-Blanch G, Fiol M, Gómez-Gracia E, Arós F, Lapetra J, Serra-Majem L, Pintó X, Buil-Cosiales P, Sorlí JV, Muñoz MA, Basora-Gallisá J, Lamuela-Raventós RM, Serra-Mir M, Ros E, PREDIMED Study Investigators. **Effect of a high-fat Mediterranean diet on bodyweight and waist circumference: a prespecified secondary outcomes analysis of the PREDIMED randomised controlled trial.** *THE LANCET DIABETES AND ENDOCRINOLOGY.* 7(5):e6-e17. I.F.: 24.540

2. Salas-Salvadó J, Díaz-López A, Ruiz-Canela M, Basora J, Fitó M, Corella D, Serra-Majem L, Wärnberg J, Romaguera D, Estruch R, Vidal J, Martínez JA, Arós F, Vázquez C, Ros E, Vioque J, López-Miranda J, Bueno-Cavanillas A, Tur JA, Tinahones FJ, Martín V, Lapetra J, Pintó X, Daimiel L, Delgado-Rodríguez M, Matía P, Gómez-Gracia E, Díez-Espino J, Babio N, Castañer O, Sorlí JV, Fiol M, Zulet MÁ, Bulló M, Goday A, Martínez-González MÁ, PREDIMED-Plus investigators. **Effect of a Lifestyle Intervention Program With Energy-Restricted Mediterranean Diet and Exercise on Weight Loss and Cardiovascular Risk Factors: One-Year Results of the PREDIMED-Plus Trial.** *DIABETES CARE.* 42(5):777-788. I.F.: 15.270

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Letters / I.F.: 59.102

1. Astrup A., Estruch R. **Alcohol and the global burden of disease.** *LANCET.* 393(10189):2390-2390. I.F.: 59.102

Editorial / I.F.: 24.19

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2. Hernáez Á., Estruch R. **The Mediterranean Diet and Cancer: What Do Human and Molecular Studies Have to Say about It?** *NUTRIENTS.* 11(9). I.F.: 4.171

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4. Rodríguez-Murillo JA, Camafort M. **Self-care for patients with heart failure.** *REVISTA CLINICA ESPANOLA.* 219(7):394-395. I.F.: 1.043

Consortium Publications / I.F.: 2.883

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GRANTS FOR RESEARCH IN PROGRESS

Camafort M. **Co-creating tools for elderly patients with heart failure.**
Sponsored by: European Comission.
CE_EIT_1stC19 (19364)
Duration: 01/01/2019-31/12/2019

Estruch R. **Nous predictors de la cardiopatía coronaria: micropartículas endotelials circulants, funcionalitat de les partícules d'HDL i composició en àcids grassos de les membranes cel·lulars.**
Sponsored by: Fundació la Marató de TV3.
TV3_Cor_15
Duration: 29/06/2016-31/12/2019

Estruch R. **Cardiovascular, Nutrition and Aging Group.**
Sponsored by: Generalitat de Catalunya.
AGAUR_SGR17_01717
Duration: 01/01/2017-31/12/2020

Estruch R. **Efecto de una pérdida de peso con dieta mediterránea hipocalórica y promoción de la actividad física en prevención primaria cardiovascular: Estudio PREDIMED-PLUS.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00381
Duration: 01/01/2017-31/12/2019

Estruch R. **The Moderate Alcohol and Cardiovascular Health Trial.**
Sponsored by: Beth Israel Medical Center.
INT_NIH_PAR-16-363 (38685)
Duration: 30/09/2016-31/03/2019

Sacanella E. **Morbi-mortalidad cardiovascular, adherencia a la dieta mediterránea y efecto legado en 1000 pacientes con dieta mediterránea (Estudio PREDIMED).**
Sponsored by: Fundación Española de Medicina Interna. FEMI_Proyectos15
Duration: 24/12/2015-

DOCTORAL THESES

Estruch R, Casas R. **Efectos de la ingesta moderada de vinos andaluces de crianza biológica sobre la función endotelial.**
PhD student: Irene Roth Perez

2.10 Respiratory biophysics and bioengineering

LOCATION
UB School of Medicine

KEYWORDS
1. **Respiratory mechanics**
2. **Lung bioengineering**
3. **Neuroimaging in refractory epilepsy**
4. **Neuroimaging in Parkinson's disease**

RELATED DISEASES
1. **Alzheimer's disease**
2. **Parkinson disease**
3. **Chronic obstructive pulmonary disease (COPD)**
4. **Obstructive sleep apnea**
5. **Acute respiratory failure**

GROUP INVOLVED IN
CIBERES
CIBER-BBN

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	13	69,23	5,33	54%	23%



GROUP LEADER
Ramon Farré (UB)
T. 93 402 45 15
rfarre@ub.edu

RESEARCHERS
Isaac Almendros (UB)
Daniel Navajas (UB)
Domenec Ros (UB)

PRE-DOCTORAL RESEARCHERS
Jair Asir (UB)
Ignacio Cabrera (UB)
Bryan Falcones (UB)
Ignasi Jorba (UB)
Esther Marhuenda (UB)

TECHNICIANS
Miguel Angel Rodriguez Lazaro (UB)
Elisabet Urrea (UB)

PROBLEM

The application of advanced biophysical techniques is essential for improving diagnostic tools (especially those used for medical imaging), as well as to optimise therapeutic devices for respiratory diseases.

APPROACH

The group studies the biophysical mechanisms that determine respiratory function. It also develops models and methods for the processing of images and biomedical signals.

IMPACT

The group has provided some keys for a better understanding of certain respiratory diseases linked to hypoxia. It is also improving our diagnostic (medical imaging) and therapeutic (respiratory support) tools, such as systems for evaluating the quality of devices used to treat obstructive sleep apnoea.

RESEARCH LINES

- Biomedical imaging analysis.
- Molecular and cellular nanomechanics.
- Respiratory mechanics.

PUBLICATIONS

Originals / I.F.: 69.225

1. Farré R, Trias G, Solana G, Ginovart G, Gozal D, Navajas D. **Novel Approach for Providing Pediatric Continuous Positive Airway Pressure (CPAP) Devices in Low-Income Underesourced Regions.** *AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE.* 199(1):118-120. I.F.: 16.494

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3. Jorba I., Beltrán G., Falcones B., Suki B., Farré R., García-Aznar J., Navajas D. **Nonlinear elasticity of the lung extracellular microenvironment is regulated by macroscale tissue strain.** *ACTA BIOMATERIALIA.* 92:265-276. I.F.: 6.638

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5. Nonaka P, Falcones B, Farre R, Artigas A, Almendros I, Navajas D. **Biophysically Preconditioning Mesenchymal Stem Cells Improves Treatment of Ventilator-Induced Lung Injury.** *ARCHIVOS DE BRONCONEUMOLOGIA.* 56(3):179-181. I.F.: 4.214

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8. Oliveira, Vinicius Rosa; Uriarte, Juan Jose; Falcones, Bryan; Jorba, Ignasi; Zin, Walter Araujo; Farre, Ramon; Nayajas, Daniel; Almendros, Isaac. **Biomechanical Response of Lung Epithelial Cells to Iron Oxide and Titanium Dioxide Nanoparticles.** *FRONTIERS IN PHYSIOLOGY.* 10(1047). I.F.: 3.201

9. Almendros I, Martinez-Ros P, Farre N, Rubio-Zaragoza M, Torres M, Gutierrez-Bautista AJ, Carrillo-Poveda JM, Sopena-Juncosa JJ, Gozal D, Gonzalez-Bulnes A, Farre R. **Placental oxygen transfer reduces hypoxia/reoxygenation swings in fetal blood in a sheep model of gestational sleep apnea.** *JOURNAL OF APPLIED PHYSIOLOGY.* 127(3):745-752. I.F.: 3.140

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12. Mayoral, Maria; Ninerola-Baizan, Aida; Marti-Fuster, Berta; Donaire, Antonio; Perissinotti, Andres; Rumia, Jordi; Bargallo, Nuria; Sala-Llonch, Roser; Pavia, Javier; Ros, Domenec; Carreno, Mar; Pons, Francesca; Setoain, Xavier. **Epileptogenic Zone Localization With (18)FDG PET Using a New Dynamic Parametric Analysis.** *FRONTIERS IN NEUROLOGY.* 10:380. I.F.: 2.635

13. Oliveira V., Uriarte J., Falcones B., Zin W., Navajas D., Farré R., Almendros I. **Escherichia coli lipopolysaccharide induces alveolar epithelial cell stiffening.** *JOURNAL OF BIOMECHANICS.* 83:315-318. I.F.: 2.576

Review / I.F.: 16.494

1. Martinez-Garcia M, Campos-Rodriguez F, Almendros I, Garcia-Rio F, Sanchez de la Torre M, Farre R, Gozal D. **Cancer and Sleep Apnea: Cutaneous Melanoma as a Case Study.** *AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE.* 200(11):1345-1353. I.F.: 16.494

Letters / I.F.: 27.935

1. Farré R., Montserrat J.M., Solana G., Gozal D., Navajas D. **Easy-to-build and affordable continuous positive airway pressure CPAP device for adult patients in low-income** countries. EUROPEAN RESPIRATORY JOURNAL. 53(5). I.F.: 11.807

2. Marhuenda E., Campillo N., Gabasa M., Martínez-García M., Campos-Rodríguez F., Gozal D., Navajas D., Alcaraz J., Farré R., Almendros I. **Effects of Sustained and Intermittent Hypoxia on Human Lung Cancer Cells.** *AMERICAN JOURNAL OF RESPIRATORY CELL AND MOLECULAR BIOLOGY.* 61(4):540-544. I.F.: 4.340

3. Suarez-Giron M., Almendros I., Roca-Ferrer J., Picado C. **Overnight Change in Urinary Prostacyclin and Thromboxane in Obstructive Sleep Apnea.** *ARCHIVOS DE BRONCONEUMOLOGIA.* 55(6):334-336. I.F.: 4.214

4. Farré R, Navajas D, Gozal D, Montserrat JM. **Telematic Multi-physician Decision-making for Improving CPAP Prescription in Sleep Apnoea.** *ARCHIVOS DE BRONCONEUMOLOGIA.* 55(11):604-606. I.F.: 4.214

5. Villanueva J., Garmendia O., Farré R., Montserrat J. **Accuracy of one-night actigraphy for estimating sleep in patients with sleep apnea.** SLEEP MEDICINE. 63:3-4. I.F.: 3.360

GRANTS FOR RESEARCH IN PROGRESS

Almendros I. **Alteraciones del citoesqueleto y de la matriz extracelular cerebral caracteristicas de la nefermedad de Allzheimer en un modelo celular y animal de apnea obstructiva del sueño.**
Sponsored by: Sociedad Española de Neumología y Cirugía Torácica (SEPAR).
SEPAR-139/2015
Duration: 01/10/2016-30/09/2019

Farré R. **Impacte de l'apnea obstructiva del son en la progressió de la malaltia d'Alzheimer. Paper de la hipòxia i la fragmentació del son.**
Sponsored by: Fundació la Marató de TV3.
Neuro_14
Duration: 03/06/2015-31/12/2020

Farré R. **Efectos de la hipoxia/hipercapnia en la interacción biomecánica célula-matriz pulmonar en la progresión de las enfermedades respiratorias.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).

SAF2017-85574-R
Duration: 01/01/2018-31/12/2020

Farré R. **Global self-management telematic support for patients with obstructive sleep apneahypopnea syndrome and CPAP treatment. Pilot study on patients with severe obstructive sleep apnea-hypopnea syndrome that are provided bad fulfillers.**
Sponsored by: Proyectos Inter-CIBER.
CIBERER-FES2018-01
Duration: 21/05/2018-30/04/2021

DOCTORAL THESES

Navajas D. **Multiscale nonlinear mechanics of soft biological tissues.**
PhD student: Ignasi Jorba Masdéu

Farre R, Montserrat JM. **Advanced methodologies for improving the characterization and treatment of sleep apnea.**
PhD student: Jair Asir Villanueva Padilla

2.11 Arrhythmias and physical activity

LOCATION
CELLEX building, floor 2 A
HCB building

KEYWORDS
1. **Atrial fibrillation**
2. **Endurance exercise**
3. **Animal models**

RELATED DISEASES
1. **Atrial fibrillation**
2. **Vascular disease**

GROUP INVOLVED IN
CIBERCV
AGAUR_SGR17: 1548

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**10**	**48,55**	**4,85**	**60%**	**10%**



GROUP LEADER
Eduard Guasch (HCB-IDIBAPS)
T. 93 227 48 05
eguasch@clinic.cat

POST-DOCTORAL RESEARCHERS
Montserrat Batlle (IDIBAPS)
Gemma Sangüesa (CIBER)

PRE-DOCTORAL RESEARCHERS
Aline Cecilia Meza (UB)

TECHNICIANS
Anna Alcarraz (FCRB)

PROBLEM

Our increasingly sedentary lifestyles and lack of physical activity constitute one of the major problems for Western societies. While moderate physical activity is essential for maintaining optimal cardiovascular health, increasing numbers of people are taking part in very high-intensity activities, such as marathons and triathlons.

Recent studies carried out at Hospital Clínic-IDIBAPS have shown that this type of exercise may increase the risk of certain cardiac diseases, especially atrial fibrillation and right ventricular arrhythmia.

APPROACH

The group uses a multidisciplinary approach in order to identify and understand the causes of exercise-induced disorders. It uses animal models, in which it attempts to reproduce the effects of very-high intensity physical exercise and of arrhythmias, and it also conducts studies in patients and healthy volunteers.

In order to analyse these, it uses in vitro techniques (such as tissue staining and the study of RNA and protein expression), ex vivo studies (study of the function of isolated cells or organs) and in vivo studies (studies in live animals).

IMPACT

The results obtained to date have made it possible to confirm that exercise increases the risk of arrhythmias in the atria and ventricles, possibly due to the appearance of scar tissue (fibrosis) in the heart and changes in the autonomic nervous system.

Cardiac scar tissue and other disorders of heart structure and function only appear when the exercise is of very high intensity and prolonged over time, whereas moderate exercise appears to be safe and even beneficial.

The group's research is currently aimed at identifying these consequences of very high-intensity physical exercise and, particularly, at understanding why they occur and how they can be prevented.

This information should make it possible to design more efficient diagnostic and therapeutic strategies targeting the initial causes.

RESEARCH LINES

- Characterization of the pathophysiology of cardiac arrhythmias.

- Extra-cardiac consequences of very high-intensity physical activity.

- Mechanisms of cardiac arrhythmias in high-level athletes.

PUBLICATIONS

Originals / I.F.: 48.545

1. Riefolo F., Matera C., Garrido-Charles A., Gomila A., Sortino R., Agnetta L., Claro E., Masgrau R., Holzgrabe U., Batlle M., Decker M., Guasch E., Gorostiza P. **Optical Control of Cardiac Function with a Photoswitchable Muscarinic Agonist.** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY.* 141(18):7628-7636. I.F.: 14.695

2. Margulescu AD, Nuñez-Garcia M, Alarcón F, Benito EM, Enomoto N, Cozzari J, Chipa F, Fernandez H, Borras R, Guasch E, Butakoff C, Tolosana JM, Arbelo E, Camara O, Mont L. **Reproducibility and accuracy of late gadolinium enhancement cardiac magnetic resonance measurements for the detection of left atrial fibrosis in patients undergoing atrial fibrillation ablation procedures.** *EUROPACE.* 21(5):724-731. I.F.: 6.100

3. San Antonio R, Chipa-Ccasani F, Apolo J, Linhart M, Trotta O, Pujol-López M, Niebla M, Alarcón F, Trucco E, Arbelo E, Roca-Luque I, Guasch E, Brugada J, Mont L, Tolosana JM. **Management of Anticoagulation in Patients Undergoing Leadless Pacemaker Implantation.** *HEART RHYTHM.* 16(12):1849-1854. I.F.: 5.225

4. Sangüesa G., Montañés J., Baena M., Sánchez R., Roglans N., Alegret M., Laguna J. **Chronic fructose intake does not induce liver steatosis and inflammation in female Sprague–Dawley rats, but causes hypertriglyceridemia related to decreased VLDL receptor expression.** *EUROPEAN JOURNAL OF NUTRITION.* 58(3):1283-1297. I.F.: 4.449

5. Rubies C, Dantas AP, Batlle M, Torres M, Farre R, Sangüesa G, Montserrat JM, Mont L, Almendros I, Guasch E. **Aortic remodelling induced by obstructive apneas is normalized with mesenchymal stem cells infusion.** *SCIENTIFIC REPORTS.* 9(1):11443-11443. I.F.: 4.011

6. Dejea, Hector; Garcia-Canadilla, Patricia; Cook, Andrew C.; Guasch, Eduard; Zamora, Monica; Crispi, Fatima; Stampanoni, Marco; Bijnens, Bart; Bonnin, Anne;. **Comprehensive Analysis of Animal Models of Cardiovascular Disease using Multiscale X-Ray Phase Contrast Tomography.** *SCIENTIFIC REPORTS.* 9(1):6996. I.F.: 4.011

7. Soler M.J., Batlle M., Riera M., Campos B., Ortiz-Perez J.T., Anguiano L., Roca-Ho H., Farrero M., Mont L., Pascual J., Perez-Villa F. **ACE2 and ACE in acute and chronic rejection after human heart transplantation.** *INTERNATIONAL JOURNAL OF CARDIOLOGY.* 275:59-64. I.F.: 3.471

8. Batlle M, Castillo N, Alcarraz A, Sarvari S, Sangüesa G, Cristóbal H, García de Frutos P, Sitges M, Mont L, Guasch E. **Axl expression is increased in early stages of left ventricular remodeling in an animal model with pressure-overload.** *PLOS ONE.* 14(6):e0217926-e0217926. I.F.: 2.776

9. Chua W, Easter CL, Guasch E, Sitch A, Casadei B, Crijns HJGM, Haase D, Hatem S, Kääb S, Mont L, Schotten U, Sinner MF, Hemming K, Deeks JJ, Kirchhof P, Fabritz L. **Development and external validation of predictive models for prevalent and recurrent atrial fibrillation: a protocol for the analysis of the CATCH ME combined dataset.** *BMC CARDIOVASCULAR DISORDERS.* 19(1):120. I.F.: 1.947

10. Sanz-de la Garza M, Giraldeau G, Marin J, Imre Sarvari S, Guasch E, Gabrielli L, Brambila C, Bijnens B, Sitges M. **Should the septum be included in the assessment of right ventricular longitudinal strain? An ultrasound two-dimensional speckle-tracking stress study.** *INTERNATIONAL JOURNAL OF CARDIOVASCULAR IMAGING.* 35(10):1853-1860. I.F.: 1.860

Review / I.F.: 10.283

1. Pujol-López M., San Antonio R., Mont L., Trucco E., Tolosana J., Arbelo E., Guasch E., Heist E., Singh J. *Electrocardiographic optimization techniques in resynchronization therapy. EUROPACE.* 21(9):1286-1296. I.F.: 6.100

2. Sanguesa, Gemma; Roglans, Nuria; Baena, Miguel; Magdalena Velazquez, Ana; Carlos Laguna, Juan; Alegret, Marta. **mTOR is a Key Protein Involved in the Metabolic Effects of Simple Sugars.** *INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES.* 20(5):E1117. I.F.: 4.183

Editorial / I.F.: 11.28

1. Guasch E, Sanz-de la Garza M, Mont L. **T-wave inversion in young athletes: Should we check their bones or their identity card? The quest for precision medicine.** *EUROPEAN JOURNAL OF PREVENTIVE CARDIOLOGY.* 26(6):638-640. I.F.: 5.640

2. Guasch, Eduard; Mont, Lluis. **Endurance training in young athletes: What happens in childhood, stays in childhood?** *EUROPEAN JOURNAL OF PREVENTIVE CARDIOLOGY.* 26(18):1998-2000. I.F.: 5.640

Case Reports / I.F.: 6.1

1. Sánchez P, Apolo J, San Antonio R, Guasch E, Mont L, Tolosana JM. **Safety and usefulness of a second Micra transcatheter pacemaker implantation after battery depletion.** *EUROPACE.* 21(6):885-885. I.F.: 6.100

Consortium Publications / I.F.: 5.126

1. Ibáñez Criado J.L., Quesada A., Cózar R., Spanish Catheter Ablation Registry collaborators. **18th Official Report of the Spanish Society of Cardiology Working Group on Electrophysiology and Arrhythmias (2018).** *REVISTA ESPANOLA DE CARDIOLOGIA.* 72(12):1031-1042. I.F.: 5.126

GRANTS FOR RESEARCH IN PROGRESS

Batlle M. **Acidosis asociada al ejercicio extremo y su efecto en la función mitocondrial vascular.**
Sponsored by: Sociedad Española de Cardiologia (SEC). SEC_BASICA_02
Duration: 26/10/2017-

Guasch E. **Caracterización del remodelado a dosis crecientes de ejercicio físico como sustrato para el desarrollo de patología inducida por el ejercicio.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00703
Duration: 01/01/2017-31/12/2019

2.12 Atrial fibrillation biopathology and therapy

LOCATION
HCB building

KEYWORDS
1. **Atrial fibrillation (AF)**
2. **AF Ablation**
3. **MRI guided ablation**

RELATED DISEASES
1. **Atrial fibrillation (AF)**

GROUP INVOLVED IN
CIBERCV
AGAUR_SGR17: 1548

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**18**	**116,13**	**6,45**	**67%**	**11%**



GROUP LEADER
Lluís Mont (HCB)
T. 93 227 17 78
lmont@clinic.cat

RESEARCHERS
M. Angeles Castel (HCB)
José M Tolosana (HCB)

POST-DOCTORAL RESEARCHERS
Ivo Roca (HCB)

PRE-DOCTORAL RESEARCHERS
Gal·la Caixal (IDIBAPS)
Glara Gunturiz (CIBER)
Rodolfo San Antonio (CIBER)

NURSING STAFF
Alba Cano (HCB)
Rebeca Domingo (HCB)
Mireia Niebla (HCB)
Miriam Sanchez Aymerich (IDIBAPS)
Silvia Vidorreta (HCB-FCRB)

ADMINISTRATIVE STAFF
M Neus Portella (FCRB)
Carolina Sanroman (FCRB)

COLLABORATOR
Francisco Alarcón (HCB)
Paula Sánchez Somonte (HCB)

PROBLEM

Atrial fibrillation (AF) is a highly prevalent disease among the population. In fact, it is the most frequent arrhythmia and can have serious health effects on sufferers. It is one of the main causes of morbidity and mortality and it increases the risk of heart failure, stroke and death.

Rates of AF increase with age. With the ageing of the current population, treatment of AF has a considerable economic impact on the health system.

APPROACH

The group studies the causes of atrial fibrillation with the aim of understanding the mechanisms that trigger it and of preventing its development. Based on the results of these studies and given the importance of early detection of the disease, it is being approached from whichever service has detected it: A&E, Primary Care, Neurology (Stroke Code) or Cardiology.

The multidisciplinary Atrial Fibrillation Unit has provided the mechanisms to implement this approach and shorten the time between detection, diagnosis and treatment. Continuous pharmacological updates and interventional approach techniques are gradually enabling its impact to be reduced.

IMPACT

The group's research has helped improve the way in which patients with atrial fibrillation (AF) are treated. The group has collaborated in the development of the ablation technique from the beginning, and it continues to study how to improve its success, by adapting it to each individual patient.

It has participated in many of the studies that have helped demonstrate the efficacy of new anticoagulant drugs. At the scientific level, the group's identification of physical exercise as a cause of AF has had a significant impact.

RESEARCH LINES

- Etiological factors of atrial fibrillation.

- Improvement of atrial fibrillation therapy.

- Non-invasive, imaging-based assessment of atrial fibrillation pathology.

PUBLICATIONS

Originals / I.F.: 116.13

1. Hohnloser S., Camm J., Cappato R., Diener H., Heidbüchel H., Mont L., Morillo C., Abozguia K., Grimaldi M., Rauer H., Reimitz P., Smolnik R., Mönninghoff C., Kautzner J. **Uninterrupted edoxaban vs. vitamin K antagonists for ablation of atrial fibrillation: the ELIMINATE-AF trial.** *EUROPEAN HEART JOURNAL.* 40(36):3013-3021. I.F.: 23.239

2. Santos-Gallego C.G., Requena-Ibanez J.A., San Antonio R., Ishikawa K., Watanabe S., Picatoste B., Flores E., Garcia-Ropero A., Sanz J., Hajjar R.J., Fuster V., Badimon J.J. **Empagliflozin Ameliorates Adverse Left Ventricular Remodeling in Nondiabetic Heart Failure by Enhancing Myocardial Energetics.** 73(15):1931-1944. I.F.: 18.639

3. Garcia-Lunar I, Pereda D, Santiago E, Solanes N, Nuche J, Ascaso M, Bobí J, Sierra F, Dantas AP, Galán C, San Antonio R, Sánchez-Quintana D, Sánchez-González J, Barberá JA, Rigol M, Fuster V, Ibáñez B, Sabaté M, García-Álvarez A. **Effect of pulmonary artery denervation in postcapillary pulmonary hypertension: results of a randomized controlled translational study.** *BASIC RESEARCH IN CARDIOLOGY.* 114(2):5-5. I.F.: 6.470

4. Mărgulescu AD, Nuñez-Garcia M, Alarcón F, Benito EM, Enomoto N, Cozzari J, Chipa F, Fernandez H, Borras R, Guasch E, Butakoff C, Tolosana JM, Arbelo E, Camara O, Mont L. **Reproducibility and accuracy of late gadolinium enhancement cardiac magnetic resonance measurements for the detection of left atrial fibrosis in patients undergoing atrial fibrillation ablation procedures.** *EUROPACE.* 21(5):724-731. I.F.: 6.100

5. Korshunov V, Penela D, Linhart M, Acosta J, Martinez M, Soto-Iglesias D, Fernández-Armenta J, Vassanelli F, Cabrera M, Borràs R, Jáuregui B, Ortiz-Pérez JT, Perea RJ, Bosch X, Sanchez-Quintana D, Mont L, Berruezo A. **Prediction of premature ventricular complex origin in left vs. right ventricular outflow tract: a novel anatomical imaging approach.** *EUROPACE.* 21(1):147-153. I.F.: 6.100

6. Boriani, Giuseppe; Pieragnoli, Paolo; Botto, Giovanni Luca; Puererfellner, Helmut; Mont, Lluis; Ziacchi, Matteo; Manolis, Antonis S.; Gulizia, Michele; Tukkie, Raymond; Landolina, Maurizio; Ricciardi, Giuseppe; Cicconetli, Manuete; Grammatico, Andrea; Biffi, Mauro. **Effect of PR interval and pacing mode on persistent atrial fibrillation incidence in dual chamber pacemaker patients: a sub-study of the international randomized MINERVA trial.** *EUROPACE.* 21(4):636-644. I.F.: 6.100

7. Castella, Manuel; Kotecha, Dipak; van Laar, Charlotte; Wintgens, Lisette; Castillo, Yakir; Kelder, Johannes; Aragon, David; Nunez, Maria; Sandoval, Elena; Casellas, Aina; Mont, Lluis; van Boven, Wim Jan; Boersma, Lucas V. A.; van Putte, Bart P. **Thoracoscopic vs. catheter ablation for atrial fibrillation: long-term follow-up of the FAST randomized trial.** *EUROPACE.* 21(5):746-753. I.F.: 6.100

8. Heidbuchel, Hein; Willems, Rik; Jordaens, Luc; Olshansky, Brian; Carre, Francois; Lozano, Ignacio F.; Wilhelm, Matthias; Muessigbrodt, Andreas; Huybrechts, Wim; Morgan, John; Anfinsen, Ole-Gunnar; Prior, David; Mont, Lluis; Mairesse, Georges H.; Boveda, Serge; Duru, Firat; Kautzner, Josef; Viskin, Sami; Geelen, Peter; Cygankiewicz, Iwona; Hoffmann, Ellen; Vandenberghe, Katleen; Cannom, David; Lampert, Rachel. **Intensive recreational athletes in the prospective multinational ICD Sports Safety Registry: Results from the European cohort.** *EUROPEAN JOURNAL OF PREVENTIVE CARDIOLOGY.* 26(7):764-775. I.F.: 5.640

9. San Antonio R, Chipa-Ccasani F, Apolo J, Linhart M, Trotta O, Pujol-López M, Niebla M, Alarcón F, Trucco E, Arbelo E, Roca-Luque I, Guasch E, Brugada J, Mont L, Tolosana JM. **Management of Anticoagulation in Patients Undergoing Leadless Pacemaker Implantation.** *HEART RHYTHM.* 16(12):1849-1854. I.F.: 5.225

10. Cano, Oscar; Bellver, Alejandro; Fontenla, Adolfo; Villuendas, Roger; Penafiel, Pablo; Francisco-Pascual, Jaume; Luis Ibanez, Jose; Bertomeu-Gonzalez, Vicente; Garcia-Riesco, Lorena; Garcia-Seara, Javier; Martinez-Brotons, Angel; Calvo, David; Campos, Bieito; Enero, Jose; Pelaez, Antonio; Martinez-Ferrer, Jose; Mazuelos, Francisco; Luis Morinigo, Jose; Exposito, Carmen; Arenal, Angel; Pombo, Marta; Segura, Federico; Pastor, Agustin; Perez, Fernando; Fernandez-Lozano, Ignacio; Jose Gonzalez-Ferrer, Juan; Moreno, Sara; Martin-Fernandez, Julia; Ormaetxe, Jose; Pavon, Ricardo; Maria Tolosana, Jose; Merce, Jordi; Garcia-Almagro, Francisco-Jose; Alvarez, Miguel; Macias, Alfonso; Peinado, Rafael; Linde, Cecilia; Normand, Camilla; Dickstein, Kenneth. **Spanish Results of the Second European Cardiac Resynchronization Therapy Survey (CRT-Survey II).** *REVISTA ESPANOLA DE CARDIOLOGIA.* 72(12):1020-1030. I.F.: 5.126

11. Penela D, Martínez M, Fernández-Armenta J, Aguinaga L, Tercedor L, Ordóñez A, Acosta J, Martí-Almor J, Bisbal F, Rossi L, Borràs R, Linhart M, Soto-Iglesias D, Jáuregui B, Ortiz-Pérez JT, Perea RJ, Bosch X, Mont L, Berruezo A. **Influence of myocardial scar on the response to frequent premature ventricular complex ablation.** *HEART.* 105(5):378-383. I.F.: 5.082

12. Rubies C, Dantas AP, Batlle M, Torres M, Farre R, Sangüesa G, Montserrat JM, Mont L, Almendros I, Guasch E. **Aortic remodelling induced by obstructive apneas is normalized with mesenchymal stem cells infusion.** *SCIENTIFIC REPORTS.* 9(1):11443-11443. I.F.: 4.011

13. Caldentey G, García De Frutos P, Cristóbal H, Garabito M, Berruezo A, Bosch X, San Antonio R, Flores-Umanzor E, Perea RJ, De Caralt TM, Rodríguez J, Ortiz-Pérez JT. **Serum levels of Growth Arrest-Specific 6 protein and soluble AXL in patients with ST-segment elevation myocardial infarction.** *EUROPEAN HEART JOURNAL-ACUTE CARDIOVASCULAR CARE.* 8(8):708-716. I.F.: 3.734

14. Soler M.J., Batlle M., Riera M., Campos B., Ortiz-Perez J.T., Anguiano L., Roca-Ho H., Farrero M., Mont L., Pascual J., Perez-Villa F. **ACE2 and ACE in acute and chronic rejection after human heart transplantation.** *INTERNATIONAL JOURNAL OF CARDIOLOGY.* 275:59-64. I.F.: 3.471

15. Mascheroni J, Mont L, Stockburger M, Patwala A, Retzlaff H, Gallagher AG, CRT-PROBIT group. **International expert consensus on a scientific approach to training novice cardiac resynchronization therapy implanters using performance quality metrics.** *INTERNATIONAL JOURNAL OF CARDIOLOGY.* 289:63-69. I.F.: 3.471

16. Bisbal F, Alarcón F, Ferrero de Loma-Osorio A, González-Ferrer JJ, Alonso-Martín C, Pachón M, Vallés E, Cabanas-Grandío P, Sanchez M, Benito E, Sarrias A, Ruiz-Granell R, Pérez-Villacastín J, Viñolas X, Arias MA, Martí-Almor J, García-Campo E, Fernández-Lozano I, Villuendas R, Mont L. **Diagnosis-to-Ablation Time in Atrial Fibrillation: A modifiable factor relevant to clinical outcome.** *JOURNAL OF CARDIOVASCULAR ELECTROPHYSIOLOGY.* 30(9):1483-1490. I.F.: 2.910

17. Batlle M, Castillo N, Alcarraz A, Sarvari S, Sangüesa G, Cristóbal H, García de Frutos P, Sitges M, Mont L, Guasch E. **Axl expression is increased in early stages of left ventricular remodeling in an animal model with pressure-overload.** *PLOS ONE.* 14(6):e0217926-e0217926. I.F.: 2.776

18. Barge-Caballero G., Castel-Lavilla M.A., Almenar-Bonet L., Garrido-Bravo I.P., Delgado J.F., Rangel-Sousa D., González-Costello J., Segovia-Cubero J., Farrero-Torres M., Lambert-Rodríguez J.L., Crespo-Leiro M.G., Hervás-Sotomayor D., Portolés-Ocampo A., Martínez-Sellés M., De la Fuente-Galán L., Rábago-Juan-Aracil G., González-Vílchez F., Mirabet-Pérez S., Muñiz J., Barge-Caballero E. **Venoarterial extracorporeal membrane oxygenation with or without simultaneous intra-aortic balloon pump support as a direct bridge to heart transplantation: results from a nationwide Spanish registry.** *INTERACTIVE CARDIOVASCULAR AND THORACIC SURGERY.* 29(5):670-677. I.F.: 1.931

Review / I.F.: 37.834

1. Willems S., Meyer C., De Bono J., Brandes A., Eckardt L., Elvan A., Van Gelder I., Goette A., Gulizia M., Haegeli L., Heidbuchel H., Haeusler K., Kautzner J., Mont L., Ng G., Szumowski L., Themistoclakis S., Wegscheider K., Kirchhof P. **Cabins, castles, and constant hearts: rhythm control therapy in patients with atrial fibrillation.** *EUROPEAN HEART JOURNAL.* 40(46):3793-3799c. I.F.: 23.239

2. Pujol-López M., San Antonio R., Mont L., Trucco E., Tolosana J., Arbelo E., Guasch E., Heist E., Singh J. **Electrocardiographic optimization techniques in resynchronization therapy.** *EUROPACE.* 21(9):1286-1296. I.F.: 6.100

3. Bertaglia E., Blank B., Blomström-Lundqvist C., Brandes A., Cabanelas N., Dan G., Dichtl W., Goette A., De Groot J., Lubinski A., Marijon E., Merkely B., Mont L., Piorkowski C., Sarkozy A., Sulke N., Vardas P., Velchev V., Wichterle D., Kirchhof P. **Atrial high-rate episodes: prevalence, stroke risk, implications for management, and clinical gaps in evidence.** EUROPACE. 21(10):1459-1467. I.F.: 6.100

4. Pujol-López M., San Antonio R., Tolosana J., Mont L. **Programming Pacemakers to Reduce and Terminate Atrial Fibrillation.** *CURRENT CARDIOLOGY REPORTS.* 21(10):127. I.F.: 2.395

Letters / I.F.: 7.003

1. Gimeno-Santos E, Coca-Martinez M, Arguis MJ, Navarro R, Lopez-Hernandez A, Castel MA, Romano B, Lopez-Baamonde M, Sandoval E, Farrero M, Sanz M, Bofill A, Martinez-Palli G. **Multimodal prehabilitation as a promising strategy for preventing physical deconditioning on the heart transplant waiting list.** *EUROPEAN JOURNAL OF PREVENTIVE CARDIOLOGY.* (25):2047487319889709. I.F.: 5.640

2. Cepas-Guillen, Pedro; Vasquez, Sara; Fernandez-Valledor, Andrea; San Antonio, Rodolfo; Flores-Umanzor, Eduardo; Martin-Yuste, Victoria. **A Need For Long-Term Results of LMCA-CTO-PCI.** *JOURNAL OF INVASIVE CARDIOLOGY.* 31(11):E342-E342. I.F.: 1.363

Editorial / I.F.: 28.562

1. Sommer P., Mont L. **Cardiac magnetic resonance based ablation procedures: Ready for take-off?** *EUROPACE.* 21(1):5-6. I.F.: 6.100

2. Mont L. **Thoracoscopic maze: yes, we can, but should we?** *EUROPACE.* 21(6):838-839. I.F.: 6.100

3. Guasch E, Sanz-de la Garza M, Mont L. **T-wave inversion in young athletes: Should we check their bones or their identity card? The quest for precision medicine.** *EUROPEAN JOURNAL OF PREVENTIVE CARDIOLOGY.* 26(6):638-640. I.F.: 5.640

4. Guasch, Eduard; Mont, Lluis. **Endurance training in young athletes: What happens in childhood, stays in childhood?** *EUROPEAN JOURNAL OF PREVENTIVE CARDIOLOGY.* 26(18):1998-2000. I.F.: 5.640

5. Roca-Luque, Ivo; Mont, Lluis. **Frequent premature ventricular complexes and normal ejection fraction: to treat or not to treat?** *HEART.* 105(18):1386-1387. I.F.: 5.082

Case Reports / I.F.: 12.503

1. Sánchez P, Apolo J, San Antonio R, Guasch E, Mont L, Tolosana JM. **Safety and usefulness of a second Micra transcatheter pacemaker implantation after battery depletion.** *EUROPACE.* 21(6):885-885. I.F.: 6.100

2. Linhart M, Tolosana JM, Chipa F, Trucco E, Mont L. **Inappropriate Shock Due to Air Entrapment in the Pocket of a Subcutaneous Implantable Cardioverter-defibrillator.** *REVISTA ESPANOLA DE CARDIOLOGIA.* 72(1):79-81. I.F.: 5.126

3. Carbonell B., Pujol-López M., San Antonio R., Vázquez S., Perea R., Andrea R. **Syncope: Arrhythmic onset of a metastasis.** *MEDICINA CLINICA.* 152(12):e73. I.F.: 1.277

Clinical Guidelines / I.F.: 12.2

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Consortium Publications / I.F.: 41.977

1. Habib G, Erba PA, Iung B, Donal E, Cosyns B, Laroche C, Popescu BA, Prendergast B, Tornos P, Sadeghpour A, Oliver L, Vaskelyte JJ, Sow R, Axler O, Maggioni AP, Lancellotti P, EURO-ENDO Investigators. **Clinical presentation, aetiology and outcome of infective endocarditis.** *EUROPEAN HEART JOURNAL.* 40(39):3222-3232. I.F.: 23.239

2. Pericà S JM, Llopis J, González-Ramallo V, Goenaga MÁ, Muñoz P, García-Leoni ME, Fariñas MC, Pajarón M, Ambrosioni J, Luque R, Goikoetxea J, Oteo JA, Carrizo E, Bodro M, Reguera-Iglesias JM, Navas E, Hidalgo-Tenorio C, Miró JM, Spanish Collaboration on Endocarditis-Grupo de Apoyo al Manejo de la Endocarditis Infecciosa en España (GAMES) investigators. **Outpatient Parenteral Antibiotic Treatment (OPAT) for Infective Endocarditis: a Prospective Cohort Study From the GAMES Cohort.** *CLINICAL INFECTIOUS DISEASES.* 69(10):1690-1700. I.F.: 9.055

3. Kuck, Karl-Heinz; Albenque, Jean-Paul; Chun, K. R. Julian; Fuernkranz, Alexander; Busch, Mathias; Elvan, Arif; Schlueter, Michael; Braegelmann, Kendra M.; Kueffer, Fred J.; Hemingway, Lauren; Arentz, Thomas; Tondo, Claudio; Brugada, Josep; FIRE AND ICE Investigators. **Repeat Ablation for Atrial Fibrillation Recurrence Post Cryoballoon or Radiofrequency Ablation in the FIRE AND ICE Trial.** *CIRCULATION-ARRHYTHMIA AND ELECTROPHYSIOLOGY.* 12(6):e007247. I.F.: 4.968

4. Pericàs JM, Nathavitharana R, Garcia-de-la-Mària C, Falces C, Ambrosioni J, Almela M, García-González J, Quintana E, Marco F, Moreno A, Bayer AS, Miró JM, Karchmer AW, Hospital Clínic Endocarditis Study Group. **Endocarditis Caused by Highly Penicillin-Resistant Viridans Group Streptococci: Still Room for Vancomycin-Based Regimens.** *ANTIMICROBIAL AGENTS AND CHEMOTHERAPY.* 63(8). I.F.: 4.715

GRANTS FOR RESEARCH IN PROGRESS

Mont JL. **Caracterització no invasiva dels teixits de l'aurícula esquerra per guiar l'ablació de la fibril·lació auricular i per predir els resultats del procediment així com la progressió de la malaltia.**
Sponsored by: Fundació la Marató de TV3.
TV3_Cor_15
Duration: 29/06/2016-28/06/2019

Mont JL. **Arítmies, resincronització i imatge cardíaques.**
Sponsored by: Generalitat de Catalunya.
AGAUR_SGR17_01548
Duration: 01/01/2017-31/12/2020

Mont L. **Incorporación de nuevos grupos al Consorcio CIBER. Área temática: enfermedades cardiovasculares.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). CB16/11/00354
Duration: 1/1/2017 - 12/31/2019

Mont L. **Ablación de fibrilación auricular guiada por resonancia magnética. Estudio randomizado de la eficacia de la identificación y aislamiento de las zonas de fibrosis.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00435
Duration: 01/01/2017-31/12/2019

Mont L. **Characterizing Atrial fibrillation by Translating its Causes into Health Modifiers in the Elderly.**
Sponsored by: European Comission.
CE_H2020-PHC-2014-2s (633196)
Duration: 01/05/2015-30/04/2020

San Antonio R. **Optimización de la Estimulación Multipunto mediante Intervalos Optimizados por Fusión (FOI) y Electrocardiographic Imaging (ECGI) en la Terapia de Resincronización Cardíaca.**
Sponsored by: Fundacion la Casa del Corazon. SEC_EstimCardiaca18
Duration: 10/26/2018-10/25/2019

2.13 Breathing disturbances in sleep

LOCATION
HCB building

KEYWORDS
1. **Sleep apnea**
2. **CPAP treatment**
3. **Telemdicine**

RELATED DISEASES
1. **Sleep disorders**
2. **SAOS-Sleep apnea**

GROUP INVOLVED IN
CIBERES

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	8	38,57	4,82	50%	25%

GROUP LEADER
Josep Mª Montserrat (HCB)
T. 93 227 57 46
jcanal@clinic.cat

POST-DOCTORAL RESEARCHERS
Monique Carolina Suárez (HCB)
Marta Torres (CIBER)

PRE-DOCTORAL RESEARCHERS
Onintza Garmendia (CIBER)

NURSING STAFF
M Concepción Ruiz (HCB)

PROBLEM

Sleep-related breathing disorders lack a cost-effective diagnostic method that is accessible to most patients. This makes it difficult to define a treatment that is both preventive and effective.

IMPACT

The group's research in mice has made it possible to demonstrate that sleep apnoea is dangerous.

In addition, it has shown that telemedicine is a valid and cost-effective system for treating sleep-related breathing disorders, and that it is useful to treat them with CPAP, an appliance providing continuous positive airway pressure throughout the respiratory cycle.

RESEARCH LINES

The group concentrates on three lines of work to optimise the management of sleep-related breathing disorders: basic experiments that enable us to understand these disorders; clinical experiments in patients to ascertain effects on them, and multicentre experiments designed to transfer knowledge gained from research to the healthcare system.

PUBLICATIONS

Originals / I.F.: 38.572

1. Cubillos-Zapata C, Martínez-García MÁ, Campos-Rodríguez F, Sánchez de la Torre M, Nagore E, Martorell-Calatayud A, Hernández Blasco L, Chiner Vives E, Abad-Capa J, Montserrat JM, Cabriada-Nuño V, Cano-Pumarega I, Corral-Peñafiel J, Diaz-Cambriles T, Mediano O, Somoza-González M, Dalmau-Arias J, Almendros I, Farré R, López-Collazo E, Gozal D, García-Río F, Spanish Sleep Network. **Soluble PD-L1 is a potential biomarker of cutaneous melanoma aggressiveness and metastasis in obstructive sleep apnea patients.** *EUROPEAN RESPIRATORY JOURNAL.* 53(2). I.F.: 11.807

2. Torres-Castro R, Vilaró J, Martí JD, Garmendia O, Gimeno-Santos E, Romano-Andrioni B, Embid C, Montserrat JM. **Effects of a Combined Community Exercise Program in Obstructive Sleep Apnea Syndrome: A Randomized Clinical Trial.** *J CLIN MED.* 8(3). I.F.: 5.688

3. Navarro-Soriano C, Martínez-García MA, Torres G, Barbé F, Caballero-Eraso C, Lloberes P, Diaz Cambriles T, Somoza M, Masa JF, González M, Mañas E, de la Peña M, García-Río F, Montserrat JM, Muriel A, Oscullo G, Feced Olmos L, García-Ortega A, Calhoun D, Campos-Rodriguez F, on behalf the Spanish Sleep Network. **Effect of continuous positive airway pressure in patients with true refractory hypertension and sleep apnea: a post-hoc intention-to-treat analysis of the HIPARCO randomized clinical trial.**

JOURNAL OF HYPERTENSION. 37(6):1269-1275. I.F.: 4.209

4. Rubies, Cira; Dantas, Ana-Paula; Batlle, Montserrat; Torres, Marta; Farre, Ramon; Sanguesa, Gemma; Montserrat, Josep M.; Mont, Lluis; Almendros, Isaac; Guasch, Eduard. **Aortic remodelling induced by obstructive apneas is normalized with mesenchymal stem cells infusion.** *SCIENTIFIC REPORTS.* 9(1):11443-11443. I.F.: 4.011

5. Campos-Rodriguez F, Navarro-Soriano C, Reyes-Nuñez N, Torres G, Caballero-Eraso C, Lloberes P, Diaz-Cambriles T, Somoza M, Masa JF, Gonzalez M, Mañas E, de la Peña M, Barbe F, Garcia-Rio F, Montserrat JM, Muriel A, Garcia-Ortega A, Selma MJ, Martinez-Garcia MA, on behalf the Spanish Sleep Network. **Good long-term adherence to continuous positive airway pressure therapy in patients with resistant hypertension and sleep apnea.** *JOURNAL OF SLEEP RESEARCH.* 28(5):e12805-e12805. I.F.: 3.432

6. Gasa M, López-Padrós C, Monasterio C, Salord N, Mayos M, Vilarrasa N, Fernandez-Aranda F, Montserrat JM, Dorca J. **Anthropometrical phenotypes are important when explaining obstructive sleep apnea in female bariatric cohorts.** *JOURNAL OF SLEEP RESEARCH.* 28(5):e12830. I.F.: 3.623

7. Navarro-Soriano C, Martínez-García MA, Torres G, Barbé F, Caballero-Eraso C, Lloberes P, Cambriles TD, Somoza M, Masa JF, González M, Mañas E, de la Peña M, García-Río F, Montserrat JM, Muriel A, Oscullo G, Olmos LF, García-Ortega A, Calhoun D, Campos-Rodriguez F, Spanish Sleep Network. **Factors associated with the changes from a resistant to a refractory phenotype in hypertensive patients: a Pragmatic Longitudinal Study.** *HYPERTENSION RESEARCH.* 42(11):1708-1715. I.F.: 3.217

8. Lugo V.M., Garmendia O., Suarez-Girón M., Torres M., Vázquez-Polo F.J., Negrín M.A., Moraleda A., Roman M., Puig M., Ruiz C., Egea C., Masa J.F., Farré R., Montserrat J.M. **Comprehensive management of obstructive sleep apnea by telemedicine: Clinical improvement and cost-effectiveness of a Virtual Sleep Unit.** A randomized controlled trial. *PLOS ONE.* 14(10):e0224069. I.F.: 2.776

Review / I.F.: 4.929

1.-Suarez-Giron M., Bonsignore M.R., Montserrat J.M. **New organisation for follow-up and assessment of treatment efficacy in sleep apnoea.** *EUROPEAN RESPIRATORY REVIEW : AN OFFICIAL JOURNAL OF THE EUROPEAN RESPIRATORY SOCIETY.* 28(153). I.F.: 4.929

Letters / I.F.: 19.381

1. Farré R., Montserrat J.M., Solana G., Gozal D., Navajas D. **Easy-to-build and affordable continuous positive airway pressure CPAP device for adult patients in low-income countries.** *EUROPEAN RESPIRATORY JOURNAL.* 53(5). I.F.: 11.807

2. Farré R, Navajas D, Gozal D, Montserrat JM. **Telematic Multi-physician Decision-making for Improving CPAP Prescription in Sleep Apnoea.** *ARCHIVOS DE BRONCONEUMOLOGIA.* 55(11):604-606. I.F.: 4.214

3. Villanueva J., Garmendia O., Farré R., Montserrat J. **Accuracy of one-night actigraphy for estimating sleep in patients with sleep apnea.** *SLEEP MEDICINE.* 63:3-4. I.F.: 3.360

Editorial / I.F.: 4.214

1. Montserrat JM, Sánchez-de-la Torre M, Terán J, Egea C. **Respiratory Disorders During Sleep: A New Dimension for 2018.** *ARCHIVOS DE BRONCONEUMOLOGIA.* 55(3):122-123. I.F.: 4.214

Consortium Publications / I.F.: 6.051

1. Gunduz, C.; Basoglu, O. Kacmaz; Hedner, J.; Bonsignore, M. R.; Hein, H.; Staats, R.; Bouloukaki, I; Roisman, G.; Pataka, A.; Sliwinski, P.; Ludka, O.; Pepin, J. L.; Grote, L.; Steiropoulos, P.; Verbraecken, J.; Petiet, E.; Trakada, G.; Montserrat, J. M.; Fietze, I; Penzel, T.; Ondrej, L.; Rodenstein, D.; Masa, J. F.; Bouloukaki, I; Schiza, S.; Kent, B.; McNicholas, W. T.; Ryan, S.; Riha, R. L.; Kvamme, J. A.; Schulz, R.; Grote, L.; Hedner, J.; Zou, D.; Pepina, J. L.; Levy, P.; Bailly, S.; Lavie, L.; Lavie, P.; Hein, H.; Basoglu, O. K.; Tasbakan, M. S.; Varoneckas, G.; Joppa, P.; Tkacova, R.; Staats, R.; Barbe, F.; Lombardi, C.; Parati, G.; Drummond, M.; van Zeller, M.; Bonsignore, M. R.; Marrone, O.; Petitjean, M.; Roisman, G.; Pretl, M.; Vitols, A.; Dogas, Z.; Galic, T.; Pataka, A.; Anttalainen, U.; Saaresranta, T.; Plywaczewski, R.; Sliwinski, P.; Bielicki, P.; European Sleep Apnoea Database Col. **Hyperlipidaemia prevalence and cholesterol control in obstructive sleep apnoea: Data from the European sleep apnea database (ESADA).** *JOURNAL OF INTERNAL MEDICINE.* 286(6):676-688. I.F.: 6.051

GRANTS FOR RESEARCH IN PROGRESS

Montserrat JM. **Telemedicina en pacientes con "sleep APNEA" que no cumplen adecuadamente el tratamiento con CPAP. Cumplidores mínimos vs cumplidores óptimos.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/01068
Duration: 01/01/2018-31/12/2020

Montserrat JM. **Aplicabilidad y coste eficiencia de un modelo de gestión para el síndrome de apneas durante el sueño basado en el trabajo en red y telemedicina.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI14/00416
Duration: 01/01/2015-30/06/2019

DOCTORAL THESES

Montserrat JM, Farre R. **Advanced methodologies for improving the characterization and treatment of sleep apnea.**
PhD student: Jair Asir Villanueva Padilla

2.14 Clinical and experimental respiratory immunoallergy

LOCATION
CELLEX building, floor 2B

KEYWORDS
1. **Chronic rhinosinusitis and nasal polyps**
2. **Aspirin sensitive asthma**
3. **Drug & Food allergy**
4. **Olfactory disorders**
5. **Urticaria and mast cells**
6. **Endoscopic & Skull base surgery**

RELATED DISEASES
1. **Rhinosinusitis (acute, COVID-19, chronic, nasal polyps)**
2. **Asthma (allergic, non-allergic, eosinophilic, N-ERD)**
3. **Rhinitis (allergic, non-allergic)**
4. **Smell and taste disorders**
5. **Drug-induced allergies**
6. **Food-induced allergies**
7. **Atopic dermatitis and urticaria**
8. **Sinus and skull base tumors**

GROUP INVOLVED IN
AGAUR_SGR17: 01090
CIBER_CIBERES
RETIC_RIRAAF
RETIC_ARADYAL

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**30**	**187,94**	**6,26**	**50%**	**27%**



GROUP LEADER
Joaquim Mullol (IDIBAPS)
T. 93 227 98 72
jmullol@clinic.cat

RESEARCHERS
Isam Alobid (HCB)
Joan Bartra (HCB)
Joaquim Enseñat (HCB)
Maria Concepció Marín (IDIBAPS)
Margarita Martin Andorrà (UB)
Rosa Maria Muñoz Cano (HCB-IDIBAPS)
Mariona Pascal (HCB)
César Picado (UB)
Antonio Valero (HCB)

POST-DOCTORAL RESEARCHERS
Ebymar Arismendi (CIBER)
Joan Berenguer (HCB)
Manuel Bernal (HCB)
Irina Bobolea (HCB)
Enrich Erola (UB)
Josep Maria Guilemany (HCB)
Sara Laxe (HCB)
Ruth Montalbo (UB)
Arnau Navinés (UB)
Jordi Roca (FCRB)
Maria Rueda (UB)
Alfonso Santamaría (HCB)

PRE-DOCTORAL RESEARCHERS
Claudio Arancibia (HCB)
Giovanna Araujo (FCRB)
Sara Balsells (FCRB)
Marina Bantulà (FCRB)
Rocío Casas (IDIBAPS)
Federico de la Roca (FCRB)
Sònia Gelis (HCB)
Yanru Guo (UB)
Francesca Jaume (UB)
Cristobal Langdon (HCB)
Eduardo Lehrer (HCB)
Mauricio López Chacón (HCB)
Paula Mackers (UB)
Elizabeth Proaño (UB)
Paula Ribó (HCB)
María Jesús Rojas (HCB)
Clara San Bartolomé (HCB)
Sònia Vicens (IDIBAPS)

TECHNICIANS
Sílvia Centellas (HCB)
Rosa Cortés (HCB)
Mireya Fuentes (IDIBAPS)
Gemma Lopez Saiz (FCRB)
María Pérez González (FCRB)
M. Carmen Sánchez Fernández (HCB)

ADMINISTRATIVE STAFF
Paola Cucagna (FCRB)

PROBLEM

Respiratory and food allergies, chronic rhinosinusitis, and asthma are chronic inflammatory diseases with a very high prevalence: they affect more than a third of the general population, have a major impact on patients' sense of smell, reduce their quality of life, and have an enormous cost in terms of long-term health care resources.

Identifying the mechanisms of action responsible for these disorders may improve the efficacy of current treatments, allow for the development of new therapeutic strategies, and also facilitate the identification of biological markers (biomarkers) for diagnosis and for monitoring therapeutic response, within a context of personalized and precision medicine.

APPROACH

The group forms part of a multidisciplinary team of physicians and researchers who are studying the mechanisms involved in certain chronic and allergic respiratory diseases and in the problem of olfactory dysfunction.

Its translational research aims to find answers in the laboratory to questions that arise in clinical practice and to integrate the results of clinical studies and patient samples with those of animal experiments and cell models.

Analysis of specific metabolites and biomarkers using cellular and molecular biology techniques and bioinformatics to process the data are helping the group to obtain improved knowledge of the mechanisms involved in these disorders and to answer some of the questions.

IMPACT

One of the most group's most highly pursued goals is the identification of diagnostic biomarkers that may even predict treatment efficacy in inflammatory and allergic disorders and in diseases that lead to loss of the sense of smell.

By means of studies in humans and the use of in vivo (animals) and in vitro models, the group is able to evaluate the anti-inflammatory potency of new drugs, and determine the pathophysiology of certain clinical problems (asthma, chronic rhinosinusitis, food allergies, rash, intolerance to NSAIDs) as well as the mechanism of action of existing drugs (corticosteroids, biological drugs) and of new therapies (post-traumatic olfactory training and cell therapy).

RESEARCH LINES

- Inflammation of the upper and lower respiratory mucosa.

- Sense of smell in health and disease.

- Food and drug allergy.

- Glucocorticoid resistance.

- Aspirin and non-steroidal anti-inflammatory drug (nsaid) intolerance.

- Pathophysiology of eosinophils, mast cells, and basophils.

- Skull base tumours treating sleep-related breathing disorders, and that it is useful to treat them with CPAP, an appliance providing continuous positive airway pressure throughout the respiratory cycle.

PUBLICATIONS

Originals / I.F.: 187.936

1. Bachert C, Han JK, Desrosiers M, Hellings PW, Amin N, Lee SE, Mullol J, Greos LS, Bosso JV, Laidlaw TM, Cervin AU, Maspero JF, Hopkins C, Olze H, Canonica GW, Paggiaro P, Cho SH, Fokkens WJ, Fujieda S, Zhang M, Lu X, Fan C, Draikiwicz S, Kamat SA, Khan A, Pirozzi G, Patel N, Graham NMH, Ruddy M, Staudinger H, Weinreich D, Stahl N, Yancopoulos GD, Mannent LP. **Efficacy and safety of dupilumab in patients with severe chronic rhinosinusitis with nasal polyps (LIBERTY NP SINUS-24 and LIBERTY NP SINUS-52): results from two multicentre, randomised, double-blind, placebo-controlled, parallel-group phase 3 trials.** *LANCET.* 394(10209):1638-1650. I.F.: 59.102

2. Bédard A, Basagaña X, Anto JM, Garcia-Aymerich J, Devillier P, Arnavielhe S, Bedbrook A, Onorato GL, Czarlewski W, Murray R, Almeida R, Fonseca J, Costa E, Malva J, Morais-Almeida M, Pereira AM, Todo-Bom A, Menditto E, Stellato C, Ventura MT, Cruz AA, Stelmach R, da Silva J, Larenas-Linnemann D, Fuentes-Pérez JM, Huerta-Villalobos YR, Emuzyte R, Kvedariene V, Valiulis A, Kuna P, Samolinski B, Klimek L, Mösges R, Pfaar O, Shamai S, Annesi-Maesano I, Bosse I, Demoly P, Fontaine JF, Cardona V, Mullol J, Valero A, Roller-Wirnsberger RE, Tomazic PV, Chavannes NH, Fokkens WJ, Reitsma S, Bewick M, Ryan D, Sheikh A, Haahtela T, Toppila-Salmi S, Valovirta E, Makris M, Papadopoulos NG, Prokopakis EP, Psarros F, Cingi C, Gemicio?lu B, Yorgancioglu A, Bosnic-Anticevich S, O'Hehir RE, Bachert C, Hellings PW, Pugin B, Bindslev-Jensen C, Eller E, Kull I, Melén E, Wickman M, De Vries G, van Eerd M, Agache I, Ansotegui IJ, Dykewicz MS, Casale T, Wallace D, Waserman S, Laune D, Bousquet J, MASK study group. **Mobile technology offers novel insights on control and treatment of allergic rhinitis.** *JOURNAL OF ALLERGY AND CLINICAL IMMUNOLOGY.* 144(1):135-143.e6. I.F.: 14.110

3. Ballmer-Weber BK, Lidholm J, Lange L, Pascal M, Lang C, Gernert S, Lozano-Blasco J, Gräni N, Guillod C, Wangorsch A, Hanschmann KM, Pontoppidan B, Tjäder L, Bartra J, Vieths S . **Allergen recognition patterns in walnut allergy are age dependent and correlate with the severity of allergic reactions.** *JOURNAL OF ALLERGY AND CLINICAL IMMUNOLOGY-IN PRACTICE.* 7(5):1560-1567. I.F.: 7.550

4. Pérez de Llano LA, Cosío BG, Domingo C, Urrutia I, Bobolea I, Valero A, Entrenas Costa LM, Quirce S, Barranco P, Marina Malanda N, Andrés LP, Alvarez-Gutiérrez FJ. **Efficacy and safety of reslizumab in severe asthma patients with inadequate response to omalizumab: a multicentre, open-label, pilot study.** *JOURNAL OF ALLERGY AND CLINICAL IMMUNOLOGY-IN PRACTICE.* 7(7):2277-2283.e2. I.F.: 7.550

5. Decuyper, Ine I. Pascal, Mariona Van Gasse, Athina L. Mertens, Christel Diaz-Perales, Araceli Araujo, Giovanna Torradeflot, Maria Rius, Josefina Balsells, Sara Munoz-Cano, Rosa M. Bartra, Joan Li, Lynne Sabato, Vito Hagendorens, Margo M. Bridts, Chris H. De Clerck, Luc S. Ebo, Didier G. Faber, Margaretha A. **Performance of basophil activation test and specific IgG4 as diagnostic tools in nonspecific lipid transfer protein allergy: Antwerp-Barcelona comparison.** *ALLERGY.* 75(3):616-624. I.F.: 6.771

6. Doña I, Jurado-Escobar R, Perkins JR, Ayuso P, Plaza-Serón MC, Pérez-Sánchez N, Campo P, Bogas-Herrera G, Bartra J, Torres MJ, Sanak M, Cornejo-García JA . **Eicosanoid mediator profiles in different phenotypes of**

nonsteroidal anti-inflammatory drug-induced urticaria. *ALLERGY.* 74(6):1135-1144. I.F.: 6.771

7. Menditto E, Costa E, Midão L, Bosnic-Anticevich S, Novellino E, Bialek S, Briedis V, Mair A, Rajabian-Soderlund R, Arnavielhe S, Bedbrook A, Czarlewski W, Annesi-Maesano I, Anto JM, Devillier P, De Vries G, Keil T, Sheikh A, Orlando V, Larenas-Linnemann D, Cecchi L, De Feo G, Illario M, Stellato C, Fonseca J, Malva J, Morais-Almeida M, Pereira AM, Todo-Bom AM, Kvedariene V, Valiulis A, Bergmann KC, Klimek L, Mösges R, Pfaar O, Zuberbier T, Cardona V, Mullol J, Papadopoulos NG, Prokopakis EP, Bewick M, Ryan D, Roller-Wirnsberger RE, Tomazic PV, Cruz AA, Kuna P, Samolinski B, Fokkens WJ, Reitsma S, Bosse I, Fontaine JF, Laune D, Haahtela T, Toppila-Salmi S, Bachert C, Hellings PW, Melén E, Wickman M, Bindslev-Jensen C, Eller E, O'Hehir RE, Cingi C, Gemicio?lu B, Kalayci O, Ivancevich JC, Bousquet J, MASK group. **Adherence to treatment in allergic rhinitis using mobile technology.** *CLINICAL AND EXPERIMENTAL ALLERGY.* 49(4):442-460. I.F.: 4.741

8. Navines-Ferrer, Arnau Ainsua-Enrich, Erola Serrano-Candelas, Eva Sayos, Joan Martin, Margarita. **Myo1f, an Unconventional Long-Tailed Myosin, Is a New Partner for the Adaptor 3BP2 Involved in Mast Cell Migration.** *FRONTIERS IN IMMUNOLOGY.* 10(MAY):1058. I.F.: 4.716

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Letters / I.F.: 25.745

1. Seys S.F., Quirce S., Agache I., Akdis C.A., Alvaro-Lozano M., Antolín-Amérigo D., Bjermer L., Bobolea I., Bonini M., Bossios A., Brinkman P., Bush A., Calderon M., Canonica W., Chanez P., Couto M., Davila I., Del Giacco S., Del Pozo V., Erjefält J.S., Gevaert P., Hagedoorn P., G. Heaney L., Heffler E., Hellings P.W., Jutel M., Kalayci O., Kurowski M.M., Loukides S., Nair P., Palomares O., Polverino E., Sanchez-Garcia S., Sastre J., Schwarze J., Spanevello A., Ulrik C.S., Usmani O., Van den Berge M., Vasakova M., Seys S.F., Quirce S. **Severe asthma: Entering an era of new concepts and emerging therapies: Highlights of the 4th international severe asthma forum, Madrid, 2018.** *ALLERGY.* 74(11):2244-2248. I.F.: 6.771

2. Suarez-Giron M., Almendros I., Roca-Ferrer J., Picado C. **Overnight Change in Urinary Prostacyclin and Thromboxane in Obstructive Sleep Apnea.** *ARCHIVOS DE BRONCONEUMOLOGIA.* 55(6):334-336. I.F.: 4.214

3. Díaz-Campos R.M., Bobolea I., Girón-Matute W., Guillén-Vera D., De las Cuevas-Moreno N., Melero-Moreno C. **Autoimmune diseases and asthma.** *JOURNAL OF INVESTIGATIONAL ALLERGOLOGY AND CLINICAL IMMUNOLOGY.* 29(3):246-248. I.F.: 3.802

4. Rueda M., López-Matas M., Agustí C., Lucena C., Carnés J., Valero A. **Allergens are not detected in the bronchoalveolar lavage fluid of patients undergoing fiberoptic bronchoscopy**. *JOURNAL OF INVESTIGATIONAL ALLERGOLOGY AND CLINICAL IMMUNOLOGY.* 29(2):148-150. I.F.: 3.802

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6. Pugin B, Deneyer L, Bachert C, Alobid I, Bousquet J, De Carlo G, Fokkens WJ, Gane S, Hopkins C, Holzmeister C, Langdon C, Lourijsen ES, Lund VJ, Marien G, Mavris M, Mullol J, Pereira-Perez C, Tomazic PV, Vanderveken O, Hellings PW, Seys SF. **Patient Advisory Board for Chronic Rhinosinusitis - A EUFOREA initiative.** *RHINOLOGY.* 57(5):331-335. I.F.: 3.354

Editorial / I.F.: 23.528

1. Laidlaw TM, Mullol J, Fan C, Zhang D, Amin N, Khan A, Chao J, Mannent LP. **Dupilumab improves nasal polyp burden and asthma control in patients with CRSwNP and AERD.** *JOURNAL OF ALLERGY AND CLINICAL IMMUNOLOGY-IN PRACTICE.* 7(7):2462-2465.e1. I.F.: 7.550

2. Bachert C, Hellings PW, Mullol J, Naclerio RM, Chao J, Amin N, Grabher A, Swanson BN, Hamilton JD, Guillonneau S, Taniou C, Zhang D, Pirozzi G, Graham NMH, Staudinger H, Mannent LP, Khan A. **Dupilumab improves patient-reported outcomes in patients with chronic rhinosinusitis with nasal polyps and comorbid asthma.** *JOURNAL OF ALLERGY AND CLINICAL IMMUNOLOGY-IN PRACTICE.* 7(7):2447-2449.e2. I.F.: 7.550

3. Picado C, Pernigotti A, Arismendi E. **Asthma: A New Cardiovascular Risk Factor?** *ARCHIVOS DE BRONCONEUMOLOGIA.* 55(7):353-354. I.F.: 4.214

4. Arismendi E, Picado Vallés C. **Current Role of Biomarkers in Severe Uncontrolled Asthma.** *ARCHIVOS DE BRONCONEUMOLOGIA.* (19):30331-X. I.F.: 4.214

Case Reports / I.F.: 3.802

1. Alarcon, E. Sansosti, A. Navarro, B. Claver, A. Botey, E. Cistero-Bahima, A. Bartra, J. **Amoxicillin-Induced Aseptic Meningitis: 2 Case Reports and Appraisal of the Literature.** *JOURNAL OF INVESTIGATIONAL ALLERGOLOGY AND CLINICAL IMMUNOLOGY.* 29(3):248-250. I.F.: 3.802

Clinical Guidelines / I.F.: 6.771

1. Kowalski ML, Agache I, Bavbek S, Bakirtas A, Blanca M, Bochenek G, Bonini M, Heffler E, Klimek L, Laidlaw TM, Mullol J, Ni?ankowska-Mogilnicka E, Park HS, Sanak M, Sanchez-Borges M, Sanchez-Garcia S, Scadding G, Taniguchi M, Torres MJ, White AA, Wardzy?ska A. **Diagnosis and Management of NSAID-Exacerbated Respiratory Disease (N-ERD) - a EAACI position paper.** *ALLERGY.* 74(1):28-39. I.F.: 6.771

Consortium Publications / I.F.: 11.807

1. Roche N, Anzueto A, Bosnic Anticevich S, Kaplan A, Miravitlles M, Ryan D, Soriano JB, Usmani O, Papadopoulos NG, Canonica GW, Respiratory Effectiveness Group Collaborators. **The importance of real-life research in respiratory medicine: manifesto of the Respiratory Effectiveness Group: Endorsed by the International Primary Care Respiratory Group and the World Allergy Organization.** *EUROPEAN RESPIRATORY JOURNAL.* 54(3):1901511. I.F.: 11.807

GRANTS FOR RESEARCH IN PROGRESS

Alobid I. **El impacto de la inflamación sobre el sentido del olfato en pacientes con poliposis nasal: el rol de los eosinófilos sobre la neurogenesis del neuroepitelio olfatorio.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00262
Duration: 01/01/2016-31/12/2019

Araujo G. **El papel de la prueba de provocación nasal alérgeno específica con Pru p3 para el diagnóstico de alergia a alimentos por proteína de transferencia de lípidos del melocotón.**
Sponsored by: Societat Catalana d'Al·lèrgia i Immunologia Clínica (SCAIC). BECA_SCAIC2017
Duration: 01/01/2018-3

Bartra J. **Red Temática de Investigación Cooperativa en Salud - Reacciones adversas a alérgenos y fármacos.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). RD16/0006/0007
Duration: 01/01/2017-31/12/2021

Bartra J. **Mecanismos y predicción de reacciones adversas medicamentosas y enfermedad alérgica.**
Sponsored by: Fundación SEAIC. AYUDAS_18-01
Duration: 25/06/2018

Bobolea I. **Identificación de biomarcadores no invasivos asociados a los distintos fenotipos y endotipos de asma descritos. Utilidad clínica y valor pronóstico de la periostina, en vistas al tratamiento personalizado.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI14/00711
Duration: 06/06/2017-30/06/2019

Bobolea I. **Estudio de los mecanismos por los cuales el Omalizumab es capaz de mejorar el asma persistente asociada a la Enfermedad Respiratoria Exacerbada por AINES (EREA).**
Sponsored by: Sociedad Española de Neumología y Cirugía Torácica (SEPAR). 687/2018
Duration: 01/04/2018-31/12/2021

De la Roca F. **Perfil de sensibilización a alérgenos del D. pteronyssinus en sujetos adultos con alergia a ácaros del polvo doméstico y su relación con la presencia de asma y la gravedad de los síntomas respiratorios (rinitis/conjuntivitis y asma).**
Sponsored by: Fundación SEAIC - AYUDAS _17
Duration: 1/01/2017-31/12/2019

De la Roca F. **Perfil de sensibilización a alérgenos del D. pteronyssinus en sujetos adultos con alergia a ácaros del polvo doméstico y su relación con las características del asma y su respuesta a la inmunoterapia especifica.**
Sponsored by: Fundació Catalana de Pneumologia (FUCAP) – AJUTS. 17
Duration: 1/01/2017-31/12/2019

Casas R. **Análisis de la sensibilidad y reactividad de los basófilos en la alergia a alimentos inducida o no por cofactor y del efecto protector de PGE2 a través de sus receptores.**
Sponsored by: Fundacio Academia de les Ciencies Mediques. BECA_SCAIC2019_01
Duration: 15/09/2019-14/09/2021

Enseñat J. **Estudio de los abordajes endoscópicos multiportales mínimamente invasivos para el tratamiento de tumores cerebrales complejos. Diseño de nuevos modelos anatómicos y traslación clínica.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI19/00592
Duration: 01/01/2019-31/12/2022

Mullol J, Roca-Ferrer J. **Expression of Rupatadine on PAF-induced inflammation in blood eosinophils and epithelial cells from nasal polyps and healthy nasal mucosa (RINOPAF-2 Study).**
Sponsored by: URIACH – RINOPAF-02-2018
Duration: 01/01/2018-31/12/2020

Mullol J. **Función reguladora de los microRNA sobre los genes diana involucrados en la diferenciación epitelial de la mucosa nasosinusal en la poliposis nasal.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00046
Duration: 01/01/2016-31/12/2019

Mullol J. **Papel de los microRNA en la modulación in vitro de la diferenciación mucociliar e inflamación del epitelio nasosinusal en la poliposis nasal.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00469
Duration: 01/01/2019-31/12/2021

Muñoz-Cano R. **Estudios de los mecanismos patogénicos en la anafilaxia inducida por alimentos y exacerbada oir antiinflamatorios no esteroideos (AINEs).**
Sponsored by: Instituto de Salud Carlos III. PI16/00696
Duration: 01/01/2017-31/12/2020

Pascal M. **Síndrome LTP: identificación y caracterización clínica de los epítopos inmunodominantes B y T y su presentación antigénica HLA.**
Sponsored by: Instituto de Salud Carlos III. PI16/00344
Duration: 01/01/2017-31/12/2019

Picado C. **Estudio de la prevalencia y de los mecanismos responsables de las manifestaciones clínicas respiratorias inducidas por las bebidas alcohólicas: Papel de los Receptores de Potenciales Transitorios.**
Sponsored by: Sociedad Española de Neumología y Cirugía Torácica (SEPAR). 495/2017
Duration: 1/01/2018-31/12/2021

Ribó P. **Prevalencia y mecanismos responsables de la clínica respiratorias inducida por bebidas alcohólicas: Papel de los Receptores de Potenciales Transitorios.**
Sponsored by: Fundación SEAIC.
AYUDAS _17-27
Duration: 01/01/2018-31/12/2021

DOCTORAL THESES

Martin Andorrà M. **New insights in mast cell function triggered by FcεRI, KIT and MRGPRX2 receptors.**
PhD student: Arnau Navines Ferrer

2.15 Translational research in post-transplant neoplasia

LOCATION
CELLEX building 2B

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**3**	**12,30**	**4,10**	**100%**	**33%**



GROUP LEADER
Ignacio Revuelta (HCB-IDIBAPS)
T. 932275400 (Ext.: 4410)
irevuelt@clinic.cat

POST-DOCTORAL RESEARCHERS
Valeria Tubita (IDIBAPS-FCRB)

PRE-DOCTORAL RESEARCHERS
David Cucchiari (HCB)

PROBLEM

A kidney transplant is the best and often, the only treatment available to terminal chronic kidney patients. Advances in medicine have made it possible to lengthen the useful life of many organs, but this is often accompanied by risks for patients. Despite being a minor problem, the rejection of an organ is the cause of most transplant deaths in the long term.

Chronic treatment with immunosuppressant drugs alters the immune system, exposing the patient to infections and tumours. To prevent this, it is necessary to have early diagnostic and therapeutic tools that are effective and with low toxicity levels.

APPROACH

There is a need to establish a distinction between and describe transplant patients from the clinical and from the molecular standpoint, due to the enormous heterogeneity of this group.

Immunological, histological (of the tissues) and biochemical monitoring is not sufficient, and we need to find new markers and new technologies.

Studying the possibilities of nanomedicine as a diagnostic and therapeutic tool could provide a response in many areas. Moreover, the addition of add big data and artificial intelligence represents a great step forward in the future of organ transplants.

IMPACT

The establishment of a clinical and molecular definition of patients in relation to their risks in terms of immunology, infection and neoplasms makes it possible to apply personalised medicine to organ transplants.

The group has experience with patients who have rejected a kidney transport and have then developed colon and skin cancer or Kaposi's sarcoma. However, apart from medication, these patients require diagnostic algorithms based on big data and artificial intelligence to attack the tumours while they remain immunodepressed. The possibility of adding nanomedicine as a biomarker and therapeutic arsenal, as demonstrated in post-transplant cancer, could lead to the use of new therapeutic strategies in these patients.

RESEARCH LINES

- Artificial intelligent and big data in nephrology and kidney transplant world.

- Immune exosomes and antibody mediated rejection and graft loss.

- Incidence, behaviour, risk factors, and therapeutic approach of cancer in kidney transplant patients.

- Molecular characterization of posttransplant malignancies.

- Role of cancer exosomes in tumor progression and metastasis in posttransplant malignancies under different immunousppressive therapy.

PUBLICATIONS

Originals / I.F.: 12.302

1. Cucchiari D, Molina-Andujar A, Montagud-Marrahi E, Revuelta I, Rovira J, Ventura-Aguiar P, Piñeiro GJ, De Sousa-Amorim E, Esforzado N, Cofán F, Torregrosa JV, Ugalde-Altamirano J, Ricart MJ, Centellas-Pérez FJ, Solè M, Martorell J, Ríos J, Campistol JM, Diekmann F, Oppenheimer F. **Use of de-novo mtor inhibitors in hypersensitzed kidney trasplant recipients: experience from clinical practice.** *TRANSPLANTATION.* I.F.: 4.593

2. Tubita V, Segui-Barber J, Lozano JJ, Banon-Maneus E, Rovira J, Cucchiari D, Moya-Rull D, Oppenheimer F, Del Portillo H, Campistol JM, Diekmann F, Ramirez-Bajo MJ, Revuelta I. **Effect of immunosuppression in miRNAs from extracellular vesicles of colorectal cancer and their influence on the pre-metastatic niche.** *SCIENTIFIC REPORTS.* 9(1):11177. I.F.: 4.011

3. Cucchiari D., Ríos J., Molina-Andujar A., Montagud-Marrahi E., Revuelta I., Ventura-Aguiar P., Piñeiro G.J., De Sousa-Amorim E., Esforzado N., Cofán F., Torregrosa J.V., Ugalde-Altamirano J., Ricart M.J., Rovira J., Torres F., Solè M., Campistol J.M., Diekmann F., Oppenheimer F. **Combination of calcineurin and mTOR inhibitors in kidney transplantation: a propensity score analysis based on current clinical practice.** *JOURNAL OF NEPHROLOGY.* I.F.: 3.698

GRANTS FOR RESEARCH IN PROGRESS

Revuelta I. **Papel de los exosomas de células inmunes de memoria (InmEx) en la activación del endotelio y desarrollo precoz del rechazo mediado por anticuerpos en el trasplante renal.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00115
Duration: 01/01/2017-31/12/2019

DOCTORAL THESES

Revuelta I. **Papel de los exosomas de células tumorales en la progresión tumoral y metástasis en cáncer posttrasplante bajo diferentes tipos de inmunosupresión.**
PhD student: Valeria Tubita

2.16 Atherosclerosis, coronary disease and heart failure

LOCATION
CELLEX building, floor 2A

KEYWORDS
1. **Acute myocardial infarction**
2. **Percutaneous coronary intervention.**
3. **Stent**
4. **Biodegradable device**
5. **Therapeutic hypothermia**
6. **Stem cell therapy**
7. **Heart failure**
8. **Structural heart disease**

RELATED DISEASES
1. **Coronary artery disease**
2. **Structural heart disease**
3. **Acute coronary syndrome**
4. **Congestive heart failure**
5. **Pulmonary hypertension**

GROUP INVOLVED IN
AGAUR_SGR17: 1525

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**68**	**505,58**	**7,43**	**51%**	**24%**



GROUP LEADER
Manel Sabaté (HCB)
T. 93 227 55 19 / 93 227 30 41
masabate@clinic.cat

RESEARCHERS
Rut Andrea (HCB)
Xavier Bosch (HCB)
Salvatore Brugaletta (HCB)
Carles Falces (HCB)
Marta Farrero (HCB)
Xavier Freixa (HCB)
Ana García Álvarez (HCB)
Mònica Masotti (HCB)
Joan Carles Paré (HCB)
Felix Pérez Villa (HCB)
Josep Lluis Pomar (HCB)
Montserrat Rigol (FCRB)
Mercè Roqué (HCB)
Ana Paula Villela (IDIBAPS)

POST-DOCTORAL RESEARCHERS
Gustavo Jiménez Britez (FCRB)
Laura Novensa (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Ioannis Andreou (FCRB)
Marta Arrieta (FCRB)
Joaquim Bobi (FCRB)
Pedro Luis Cepas (HCB)
Oriol de Diego (HCB)
Eduardo Josue Flores (HCB)
John García Penayo (FCRB)
Marco Hernández Enríquez (FCRB)
Francisco Rafael Jiménez Trinidad (FCRB)
Teresa López Sobrino (HCB)
Lina Guiomar Mendieta (HCB)
Luis Gabriel Ortega (HCB)
Pedro Ramón Pérez Fuentes (FCRB)
Juan José Rodríguez Arias (HCB)

NURSING STAFF
Anna Barrabés (FCRB)
Elisabet Codina (FCRB)
Elisabet de Mingo (FCRB)

ADMINISTRATIVE STAFF
Anna Maria Campos (FCRB)
Eva Maria Trelliso (FCRB)

COLLABORATOR
Susanna Prat (HCB)
Ander Regueiro (HCB)
Núria Solanes (FCRB)

PROBLEM

Cardiovascular diseases are the most frequent cause of death in the western world, causing more than 4 million deaths every year in Europe, and 45% of all deaths in Catalonia, being the leading cause of death in women and the second in men.

Population ageing causes these diseases to appear increasingly in more complex patients. In addition, today's lifestyles do not favour prevention. Research in this context must be at all levels: diagnosis, prevention, regenerative and therapeutic.

APPROACH

The group's vocation is to conduct research on the diagnosis and mechanisms that cause diseases of the heart's arteries using sophisticated imaging techniques and experimental models.

Another important aspect of its research is the evaluation of advanced therapies (with stem cells) and of new devices for the treatment of the most prevalent cardiovascular diseases (myocardial infarction, valvopathies, pulmonary hypertension, congenital illnesses). The group does research with translational, multidisciplinary, collaborative vocation between different centres and groups and Pan-European countries.

IMPACT

In basic research, the group identifies mechanisms for the regulation of stem cell therapy for the regeneration and improvement of blood circulation to the heart muscle. In addition, it studies the mechanisms of cellular ageing and inflammatory response after an infarct or a therapeutic procedure.

From a clinical point of view, it evaluates new devices (such as biodegradable stents or percutaneous valves) using different imaging and vascular physiology techniques, as well as new strategies for the treatment of myocardial infarction, cardiogenic shock, heart failure and pulmonary hypertension. The results of these studies have been published in high-impact clinical journals and are part of European clinical practice guidelines.

RESEARCH LINES

- To design experimental and clinical studies to evaluate the performance of novel devices and strategies to treat coronary artery disease, including chronic and acute coronary syndromes, cardiogenic shock and cardiac arrest.

- To determine the safety, efficacy and efficiency of new transcatheter and minimally invasive devices to treat structural and congenital heart disease and the role of imaging techniques.

- To evaluate neurohormonal activation, fibrotic process, genetic and environmental factors associated with ventricular remodeling in dilated cardiomyopathy.

- To evaluate new pharmacological and invasive treatments for pulmonary hypertension.

- To evaluate the influence of hormonal factors, gender and aging in ischemic heart disease.

- To perform experimental models of neointimal hyperplasia, endothelialization, vascular inflammation and thrombosis.

- To study the regulatory mechanisms and efficacy of stem cell therapy in experimental models and in clinical contexts.

PUBLICATIONS

Originals / I.F.: 505.58

1. Stone G.W., Pieter Kappetein A., Sabik J.F., Pocock S.J., Morice M.C., Puskas J., Kandzari D.E., Karmpaliotis D., Morris Brown W., Lembo N.J., Banning A., Merkely B., Horkay F., Boonstra P.W., Van Boven A.J., Ungi I., Bogáts G., Mansour S., Noiseux N., Sabaté M., Pomar J., Hickey M., Gershlick A., Buszman P.E., Bochenek A., Schampaert E., Pagé P., Modolo R., Gregson J., Simonton C.A., Mehran R., Kosmidou I., Généreux P., Crowley A., Dressler O., Serruys P.W. **Five-year outcomes after PCI or CABG for left main coronary disease.** *NEW ENGLAND JOURNAL OF MEDICINE.* 381(19):1820-1830. I.F.: 70.670

2. Piccolo R, Bonaa KH, Efthimiou O, Varenne O, Baldo A, Urban P, Kaiser C, Remkes W, Räber L, de Belder A, van 't Hof AWJ, Stankovic G, Lemos PA, Wilsgaard T, Reifart J, Rodriguez AE, Ribeiro EE, Serruys PWJC, Abizaid A, Sabaté M, Byrne RA, de la Torre Hernandez JM, Wijns W, Jüni P, Windecker S, Valgimigli M, Coronary Stent Trialists' Collaboration. **Drug-eluting or bare-metal stents for percutaneous coronary intervention: a systematic review and individual patient data meta-analysis of randomised clinical trials.** *LANCET.* 393(10190):2503-2510. I.F.: 59.102

3. Sabaté M, Alfonso F, Cequier A, Romaní S, Bordes P, Serra A, Iñiguez A, Salinas P, García Del Blanco B, Goicolea J, Hernández-Antolín R, Cuesta J, Gómez-Hospital JA, Ortega-Paz L, Gomez-Lara J, Brugaletta S. **Magnesium-Based Resorbable Scaffold Versus Permanent Metallic Sirolimus-Eluting Stent in Patients With ST-Segment Elevation Myocardial Infarction: The MAGSTEMI Randomized Clinical Trial.** *CIRCULATION.* 140(23):1904-1916. I.F.: 23.054

4. Windecker, Stephan; Lopes, Renato D.; Massaro, Tyler; Jones-Burton, Charlotte; Granger, Christopher B.; Aronson, Ronald; Heizer, Gretchen; Goodman, Shaun G.; Darius, Harald; Jones, W. Schuyler; Aschermann, Michael; Brieger, David; Cura, Fernando; Engstrom, Thomas; Fridrich, Viliam; Halvorsen, Sigrun; Huber, Kurt; Kang, Hyun-Jae; Leiva-Pons, Jose L.; Lewis, Basil S.; Malaga, German; Meneveau, Nicolas; Merkely, Bela; Milicic, Davor; Morais, Joao; Potpara, Tatjana S.; Raev, Dimitar; Sabate, Manel; de Waha-Thiele, Suzanne; Welsh, Robert C.; Xavier, Denis; Mehran, Roxana; Alexander, John H. AUGUSTUS Investigators. **Antithrombotic Therapy in Patients With Atrial Fibrillation and Acute Coronary Syndrome Treated Medically or With Percutaneous Coronary Intervention or Undergoing Elective Percutaneous Coronary Intervention Insights From the AUGUSTUS Trial.** *CIRCULATION.* 140(23):1921-1932. I.F.: 23.054

5. Sen S, Ahmad Y, Dehbi HM, Howard JP, Iglesias JF, Al-Lamee R, Petraco R, Nijjer S, Bhindi R, Lehman S, Walters D, Sapontis J, Janssens L, Vrints CJ, Khashaba A, Laine M, Van Belle E, Krackhardt F, Bojara W, Going O, Härle T, Indolfi C, Niccoli G, Ribichini F, Tanaka N, Yokoi H, Takashima H, Kikuta Y, Erglis A, Vinhas H, Silva PC, Baptista SB, Alghamdi A, Hellig F, Koo BK, Nam CW, Shin ES, Doh JH, Brugaletta S, Alegria-Barrero E, Meuwissen M, Piek JJ, van Royen N, Sezer M, Di Mario C, Gerber RT, Malik IS, Sharp ASP, Talwar S, Tang K, Samady H, Altman J, Seto AH, Singh J, Jeremias A, Matsuo H, Kharbanda RK, Patel MR, Serruys P, Escaned J, Davies JE. **Clinical Events After Deferral of LAD Revascularization Following Physiological Coronary Assessment.** *JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY.* 73(4):444-453. I.F.: 18.639

6. Chichareon P., Modolo R., Collet C., Tenekecioglu E., Vink M.A., Oh P.C., Ahn J.M., Musto C., Díaz de la Llera L.S., Cho Y.S., Violini R., Park S.J., Suryapranata H., Piek J.J., de Winter R.J., Wykrzykowska J.J., Spaulding C., Kang W.C., Slagboom T., Hofma S.H., Wijnbergen I.F., Di Lorenzo E., Pijls N.H., Räber L., Brugaletta S., Sabaté M., Stoll H.P., Stone G.W., Windecker S., Onuma Y., Serruys P.W.

Efficacy and Safety of Stents in ST-Segment Elevation Myocardial Infarction. *JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY.* 74(21):2572-2584. I.F.: 18.639

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GRANTS FOR RESEARCH IN PROGRESS

Bosch X. **Papel del sistema GAS-6-TAM en la diferenciacion fibroblastica y el remodelado ventricular tras el infarto agudo de miocardio.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00531
Duration: 01/01/2016-31/12/2019

Dantas AP, Brugaletta S. **Potential prognostic and therapeutic role of exosomal miRNAs derived from circulating cells (Endothelial Progenitor, Platelets and Neutrophils) in acute coronary syndrome.**
Sponsored by: Instituto de Salud Carlos III. PI16/00742
Duration: 01/01/2017-31/12/2020

Dantas AP. **Targeting endothelial dysfunction in highly prevalent diseases: characterization and validation of prognostic biomarkers and identification of potential therapeutic strategies.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PIE15/00027
Duration: 01/01/2016-30/06/2020

García A. **Tractament agonista adrenèrgic en la hipertensió pulmonar crònica secundària a insuficiència cardíaca: assaig clínic fase 2 aleatoritzat i controlat amb placebo.**
Sponsored by: Fundació la Marató de TV3. TV3_Cor_15
Duration: 21/07/2016-30/01/2020

García A. **Estudio de los mecanismos fisiopatológicos que conducen a la hipertrofia maladaptativa del ventrículo derecho en la hipertensión pulmonar crónica.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00995
Duration: 01/01/2018-31/12/2020

Pomar JL. **Aortic Valve Replacement using Individualised Regenerative Allografts: Bridging the Therapeutic Gap.**
Sponsored by: European Comission. CE_H2020-PHC-2014-1s (643597)
Duration: 01/01/2015-31/03/2019

Rigol M. **Estrategias para optimizar el potencial terapéutico de las células progenitoras endoteliales: terapia combinada y rejuvenecimiento.**
Sponsored by: Fundación Casa del Corazon. SEC_InvBasica17_01
Duration: 26/10/2017-

Rigol M, Sabaté M. **Terapia combinada con células progenitoras endoteliales y mesenquimales autólogas para maximizar su potencial terapéutico en la cardiopatía isquémica crónica.**
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Duration: 01/01/2019-31/12/2021

Roque M. **Caracterización del riesgo cardiovascular antes del primer evento cardiovascular prematuro en Catalunya.**
Sponsored by: Generalitat de Catalunya. PERIS_SLT002/16/00095
Duration: 27/03/2017-31/12/2019

Roqué M. **Inhibición de la hiperplasia de la íntima con PAP-1, un inhibidor selectivo de los canales de potasio. Desarollo de un stent farmacoactivo liberador de PAP-1 y aplicación en un modelo experimental de restenosis.**
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Duration: 24/10/2015-

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Sabaté M. **Aterosclerosi, malaltia coronària i insuficiència cardíaca.**
Sponsored by: Generalitat de Catalunya. AGAUR_SGR17_01525
Duration: 01/01/2017-31/12/2020

Sabaté M**. EURO SHOCK. Assessment of up-front use of Mechanical Support Device in Cardiogenic Shock: The EURO SHOCK trial.**
Sponsored by: European Comission. CE_H2020-SC1_17_2s (754946-1)
Duration: 01/01/2018-31/12/2022

DOCTORAL THESES

Roque M, Sabate M. **Redes regionales para la atención del infarto agudo de miocardio. Impacto clínico y económico.**
PhD student: Ander Regueiro Cueva

Sabate M, Freixa X. **Parada cardiaca extra-hospitalaria e hipotermia terapéutica en el Síndrome Coronario Agudo: riesgo de trombosis y hemorragias.**
PhD student: Gustavo David Jiménez Britez

2.17 Cardiac imaging

LOCATION
HCB building

KEYWORDS
1. **Cardiac imaging**
2. **Echocardiography**
3. **Cardiac magnetic resonance**

RELATED DISEASES
1. **Heart valve disease**
2. **Athlete's heart**
3. **Arrhythmia**
4. **Acute coronary syndromme**
5. **Myocardial infarction**

GROUP INVOLVED IN
CIBERCV

AWARDS
Young Investigator Award Euroecho 2019
Institution: European Association of Cardiovascular Imaging, European Society of Cardiology
Awardee/s: Filip Loncaric

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**20**	**142,00**	**7,10**	**65%**	**15%**



GROUP LEADER
Marta Sitges (HCB)
T. 93 227 17 94
msitges@clinic.cat

RESEARCHERS
Mª Teresa de Caralt (HCB)
Adelina Doltra (HCB)
Sílvia Montserrat (HCB)
José Tomás Ortiz (HCB)
Rosario Jesús Perea (HCB)
Susanna Prat (HCB)
María Sanz (HCB)
Bàrbara Vidal (HCB)

POST-DOCTORAL RESEARCHERS
Laura Sanchis (HCB)
Montserrat Venturas (HCB)

PRE-DOCTORAL RESEARCHERS
Marc Abulí (FCRB-HCB)
Blanca Domenech (UB)
Filip Loncaric (IDIBAPS)
Dulman Omar Pineda (UB)

TECHNICIANS
Daniel Lorenzatti (IDIBAPS)

NURSING STAFF
Sílvia Poyatos (FCRB)

ADMINISTRATIVE STAFF
Laura González Betlinski (FCRB)

PROBLEM

Many cardiac diseases present with a common syndrome: heart failure or arrhythmia. There are several therapeutic options for treating these diseases, which can sometimes be very expensive or involve a certain risk for the patient.

The group's research focuses on non-invasive identification, using imaging techniques and cardiac biomarkers, of the myocardial and electrical pathophysiological substrate in order to be able to select the best therapeutic option for each patient, as well as identify those patients with the highest risks.

This level of description and identification, which we can achieve with imaging techniques, also allows us to evaluate the impact of new therapies.

APPROACH

This is a multidisciplinary group and includes professionals who are experts in the various aspects of non-invasive heart imaging. It performs research on cardiac mechanics in various cardiovascular conditions, such as arrhythmias, heart valve diseases and heart failure, as well as heart adaptation to physical training.

Based on clinical observations, the group applies cardiac imaging techniques to evaluate the functioning of the heart. In this way, we can identify patients at risk of heart disease or complications. Through this research, the benefits or impact of some therapies on the heart can also be analyzed.

IMPACT

The group's goal is to improve the tools that enable the identification of patients at risk of suffering from heart disease, as well as those who may respond better to a specific treatment. Therefore, its hope is to obtain results in both prevention and the achievement of a more accurate diagnosis.

Its research is also helping to improve the treatment of heart failure, valvular disease and heart rhythm disorders. As a whole, its work is also leading to better survival rates and a better quality of life for patients with cardiovascular diseases, as well as a more efficient use of health resources.

RESEARCH LINES

- Characterization of cardiac mechanics in heart failure.

- Characterization of hypertrophic hearts (INDEPTH-HCM).

- Identification of athletes at risk of sudden death.

- Identification of candidates for and impact of percutaneous therapies for heart valve diseas.

- Identification of patients at risk of sudden death and heart failure after myocardial infarction.

- Non invasive characterization of arrhythmia substrate.

- Prediction of atrial fibrillation in patients at risk (PREDICTAF study).

- Usefulness of non-invasive cardiac imaging in the identification of acute coronary syndromes.

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Editorial / I.F.: 11.28

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2. Sanz-de la Garza, Maria; Sitges, Marta. **Physical exercise: Another tool in the fight against cancer and its treatment side effects?** *EUROPEAN JOURNAL OF PREVENTIVE CARDIOLOGY.* (UNSP 2047487319890173):2047487319890173. I.F.: 5.640

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1. Ortega-Paz L., Regueiro A., Perdomo J.M., Sanchis L., Sabaté M., Freixa X. **Minimally Invasive Transradial Percutaneous Closure of an Aortic Paravalvular Leak After Transcatheter Aortic Valve Replacement.** *CANADIAN JOURNAL OF CARDIOLOGY.* 35(7):941.e1-941.e2. I.F.: 5.592

Clinical Guidelines / **I.F.: 5.26**

1. Haugaa KH, Marsan NA, Cameli M, D'Andrea A, Dweck MR, Carvalho RF, Holte E, Manka R, Michalski B, Podlesnikar T, Popescu BA, Schulz-Menger J, Sitges M, Stankovic I, Maurer G, Edvardsen T. **Criteria for surveys: from the European Association of Cardiovascular Imaging Scientific Initiatives Committee.** *EUROPEAN HEART JOURNAL CARDIOVASCULAR IMAGING.* 20(9):963-966. I.F.: 5.260

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1. Pericà S JM, Llopis J, González-Ramallo V, Goenaga MÁ, Muñoz P, García-Leoni ME, Fariñas MC, Pajarón M, Ambrosioni J, Luque R, Goikoetxea J, Oteo JA, Carrizo E, Bodro M, Reguera-Iglesias JM, Navas E, Hidalgo-Tenorio C, Miró JM, Spanish Collaboration on Endocarditis-Grupo de Apoyo al Manejo de la Endocarditis Infecciosa en España (GAMES) investigators. **Outpatient Parenteral Antibiotic Treatment (OPAT) for Infective Endocarditis: a Prospective Cohort Study From the GAMES Cohort.** *CLINICAL INFECTIOUS DISEASES.* 69(10):1690-1700. I.F.: 9.055

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3. Cuerpo GP, Valerio M, Pedraz A, Rodríguez-Abella H, Mestres CA, Obrador EQ, González-Calle A, Rodríguez Álvarez R, García PM, Bouza E, GAMEs Study Group. **Mitral valve repair in infective endocarditis is not inferior to valve replacement: results from a Spanish nationwide prospective registry.** *GENERAL THORACIC AND CARDIOVASCULAR SURGERY.* 67(7):585-593. I.F.: 1.219

GRANTS FOR RESEARCH IN PROGRESS

Doltra A. **Cooperación clínico-técnica para la predicción precoz de fibrilación auricular: hacia un abordaje personalizado integral.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/01131
Duration: 01/01/2018-31/12/2020

Ortiz JT. **Paper dels macròfags i fibroblastes residents a la remodelació miocàrdica i la regeneració tisular tras l'infart de miocardi: contribució del sistema GAS6-TAM.**
Sponsored by: Fundació la Marató de TV3. TV3_Cor_15
Duration: 26/04/2016-31/12/2019

Ortiz JT. **Papel del sistema GAS6-TAM en la difeerenciación fibroblástica y el remodelado ventricular tras el infarto de miocardio.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00531
Duration: 01/01/2016-31/12/2019

Ortiz JT. **Therapeutic targeting of the neutrophil clock in cardiovascular disease. Sponsored by: Centro Nacional de Investigaciones Cardiovasculares (CNIC).**
LaCaixa_HealthRes (17HR17-00527)
Duration: 05/11/2018-04/11/2021

Sitges M. **Predicció personalitzada i oprecoç de fibrilació auricular en subjectes en risc. PREDICTAF.**
Sponsored by: Fundació la Marató de TV3. TV3_Cor_15
Duration: 10/05/2016-31/12/2019

Sitges M. **Estudio de investigación PREDICTAF para la prevención de fibrilación auricular.**
Sponsored by: BANKIA. Bankia_RedSolidar18 (RS2018-268)
Duration: 11/07/2018-

Sitges M. **Personalized In-Silico Cardiology.**
Sponsored by: European Comission. CE_H2020-MSCA-ITN-17 (764738)
Duration: 01/09/2017-31/08/2021

2.18 Applied research in infectious respiratory diseases and critically ill patients

LOCATION
CELLEX building, floor 2B

KEYWORDS
1. **Respiratory infections**
2. **Mechanical ventilation**
3. **Pneumonia**
4. **COPD, bronchiectasis**
5. **Breathing disturbances in sleep**

RELATED DISEASES
1. **Pulmonary infections, respiratory infections**
2. **Community-acquired pneumònia**
3. **Ventilator-associated pneumonia**
4. **COPD: Chronic Obstructive Pulmonary Diseases**
5. **Bronchiectasis**
6. **Lower respiratory tract infection**

GROUP INVOLVED IN
CIBERES
AGAUR_SGR17: 00787

AWARDS
ICREA Academia 2019
Institution: ICREA
Awardee/s: Antoni Torres

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**35**	**222,28**	**6,35**	**74%**	**40%**



GROUP LEADER
Antoni Torres (HCB)
T. 93 227 54 00 (Ext.: 3037)
atorres@clinic.cat

RESEARCHERS
Carles Agustí (HCB)
Joan Ramon Badia (HCB)
Laia Fernández Barat (CIBER)
Miquel Ferrer (HCB)
Arturo Huerta (HCB)
Nestor Soler (HCB)
Dolors Soy (HCB)

POST-DOCTORAL RESEARCHERS
Rosanel Amaro (HCB)
Roberto Cabrera (CIBER)
Adrian Ceccato (HCB)
Catia Cillóniz (FCRB)
Pamela Andrea Conde (FCRB)
Gianluigi Li Bassi (IDIBAPS)
Carmen Lucena (HCB)
Ignacio Martín-Loeches (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Victòria Alcaraz (FCRB)
Enric Barbeta (HCB)
Ruben López Aladid (FCRB)
Anna Motos (CIBER)
Andrea Palomeque (HCB)
Carmen Rosa Vargas (HCB)
Hua Yang (FCRB)
Minlan Yang (FCRB)

TECHNICIANS
Marta Arrieta (IDIBAPS)
Albert Gabarrús (FCRB)

NURSING STAFF
Leticia Bueno (IDIBAPS)

ADMINISTRATIVE STAFF
Elisabet Sancho (CIBER)

COLLABORATOR
Joaquim Bobi (FCRB)
Ricard Mellado (IDIBAPS)
Nil Vázquez (IDIBAPS)

VISITING SCIENTISTS
Pierluigi di Giannatale (University of Chieti-Pescara)
Cristina Dominedó (Fondazione Policlinico Universitario Agostino Gemelli)
Kasra Kiarostami (IDIBAPS)
Antonella Ielpo (University of Parma)
Stefano Nogas (University of Genova)
Giulia Scioscia (Universita de Foggia)
Giacomo Tanzella (University of Genova)

PROBLEM

The group focuses its research on the causes, diseased tissue, diagnosis and treatment of respiratory infections in the community and in intensive care, and especially in patients receiving mechanical ventilation.

APPROACH

The group's approach is completely translational: it studies respiratory infections based on cell and molecular responses to obtain clinical results, which include pig models.

The group has coordinated and taken part in international guidelines and clinical trials with EMBARC (the European Bronchiectasis Registry). It has also conducted systematic reviews and meta-analyses to improve the evidence-based medical knowledge of respiratory diseases.

IMPACT

The group has described measures for preventing nosocomial pneumonia and criteria for admitting patients with community-acquired pneumonia to the intensive care unit (ICU) that have been universally adopted.

Furthermore, the research conducted has made it possible to put into practice new therapeutic approaches using advanced genetic bioengineering techniques, in collaboration with the Centre for Genomic Regulation (GRC).

RESEARCH LINES

- Epidemiology, prevention and new treatments of pneumonias associated with artificial ventilation and new methods of fast diagnosis.

- Epidemiology and diagnosis of community-acquired pneumonia.

- Etiopathogenesis, bronchial infection and inflammation in the patient with chronic obstructive pulmonary disease (COPD).

- Chronic pulmonary infections.

- Infectious lung complications in immune depressed patients.

- Invasive and noninvasive mechanical ventilation.

- Porcine model of acute pulmonary damage due to methicillinresistant P. Aeruginosa, S. Aureus and S. Pneumoniae.

- Translational research laboratory for the microbiology diagnosis and pathogen-host response in respiratory infections.

- Chronic sleep apnea.

PUBLICATIONS

Originals / I.F.: 222.281

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4. Ranzani, OT; Coelho, L; Torres, A. **Biomarkers in community-acquired pneumonia: can we do better by using them correctly?** *JORNAL BRASILEIRO DE PNEUMOLOGIA*. 45(4):e20190189. I.F.: 1.371

Consortium Publications / I.F.: 23.162

1. Di Pasquale M.F., Sotgiu G., Gramegna A., Radovanovic D., Terraneo S., Reyes L.F., Rupp J., González Del Castillo J., Blasi F., Aliberti S., Restrepo M.I., Aruj P.K., Attorri S., Barimboim E., Caeiro J.P., Garzón M.I., Cambursano V.H., Cazaux A., Ceccato A., Chertcoff J., Lascar F., Tulio F.D., Díaz A.C., de Vedia L., Ganaha M.C., Lambert S., Lopardo G., Luna C.M., Malberti A.G., Morcillo N., Tartara S., Cetrangolo A.A., Pensotti C., Pereyra B., Scapellato P.G., Stagnaro J.P., Shah S., Lötsch F., Thalhammer F., Anseeuw K., Di Pasquale M.F., Sotgiu G., Gramegna A., Radovanovic D., Terraneo S., Reyes L.F., Rupp J., González Del Castillo J., Blasi F., Aliberti S., Restrepo M.I., Aruj P.K., Attorri S., Barimboim E., Caeiro J.P., Garzón M.I., Cambursano V.H., Cazaux A., Ceccato A., Chertcoff J., Lascar F., Tulio F.D., Díaz A.C., de Vedia L., Ganaha M.C., Lambert S., Lopardo G., Luna C.M., Malberti A.G., Morcillo N., Tartara S., Cetrangolo A.A., Pensotti C., Pereyra B., Scapellato P.G., Stagnaro J.P., Shah S., Lötsch F., Thalhammer F., Anseeuw K., Di Pasquale M.F., Sotgiu G., Gramegna A., Radovanovic D., Terraneo S., Reyes L.F., Rupp J., González Del Castillo J., Blasi F., Aliberti S., Restrepo M.I., Aruj P.K., Attorri S., Barimboim E., Caeiro J.P., Garzón M.I., Cambursano V.H., Cazaux A., Ceccato A., Chertcoff J. **Prevalence and Etiology of Community-acquired Pneumonia in Immunocompromised Patients.** *CLINICAL INFECTIOUS DISEASES*. 68(9):1482-1493. I.F.: 9.055

2. Aliberti S, Cook GS, Babu BL, Reyes LF, H Rodriguez A, Sanz F, Soni NJ, Anzueto A, Faverio P, Sadud RF, Muhammad I, Prat C, Vendrell E, Neves J, Kaimakamis E, Feneley A, Swarnakar R, Franzetti F, Carugati M, Morosi M, Monge E, Restrepo MI, GLIMP investigators. **International prevalence and risk factors evaluation for drug-resistant Streptococcus pneumoniae pneumonia.** *JOURNAL OF INFECTION*. 79(4):300-311. I.F.: 5.099

3. Radovanovic D, Sotgiu G, Jankovic M, Mahesh PA, Marcos PJ, Abdalla MI, Di Pasquale MF, Gramegna A, Terraneo S, Blasi F, Santus P, Aliberti S, Reyes LF, Restrepo MI, GLIMP Study Group. **An international perspective on hospitalized patients with viral community-acquired pneumonia.** *EUROPEAN JOURNAL OF INTERNAL MEDICINE*. 60:54-70. I.F.: 3.660

4. Kotfis, Katarzyna; Wittebole, Xavier; Jaschinski, Ulrich; Sole-Violan, Jordi; Kashyap, Rahul; Leone, Marc; Nanchal, Rahul; Fontes, Luis E.; Sakr, Yasser; Vincent, Jean-Louis; ICON Investigators. **A worldwide perspective of sepsis epidemiology and survival according to age: Observational data from the ICON audit.** *JOURNAL OF CRITICAL CARE*. 51:122-132. I.F.: 2.783

5. Mertz D, Lo CK, Lytvyn L, Ortiz JR, Loeb M, FLURISK-INVESTIGATORS. **Pregnancy as a risk factor for severe influenza infection: an individual participant data meta-analysis.** *BMC INFECTIOUS DISEASES*. 19(1):683-683. I.F.: 2.565

GRANTS FOR RESEARCH IN PROGRESS

Alcaraz V. **Rehabilitación respiratoria y fisioterapia respiratoria en pacientes con Bronquiectasias no derivadas de Fibrosis Quística.**
Sponsored by: Col·legi de Fisioterapeutes de Catalunya. CFC_ProyFisio16 (047913)
Duration: 02/01/2017-31/01/2020

Cilloniz C. **Fenotipos relacionados con la evolución clínica a corto y largo plazo en la neumonía adquirida en la comunidad.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI19/00207
Duration: 01/01/2019-31/12/2022

Ferrer-Monreal M. **Driving Pressure e Inflamación en el Síndrome de Distress Respiratorio Agudo.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00974
Duration: 01/01/2019-31/12/2021

Soler N. **Dinámica del microbioma pulmonar en la agudización neumónica y no neumónica de la EPOC y uso como potencial diana terapéutica: estudio discriminativo con TAC torácica de baja radiación.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00803
Duration: 01/01/2017-31/12/2020

Torres A. **Fisiopatologia i tractament de les malalties respiratòries.**
Sponsored by: Generalitat de Catalunya. AGAUR_SGR17_00787
Duration: 01/01/2017-31/12/2020

Torres A. **Pulmonary and cardiac injury caused by severe pneumococcal pneumonia: appraisal of the benefits of corticosteroids and macrolides.**
Sponsored by: Fundació La Marató de TV3. TV3_Infeccioses_18
Duration: 29/03/2019-28/03/2022

Torres A. **Eficacia y caracterización de los efectos de los corticosteroides asociados a antibióticos en un modelo animal de neumonía grave por streptococcus pneumoniae.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00506
Duration: 01/01/2016-31/12/2019

Torres A. **Importancia de las biopelículas de Pseudomonas aeruginosa en las agudizaciones en pacientes con bronquiectasias con y sin enfermedad pulmonar obstructiva crónica.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00145
Duration: 01/01/2019-31/12/2021

Torres A. **COMBACTE_APC: Academic Partners of COMBACTE.**
Sponsored by: European commission.
IMI12_8th_2stg
Duration: 01/01/2013-31/12/2021

Torres A. **COMBACTE-MAGNET: Combatting Bacterial Resistance in Europe - Molecules Against Gram Negative Infections.**
Sponsored by: European commission.
IMI13_11th_2stg
Duration: 01/01/2015-31/12/2021

DOCTORAL THESES

Torres A. **Estrategias Diagnósticas y Terapéuticas de la Neumonía Adquirida en la Comunidad por Streptococcus pneumoniae.**
PhD student: Adrián Arturo Ceccato

ANNUAL
SCIENTIFIC REPORT
2019

AREA 3

LIVER, DIGESTIVE SYSTEM AND METABOLISM



3

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AREA 3

LIVER, DIGESTIVE SYSTEM AND METABOLISM

3.1 **Hepatic oncology (BCLC)**
Jordi Bruix

3.2 **Gastrointestinal and pancreatic oncology**
Antoni Castells

3.3 **Genetic predisposition to gastrointestinal cancer**
Sergi Castellví

3.4 **Neuronal control of metabolism (NeuCoMe)**
Marc Claret

3.5 **Inflammation and liver disease**
Joan Clària

3.6 **Angiogenesis in liver disease**
Mercedes Fernández Lobato

3.7 **Mitochondrial regulation of cell death and steatohepatitis**
José Carlos Fernández-Checa

3.8 **Gene therapy and cancer**
Cristina Fillat

3.9 **Liver transplantation and graft viability**
Constantino Fondevila

3.10 **Viral toxic and metabolic hepatopathies**
Xavi Forns

3.11 **Regulation of liver microcirculation in cirrhosis and hepatic vascular diseases**
Joan Carles García Pagán

3.12 **Chronic liver diseases molecular mechanisms and clinical consequences**
Pere Ginès

3.13 **Liver vascular biology**
Jordi Gràcia

3.14 **Fetal and perinatal medicine**
Eduard Gratacós

3.15 **Metabolic bone disease**
Núria Guañabens

3.16 **Endocrine disorders: crosstalk between molecular, metabolic and therapeutic determinants**
Felicia Hanzu

3.17 **Translational research group in new therapeutic and diagnostic strategies in liver diseases**
Wladimiro Jiménez

3.18 **Translational research in hepatic oncology**
Josep Maria Llovet

3.19 **Gynecological endocrinology and human reproduction**
Mª Angels Martinez

3.20 **Hepatocellular signaling and cancer**
Albert Morales

3.21 **Pathogenesis and prevention of diabetes**
Anna Novials

3.22 **Inflammatory bowel disease**
Julià Panés

3.23 **Cholestasis**
Albert Parés

3.24 **Protective strategies against hepatic ischemia reperfusion injury**
Carmen Peralta

3.25 **Inherited metabolic diseases**
Antonia Ribes

3.26 **Liver cell plasticity and tissue repair**
Pau Sancho

3.27 **Pathogenesis and treatment of autoimmunity**
Pere Santamaria

3.28 **Translational research in diabetes lipids and obesity**
Josep Vidal

3.1 Hepatic oncology (BCLC)

LOCATION
CEK building, floor 3
HCB building, stair 11, floor 4

KEYWORDS
1. **Hepatocellular carcinoma**
2. **Cholangiocarcinoma**
3. **Rare hepatic tumors**
4. **Biomarkers**
5. **Outcome research**

RELATED DISEASES
1. **Chronic liver disease**

GROUP INVOLVED IN
AGAUR_SGR17: 01465
CIBEREHD
ERN

AWARDS
Distinguished Achievement Award
Institution: American Association for the Study of Liver Diseases
Institution: American Association for the Study of Liver Diseases (AASLD)
Awardee/s: Jordi Bruix

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**12**	**126,93**	**10,58**	**92%**	**83%**



GROUP LEADER
Jordi Bruix (HCB)
T. 93 227 98 03
jbruix@clinic.cat

RESEARCHERS
Mari Carmen Ayuso (HCB)
Loreto Boix (CIBER)
Joana Ferrer (HCB)
Alejandro Forner (HCB)
Josep Fuster (HCB)
María Reig (HCB-FCRB)
Ramon Vilana (HCB)

PRE-DOCTORAL RESEARCHERS
Álvaro Díaz González (FCRB)
Marco Sanduzzi-Zamparelli (FCRB)

TECHNICIANS
Josep Corominas (FCRB)
Cristina Millan (FCRB)
Maragda Quintas (FCRB)
Esther Samper (FCRB)
Victor Sapena (CIBER)

NURSING STAFF
Gemma Iserte (HCB)
Neus Llarch (HCB)

ADMINISTRATIVE STAFF
Nuria Pérez Pons (FCRB)

VISITING SCIENTISTS
Sergio Gabriel Muñoz (Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubirán Ciudad de México)

PROBLEM

Liver cancer normally affects patients who already have chronic liver disease. Among this risk population, the development of liver cancer is the leading cause of death. This group studies the epidemiological, molecular, diagnostic and therapeutic aspects of this disease.

In our region, liver cancer represents 10 new cases per 100,000 inhabitants per year whereas in global terms, this type of tumour is the second leading cause of death by cancer.

Depending on the approach area (risk factors, diagnosis, treatment), it is necessary to involve a combination of the diverse specialists who form part of the group (hepatologists, surgeons, radiologists, pathologists, oncologists and nurses) and implement the technologies that fall within their expertise.

APPROACH

The group is developing tools to predict which patients may develop cancer and to improve early detection plans, as well as investigating the mechanisms of action of new treatments and their efficiency in reducing the risk of recurrence after cancer treatment and in increasing the patient's survival rate at advanced stages. All of the above is combined with education designed to empower patients.

The group leads international studies that involve centres from all over the world. This makes it possible to generate evidence, within the contexts of research and real life alike.

IMPACT

The group has established non-invasive diagnostic criteria, but it is necessary to improve their sensitivity to tumours of less than 2 cm in size. Imaging tools must be developed to establish the molecular profile of the tumours and their prognosis, without the need for biopsies. And educational tools are needed to ensure that patients are fully integrated into the entire process.

The group has led national and international studies to evaluate new treatment options and define the best candidates. It is necessary to continue investigating new agents that can reduce the risk of postoperative recurrence and new alternatives for increasing patient survival at advanced stages, by conducting clinical trials.

RESEARCH LINES

- Epidemiology and risk factors for liver cancer
- Diagnosis and staging
- Surgery for liver cancer
- Locoregional therapy
- Adjuvant therapy
- Systemic therapy
- Intrahepatic colangiocarcinoma
- Rare hepatic tumors
- Research in nursing

PUBLICATIONS

Originals / I.F.: 126.925

1. Teufel M, Seidel H, Köchert K, Meinhardt G, Finn RS, Llovet JM, Bruix J. **Biomarkers associated with response to regorafenib in patients with hepatocellular carcinoma.** *GASTROENTEROLOGY.* 156(6):1731-1741. I.F.: 19.233

2. Reverter E, Cirera I, Albillos A, Debernardi-Venon W, Abraldes JG, Llop E, Flores A, Martínez-Palli G, Blasi A, Martínez J, Turon F, García-Valdecasas JC, Berzigotti A, de Lacy AM, Fuster J, Hernández-Gea V, Bosch J, García-Pagán JC. **The prognostic role of hepatic venous pressure gradient in cirrhotic patients undergoing elective extrahepatic surgery.** *JOURNAL OF HEPATOLOGY.* 71(5):942-950. I.F.: 18.946

3. Mariño Z, Darnell A, Lens S, Sapena V, Díaz A, Belmonte E, Perelló C, Calleja JL, Varela M, Rodriguez M, Rodriguez de Lope C, Llerena S, Torras X, Gallego A, Sala M, Morillas RM, Minguez B, Llaneras J, Coll S, Carrion JA, Iñarrairaegui M, Sangro B, Vilana R, Sole M, Ayuso C, Ríos J, Forns X, Bruix J, Reig M. **Time association between hepatitis C therapy and hepatocellular carcinoma emergence in cirrhosis: relevance of non-characterized nodules.** *JOURNAL OF HEPATOLOGY.* 70(5):874-884. I.F.: 18.946

4. Pinyol R, Montal R, Bassaganyas L, Sia D, Takayama T, Chau GY, Mazzaferro V, Roayaie S, Lee HC, Kokudo N, Zhang Z, Torrecilla S, Moeini A, Rodriguez-Carunchio L, Gane E, Verslype C, Croitoru AE, Cillo U, de la Mata M, Lupo L, Strasser S, Park JW, Camps J, Solé M, Thung SN, Villanueva A, Pena C, Meinhardt G, Bruix J, Llovet JM. **Molecular predictors of prevention of recurrence in HCC with sorafenib as adjuvant treatment and prognostic factors in the phase 3 STORM trial.** *GUT.* 68(6):1065-1075. I.F.: 17.943

5. Ventura-Aguiar P, Ferrer J, Paredes D, Rodriguez-Villar C, Ruiz A, Fuster J, Fondevila C, Garcia-Valdecasas JC, Esmatjes E, Adália R, Oppenheimer F, Campistol JM, Diekmann F, Ricart MJ. **Outcomes From Brain Death Donors With Previous Cardiac Arrest Accepted for Pancreas Transplantation: A Single-center Retrospective Analysis.** *ANNALS OF SURGERY.* I.F.: 9.476

6. Unfried JP, Serrano G, Suárez B, Sangro P, Ferretti V, Prior C, Boix L, Bruix J, Sangro B, Segura V, Fortes P. **Identification of coding and long non-coding RNAs differentially expressed in tumors and preferentially expressed in healthy tissues.** *CANCER RESEARCH.* 79(20):5167-5180. I.F.: 8.378

7. Díaz-González Á, Sanduzzi-Zamparelli M, Sapena V, Torres F, LLarch N, Iserte G, Forner A, da Fonseca L, Ríos J, Bruix J, Reig M. **Systematic review with meta-analysis: the critical role of dermatological events in patients with hepatocellular carcinoma treated with sorafenib.** *ALIMENTARY PHARMACOLOGY AND THERAPEUTICS.* 49(5):482-491. I.F.: 7.731

8. Iavarone M, Invernizzi F, Czauderna C, Sanduzzi-Zamparelli M, Bhoori S, Amaddeo G, Manini MA, López MF, Anders M, Pinter M, Rodríguez MJB, Cristóbal MR, Soteras GA, Piñero F, Villadsen GE, Weinmann A, Crespo G, Mazzaferro V, Regnault H, Giorgio M, González-Diéguez ML, Donato MF, Varela M, Wörns MA, Bruix J, Lampertico P, Reig M . **Preliminary experience on safety of regorafenib after sorafenib failure in recurrent hepatocellular carcinoma after liver transplantation.** *AMERICAN JOURNAL OF TRANSPLANTATION.* 19(11):3176-3184. I.F.: 7.163

9. Riquelme-Mc Loughlin C, Podlipnik S, Bosch-Amate X, Riera-Monroig J, Barreiro A, Espinosa N, Moreno-Ramírez D, Giavedoni P, Vilana R, Sánchez M, Vidal-Sicart S, Carrera C, Malvehy J, Puig S. **Diagnostic accuracy of imaging studies for initial staging of T2b-T4b melanoma patients.** *JOURNAL OF THE AMERICAN ACADEMY OF DERMATOLOGY.* 81(6):1330-1338. I.F.: 7.102

10. Ayuso C, Forner A, Darnell A, Rimola J, García-Criado Á, Bianchi L, Vilana R, Oliveira R, Llarch N, Bruix J. **Prospective evaluation of gadoxetic-acid MR for the diagnosis of HCC in newly detected nodules ≤ 2 cm in cirrhosis.** *LIVER INTERNATIONAL.* 39(7):1281-1291. I.F.: 5.542

11. Reig M, Gambato M, Man NK, Roberts JP, Victor D, Orci LA, Toso C. **Should patients with NAFLD/NASH be surveyed for HCC?** *TRANSPLANTATION.* 103(1):39-44. I.F.: 4.593

12. Pavel M., Reyner E., Molina V., Garcia R., Ruiz A., Roque R., Diaz A., Fuster J., Garcia-Valdecasas J. **Evolution Under Normothermic Machine Perfusion of Type 2 DCD Livers Discarded as Nontransplantable.** *JOURNAL OF SURGICAL RESEARCH.* 235:383-394. I.F.: 1.872

Review / I.F.: 52.082

1. Bruix J, da Fonseca LG, Reig M. **Insights into the success and failure of systemic therapy for hepatocellular carcinoma.** *NATURE REVIEWS GASTROENTEROLOGY & HEPATOLOGY.* 16(10):617-630. I.F.: 23.570

2. Raoul J., Forner A., Bolondi L., Cheung T., Kloeckner R., de Baere T. **Updated use of TACE for hepatocellular carcinoma treatment: How and when to use it based on clinical evidence.** *CANCER TREATMENT REVIEWS.* 72:28-36. I.F.: 8.332

3. Adeva J., Sangro B., Salati M., Edeline J., La Casta A., Bittoni A., Berardi R., Bruix J., Valle J. **Medical treatment for cholangiocarcinoma.** *LIVER INTERNATIONAL.* 39(S1):123-142. I.F.: 5.542

4. Forner A, Vidili G, Rengo M, Bujanda L, Ponz-Sarvisé M, Lamarca A. **Clinical presentation, diagnosis and staging of cholangiocarcinoma.** *LIVER INTERNATIONAL.* 39(S1):98-107. I.F.: 5.542

5. Sanduzzi-Zamparelli M, Díaz-Gonzalez Á, Reig M. **New Systemic Treatments in Advanced Hepatocellular Carcinoma.** *LIVER TRANSPLANTATION.* 25(2):311-322. I.F.: 4.159

6. Sanduzzi-Zamparelli M., Boix L., Leal C., Reig M. **Hepatocellular Carcinoma Recurrence in HCV Patients Treated with Direct Antiviral Agents.** *VIRUSES-BASEL.* 11:5. I.F.: 3.811

7. Hernáez-Alsina T, Caballol-Oliva B, Díaz-González Á, Guedes-Leal C, Reig M . **Risk of recurrence of hepatocellular carcinoma in patients treated with interferon-free antivirals.** *GASTROENTEROLOGIA Y HEPATOLOGIA.* 42(8):502-511. I.F.: 1.126

Letters / I.F.: 31.802

1. Sapena V, Rios J, Torres F, Mariño Z, Forns X, Bruix J, Reig M. **Reply to: Time association between hepatitis C therapy and hepatocellular carcinoma emergence in cirrhosis: Relevance of non-characterized nodules - A response.** *JOURNAL OF HEPATOLOGY.* 71(2):447-448. I.F.: 18.946

2. Sanduzzi-Zamparelli M, Forner A. **Systemic doxorubicin and hepatocellular carcinoma: the end of an era never risen up.** *THE LANCET GASTROENTEROLOGY AND HEPATOLOGY.* 4(6):418-420. I.F.: 12.856

Editorial / I.F.: 43.721

1. Bruix J, Ayuso C. **Diagnosis of Hepatic Nodules in Patients at Risk for Hepatocellular Carcinoma: LI-RADS Probability Versus Certainty.** *GASTROENTEROLOGY.* 156(4):860-862. I.F.: 19.233

2. Díaz A., Forner A. **Prognosis assessment by pathologist: Is the detection of intratumoural tertiary lymphoid structures a reliable tool?** *JOURNAL OF HEPATOLOGY.* 70(1):11-12. I.F.: 18.946

3. Valenti L, Aghemo A, Forner A. **Liver International: Anticipating the future of hepatology worldwide.** *LIVER INTERNATIONAL.* 39(10):1796-1797. I.F.: 5.542

Case Reports / I.F.: 1.126

1. Caballol B, Ruiz P, Ferrer-Fàbrega J, Diaz A, Forner A. **A rare cause of systemic inflammatory response syndrome.** *GASTROENTEROLOGIA Y HEPATOLOGIA.* 42(6):383-384. I.F.: 1.126

GRANTS FOR RESEARCH IN PROGRESS

Bruix J. **Molecular regulation of the progression from hepatic steatosis to cirrhosis and hepatocellular carcinoma: Role and therapeutic potential of CPEB proteins.**
Sponsored by: Asociación Española Contra el Cáncer (AECC). GrupoEstable15
Duration: 01/09/2015-31/08/2020

Bruix J. **La inhibición de miR122 como evento precoz en el desarrollo de carcinoma hepatocelular en pacientes infectados por el virus de la hepatitis C. Papel de miR122 en el sistema inmunitario.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00768
Duration: 01/01/2019-31/12/2021

Ferrer-Fàbrega J. **Optimización de los injertos en el trasplante de páncreas: Análisis de los factores histo-morfológicos y funcionales de los órganos descartados en un estudio multicéntrico.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00161
Duration: 01/01/2019-31/12/2021

Forner A. **Rendimiento de la RM con ácido gadoxético para el diagnóstico y estadiaje del carcinoma hepatocelular: Correlación radiológica-patológica.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00542
Duration: 01/01/2019-31/12/2021

Reig M. **Evaluación clínica prospectiva del perfil genético-inmuno/inflamatorio en el tratamiento del carcinoma hepatocelular con sorafenib para predecir tolerancia y supervivencia.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI115/00145
Duration: 23/05/2016-30/06/2020

Reig M. **Importancia del inflamasoma en la sensibilidad o resistencia a inhibidores tirosina quisana en pacientes con cáncer de hígado.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00358
Duration: 01/01/2019-31/12/2021

Reig M. **Prospective clinical evaluation of the genetic-immuno / inflammatory profile in the treatment of hepatocellular carcinoma with sorafenib to predict tolerance and survival.**
Sponsored by: Asociación Española Contra el Cáncer (AECC).
Duration: 01/08/2018-

DOCTORAL THESES

Bruix J, Reig ME. **Evaluación clínica prospectiva del perfil genético - inmuno / inflamatorio en el tratamiento con sorafenib del carcinoma hepatocelular para predecir tolerancia y supervivencia.**
PhD student: Álvaro Díaz González

Fuster J. **Nuevos métodos predictivos de pronóstico y complicaciones en pacientes con metástasis hepáticas por cáncer colorrectal.**
PhD student: Amalia Pelegrina Manzano

3.2 Gastrointestinal and pancreatic oncology

LOCATION
CEK building, floor 4

KEYWORDS
1. **Colorectal cancer**
2. **Pancreatic cancer**
3. **Genetics**
4. **Inherited disorders**

RELATED DISEASES
1. **Colorectal cancer**
2. **Pancreatic cancer**
3. **Gastric cancer**

GROUP INVOLVED IN
CIBEREHD
CIBERER
AGAUR_SGR17: 01035, 00653

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**42**	**332,24**	**7,91**	**81%**	**45%**



GROUP LEADER
Antoni Castells (HCB)
T. 93 227 57 03
castells@clinic.cat

RESEARCHERS
Juan Ramon Ayuso (HCB)
Francesc Balaguer (HCB)
Jordi Camps Polo (IDIBAPS)
José Ignacio Elizalde (HCB)
Gloria Fernández Esparrach (HCB)
Mª Àngels Ginès (HCB)
Meritxell Gironella (CIBER)
Antonio Maria Lacy (HCB)
Maria Pellisé (HCB)
Esther Sánchez Tilló (IDIBAPS)
Eva Cristina Vaquero (HCB)
Oscar Vidal Pérez (HCB)

POST-DOCTORAL RESEARCHERS
Josep Maria Augé (HCB)
Sabela Carballal (HCB)
Henry Nelson Cordova (HCB)
Saray Durán (IDIBAPS)
Oriol Sendino (HCB)
Margalida Torrens (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Isis Karina Araujo (HCB)
Claudia Galofre (CIBER)
Sara Lahoz (IDIBAPS)
Maria Marcuello (CIBER)
Liseth Rivero (IDIBAPS)
Ariadna Sánchez Garcia (HCB)
Diana Zaffalon (FCRB)

TECHNICIANS
Nereida Aguilar (CIBER)
Manuel Dominguez (CIBER)
Lorena Moreno (HCB-FCRB)
Carolina Parra (CIBER)

NURSING STAFF
Mireia Diaz Centeno (HCB)
Teresa Ocaña (HCB)
Àngels Pozo (HCB)
Anna Serradesanferm (HCB)

ADMINISTRATIVE STAFF
Diana Patricia Vargas (HCB)

PROBLEM

Gastrointestinal and pancreatic neoplasms are among the most common cancers in the western world, and among those that cause the highest number of deaths. Paradoxically, some of them, for instance, colorectal cancer, can easily be prevented as they are usually preceded by premalignant lesions that can be removed, thus preventing their progression to cancer.

Meanwhile, in a small but significant number of cases, the tumour is the result of a hereditary disease and the genes responsible for them are known.

APPROACH

Prevention of colorectal cancer considers several approaches, depending on personal and/or family-related factors that condition its development. Establishing screening programmes among the general public is the most cost-effective measure.

In hereditary forms, genetic counselling and performing genetic studies, where appropriate, make it possible to identify individuals who are carriers of mutations. Lastly, advanced endoscopic techniques promote the detection and eventual removal of the first lesions.

IMPACT

Studies performed by the group have made it possible to ascertain the efficacy of diverse colorectal and pancreatic cancer screening strategies and identify biomarkers derived from tumour molecular alterations. It has also established the best approach for the detection of Lynch syndrome, the main form of hereditary colorectal cancer.

Lastly, many clinical studies have contributed to defining the indications and outcomes of different endoscopic and surgical techniques for the diagnosis and treatment of these neoplasms.

RESEARCH LINES

- Colorectal cancer screening and surveillance.

- Genetics and epigenetics of gastrointestinal and pancreatic cancer.

- Physiopathology of colorectal and pancreatic cancer.

- Research and innovation in endoscopy.

- Research and innovation in surgery.

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Consortium Publications / I.F.: 20.359

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2. Luque Mellado FJ, Paino Pardal L, Condomines Feliu I, Tora-Rocamora I, Cuadras Rofastes M, Romero Díaz E, Pacheco Ortiz M, Camuñez Bravo JC, Aldea M, Grau Cano J; grupo de investigación PROCOLON. **Impact of a Primary Care intervention on the colorectal cancer early detection programme.** *GASTROENTEROLOGIA Y HEPATOLOGIA.* 42(6):351-361. I.F.: 1.126

GRANTS FOR RESEARCH IN PROGRESS

Balaguer F. **Análisis del defecto de campo mediado por metilación aberrante del ADN en el síndrome de poliposis serrada.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00766
Duration: 01/01/2017-31/12/2019

Balaguer F. **Identificación de neoantígenos para desarrollar una inmunoterapia eficaz para la prevención del cáncer en el síndrome de Lynch.**
Sponsored by: Asociación Española de Gastroenterología.
AEG_BecaGrupoOncología18
Duration: 01/04/2018-

Balaguer F. **Methylation Biomarker Development for noninvasive detection of Colorectal Cancer.**
Sponsored by: National Institutes of Health.
NIH10_1R01CA181572
Duration: 01/05/2014-30/04/2020

Balaguer F. **Development of microRNA Biomarkers For Noninvasive Detection of Colorectal Cancer.**
Sponsored by: National Institutes of Health.
NIH13_1R01CA184792-01A1
Duration: 01/07/2015-30/06/2020

Balaguer F. **Development of microRNA Biomarkers For Noninvasive Detection of Colorectal Cancer.**
Sponsored by: National Institutes of Health.
NIH13_R01CA184792-05
Duration: 01/07/2019-30/06/2020

Camps J. **Genòmica traslacional del càncer colorectal.**
Sponsored by: Generalitat de Catalunya.
AGAUR_SGR17_01035
Duration: 01/01/2017-31/12/2020

Camps J. **Implicaciones de la heterogeneidad intratumoral en la respuesta al tratamiento de quimio-radioterapia neoadyuvante en pacientes con cáncer de recto.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI14/00783
Duration: 01/01/2015-30/06/2019

Camps J. **Nuevas estrategias para la estratificación del riesgo de recidiva en pacientes con cáncer de colon en estadio II: Integración de perfiles genómicos y carga tumoral ganglionar.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/01304
Duration: 01/01/2018-31/12/2020

Camps J. **Identificación de una firma inmunogénica asociada a la respuesta al tratamiento neoadyuvante del cáncer de recto localizado.**
Sponsored by: Grupo Español Multidisciplinar en Cáncer Digestivo. GEMCAD_18_001
Duration: 10/05/2019-09/05/2021
Castells A**. Grup de recerca en Oncologia Gastrointestinal i Pancreàtica.**
Sponsored by: Generalitat de Catalunya.
AGAUR_SGR17_00653
Duration: 01/01/2017-31/12/2020

Castells A. **Prevenció del càncer colorectal en la població de risc mitjà mitjançant biomarcadors genòmics i microbiòmics (CRIPREV).**
Sponsored by: Generalitat de Catalunya.
PERIS_SLT002/16/00398
Duration: 27/03/2017-31/12/2019

Castells A. **Detección de miRNA en heces con nueva estrategia de cribado del cancer colorrectal: identificación y validación en población de riesgo medio.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
SAF2014-54453-R
Duration: 01/01/2015-31/12/2019

Castells A. **Kit easy-CCR: Desarollo de un kit de diagnóstico precoz de cáncer colorrectal mediante método no invsivo en plasma basado en la expresión de miRNAs.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
RTC-2015-3850-1
Duration: 25/02/2015-30/06/2019

Castells A**. Identificación de nuevos biomarcadores para la prevención del cáncer colorrectal.**
Sponsored by: Asociación Española Contra el Cáncer (AECC). GrupoEstable13
Duration: 01/10/2013-30/09/2019

Fernandez-Esparrach G. **Validación clínica del primer sistema in-vivo de predicción histológica automática de los pólopis de colon integrando la visión del endoscopista con la visión por computador (HISINVIA).**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00894
Duration: 01/01/2018-31/12/2020

Fernandez-Esparrach G. **Validación preclínica de un dispositivo de endoscopia basado en microondas (MiWendo) para el diagnóstico de neoplasias colorectales.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). DTS17/00090
Duration: 01/01/2018-31/12/2020

Pellisé M. **Utilidad de la Imagen de Color Vinculada (Linked Color Imaging; LCI) en la vigilancia del Síndrome de Poliposis Serrada: Ensayo clínico Aleatorizado, Controlado, Paralelo y Multicéntrico.**
Sponsored by: Fundación SEED.
FSEED_18_001
Duration: 21/12/2018-

Sánchez-Tillo E. **La ligasa E3 de ubiquitina GRAIL/RNF128 en los subtipos de cáncer de colon con mutaciones en KRAS, BRAF y APC.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00244
Duration: 01/01/2019-31/12/2021

Sendino O**. Ensayo prospectivo multicéntrico aleatorizado de uso de stents Vs terapia de vacío endoscópica en el tratamiento de dehiscencia de sutura anastomótica en el tracto digestivo superior.**
Sponsored by: Fundación SEED.
FSEED_19_001
Duration: 19/12/2019-18/12/2021

Vaquero EC. **Intervención farmacológica sobre el patrón fibroinflamatorio asociado al desarrollo de cáncer de páncreas.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00842
Duration: 01/01/2019-31/12/2021

Vaquero EC. **Intervención farmacológica sobre el patrón fibroinflamatorio asociado al desarrollo de cáncer de páncreas.**
Sponsored by: Asociación Española de Pancreatología (AEP).
Duration: 25/11/2019-24/11/2021

Vaquero EC. **Farmacotipificación de pacientes con cáncer de páncreas mediante organoides autogénicos.**
Sponsored by: Fundación de Investigación Médica Mútua Madrileña. AP172132019
Duration: 30/09/2019-29/09/2022

DOCTORAL THESES

Balaguer F, Castellvi S. **Identification of new candidates genes for germline predisposition to familial colorectal cancer using somatic mutational profiling.**
PhD student: Marcos Díaz Gay

Camps J, Pérez-Galán P. **Targeting tumor microenvironment crosstalk through GPCR receptors and PI3K pathway.**
PhD student: Martina Guerrero Hernández

Castells A, Gironella M. **Identificación y validación de microRNAs como biomarcadores para la detección precoz del cáncer colorrectal.**
PhD student: Saray Duran Sanchon

Castells A, Postigo A. **Role of ZEB1 in adenoma formation, inflammation and inflammation-driven carcinoma.**
PhD student: Lidia Sanchez Moral

Fernandez-Esparrach MG, Bernal J. **Análisis del rendimiento off-line de métodos computacionales para la detección y predicción histológica de pólipos en imágenes de colonoscopia.**
PhD student: Cristina Sánchez Montes

Vidal-Perez O, Vidal-Sicart S. **Utilidad del ganglio centinela en el cáncer papilar de tiroides.**
PhD student: Eduardo Delgado Oliver

3.3 Genetic predisposition to gastrointestinal cancer

LOCATION
CEK building, floor 4

KEYWORDS
1. **Gastrointestinal cancer**
2. **Hereditary predisposition**
3. **Genetic association studies**
4. **Next generation sequencing**
5. **Gene editing**
6. **Intestinal organoids**

RELATED DISEASES
1. **Colorectal cancer**
2. **Gastric cancer**

GROUP INVOLVED IN
AGAUR_SGR17: 00021
CIBEREHD

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**11**	**92,01**	**8,36**	**100%**	**36%**



GROUP LEADER
Sergi Castellví-Bel (IDIBAPS)
T. 93 227 54 00 (Ext.: 4183/2915)
sbel@clinic.cat

RESEARCHERS
Leticia Moreira (HCB)

POST-DOCTORAL RESEARCHERS
Laia Bonjoch (FCRB)

PRE-DOCTORAL RESEARCHERS
Coral Arnau (CIBER)
Marcos Diaz-Gay (IDIBAPS)
Sebastia Franch-Exposito (FCRB-CIBER)
Cristina Herrera (CIBER)
Yasmin Soares (IDIBAPS)

TECHNICIANS
Jenifer Muñoz (CIBER)

PROBLEM

Cancer is the second leading cause of death worldwide. Gastrointestinal neoplasms, such as colorectal cancer and gastric cancer, are common tumours. An important number of these cancers are due to alterations of genes, which will be transmitted down generation after generation within the same family.

It is necessary to determine what these genes are, how they work, and whether their alteration predisposes people to cancer. This will improve knowledge of these diseases, permit the identification of people at risk and enable strategies to be designed for personalised prevention and treatment.

APPROACH

The group works to identify alterations of the human genome that are relevant to hereditary predisposition towards suffering gastrointestinal neoplasms.

To determine them, we use genetic association studies, in which the group compares the genomes of patients and those of healthy controls, along with mass sequencing studies to decode the genome.

To verify the effect of genetic alterations, it uses molecular and cellular biology tools such as gene editing using the CRISPR system and the growth of organoids, three-dimensional structures that allow it to recreate gastrointestinal tissue in the laboratory.

IMPACT

The group's research identifies new genes and genetic variants involved in hereditary predisposition to gastrointestinal cancer. It has been able to identify new variants thanks to the results obtained in genetic association studies and in international collaboration.

Sequencing studies have identified significant candidates, and the group is applying functional studies to corroborate their implications for predisposition towards cancer. The group wants to use these new genetic variants to improve the clinical management of patients and to develop customised follow-up and treatment.

RESEARCH LINES

- Clinical relevance of new hereditary genes for gastrointestinal cancer.

- Genetic association studies in colorectal cancer and advanced adenomas.

- New hereditary genes for colorectal cancer.

- New hereditary genes for gastric cancer.

- State-of-the-art functional studies of candidate genes.

PUBLICATIONS

Originals / I.F.: 92.006

1. Huyghe JR, Bien SA, Harrison TA, Kang HM, Chen S, Schmit SL, Conti DV, Qu C, Jeon J, Edlund CK, Greenside P, Wainberg M, Schumacher FR, Smith JD, Levine DM, Nelson SC, Sinnott-Armstrong NA, Albanes D, Alonso MH, Anderson K, Arnau-Collell C, Arndt V, Bamia C, Banbury BL, Baron JA, Berndt SI, Bézieau S, Bishop DT, Boehm J, Boeing H, Brenner H, Brezina S, Buch S, Buchanan DD, Burnett-Hartman A, Butterbach K, Caan BJ, Campbell PT, Carlson CS, Castellví-Bel S, Chan AT, Chang-Claude J, Chanock SJ, Chirlaque MD, Cho SH, Connolly CM, Cross AJ, Cuk K, Curtis KR, de la Chapelle A, Doheny KF, Duggan D, Easton DF, Elias SG, Elliott F, English DR, Feskens EJM, Figueiredo JC, Fischer R, FitzGerald LM, Forman D, Gala M, Gallinger S, Gauderman WJ, Giles GG, Gillanders E, Gong J, Goodman PJ, Grady WM, Grove JS, Gsur A, Gunter MJ, Haile RW, Hampe J, Hampel H, Harlid S, Hayes RB, Hofer P, Hoffmeister M, Hopper JL, Hsu WL, Huang WY, Hudson TJ, Hunter DJ, Ibañez-Sanz G, Idos GE, Ingersoll R, Jackson RD, Jacobs EJ, Jenkins MA, Joshi AD, Joshu CE, Keku TO, Key TJ, Kim HR, Kobayashi E, Kolonel LN, Kooperberg C, Kühn T, Küry S, Kweon SS, Larsson SC, Laurie CA, Le Marchand L, Leal SM, Lee SC, Lejbkowicz F, Lemire M, Li CI, Li L, Lieb W, Lin Y, Lindblom A, Lindor NM, Ling H, Louie TL, Männistö S, Markowitz SD, Martín V, Masala G, McNeil CE, Melas M, Milne RL, Moreno L, Murphy N, Myte R, Naccarati A, Newcomb PA, Offit K, Ogino S, Onland-Moret NC, Pardini B, Parfrey PS, Pearlman R, Perduca V, Pharoah PDP, Pinchev M, Platz EA, Prentice RL, Pugh E, Raskin L, Rennert G, Rennert HS, Riboli E, Rodríguez-Barranco M, Romm J, Sakoda LC, Schafmayer C, Schoen RE, Seminara D, Shah M, Shelford T, Shin MH, Shulman K, Sieri S, Slattery ML, Southey MC, Stadler ZK, Stegmaier C, Su YR, Tangen CM, Thibodeau SN, Thomas DC, Thomas SS, Toland AE, Trichopoulou A, Ulrich CM, Van Den Berg DJ, van Duijnhoven FJB, Van Guelpen B, van Kranen H, Vijai J, Visvanathan K, Vodicka P, Vodickova L, Vymetalkova V, Weigl K, Weinstein SJ, White E, Win AK, Wolf CR, Wolk A, Woods MO, Wu AH, Zaidi SH, Zanke BW, Zhang Q, Zheng W, Scacheri PC, Potter JD, Bassik MC, Kundaje A, Casey G, Moreno V, Abecasis GR, Nickerson DA, Gruber SB, Hsu L, Peters U. **Discovery of common and rare genetic risk variants for colorectal cancer.** *NATURE GENETICS.* 51(1):76-87. I.F.: 25.455

2. Vleugels JLA, Hassan C, Senore C, Cassoni P, Baron JA, Rex DK, Ponugoti PL, Pellise M, Parejo S, Bessa X, Arnau-Collell C, Kaminski MF, Bugajski M, Wieszczy P, Kuipers EJ, Melson J, Ma KH, Holman R, Dekker E, Pohl H. **Diminutive Polyps With Advanced Histologic Features Do Not Increase Risk for Metachronous Advanced Colon Neoplasia.** *GASTROENTEROLOGY.* 156(3):623-634.e3. I.F.: 19.233

3. Rivero-Sánchez L, López Vicente J, Hernandez Villalba L, Puig I, Arnau-Collell C, Moreno L, Díaz M, Rodriguez de Miguel C, Ocaña T, Moreira L, Cuatrecasas M, Carballal S, Sánchez A, Ortiz O, Llach J, Balaguer F, Pellisé M, EndoCAR group from the Spanish Gastroenterology Association and the Spanish Society of Digestive Endoscopy. **Endocuff-assisted colonoscopy for surveillance of serrated polyposis syndrome: a multicenter randomized controlled trial.** *ENDOSCOPY.* 51(7):637-645. I.F.: 6.381

4. Rodríguez-Alcalde D, Carballal S, Moreira L, Hernández L, Rodríguez-Alonso L, Rodríguez-Moranta F, Gonzalo V, Bujanda L, Bessa X, Poves C, Cubiella J, Castro I, González M, Moya E, Oquiñena S, Clofent J, Quintero E, Esteban P, Piñol V, Fernández FJ, Jover R, Cid L, Saperas E, López-Cerón M, Cuatrecasas M, López-Vicente J, Rivero-Sánchez L, Jung G, Vila-Casadesús M, Sánchez A, Castells A, Pellisé M, Balaguer F, Gastrointestinal Oncology Group of the Spanish Gastroenterological Association. **High incidence of advanced colorectal neoplasia during endoscopic surveillance in serrated polyposis syndrome.** *ENDOSCOPY.* 51(2):142-151. I.F.: 6.381

5. Díaz-Gay M, Franch-Expósito S, Arnau-Collell C, Park S, Supek F, Muñoz J, Bonjoch L, Gratacós-Mulleras A, Sánchez-Rojas PA, Esteban-Jurado C, Ocaña T, Cuatrecasas M, Vila-Casadesús M, Lozano JJ, Parra G, Laurie S, Beltran S,, Castells A, Bujanda L, Cubiella J, Balaguer F, Castellví-Bel S EPICOLON Consortium. **Integrated Analysis of Germline and Tumor DNA Identifies New Candidate Genes Involved in Familial Colorectal Cancer.** *CANCERS.* 11(3):E362. I.F.: 6.162

6. Torabi K, Erola P, Alvarez-Mora MI, Díaz-Gay M, Ferrer Q, Castells A, Castellví-Bel S, Milà M, Lozano JJ, Miró R, Ried T, Ponsa I, Camps J. **Quantitative analysis of somatically-acquired and constitutive uniparental disomy in gastrointestinal cancers.** *INTERNATIONAL JOURNAL OF CANCER.* 144(3):513-524. I.F.: 4.982

7. Antelo M, Golubicki M, Roca E, Mendez G, Carballido M, Iseas S, Cuatrecasas M, Moreira L, Sanchez A, Carballal S, Castells A, Boland CR, Goel A, Balaguer F. **Lynch-like syndrome is as frequent as Lynch syndrome in early-onset non-familial non-polyposis colorectal cancer.** *INTERNATIONAL JOURNAL OF CANCER.* 145(3):705-713. I.F.: 4.982

8. Quintanilla I, López-Cerón M, Jimeno M, Cuatrecasas M, Zabalza M, Moreira L, Alonso V, Rodríguez de Miguel C, Muñoz J, Castellvi-Bel S, Llach J, Castells A, Balaguer F, Camps J, Pellisé M. **Rectal Aberrant Crypt Foci in Humans Are Not Surrogate Markers for Colorectal Cancer Risk.** *CLINICAL AND TRANSLATIONAL GASTROENTEROLOGY.* 10(6):e00047. I.F.: 4.803

9. Toma C, Díaz-Gay M, Soares de Lima Y, Arnau-Collell C, Franch-Expósito S, Muñoz J, Overs B, Bonjoch L, Carballal S, Ocaña T, Cuatrecasas M, Díaz de Bustamante A, Castells A, Bujanda L, Cubiella J, Balaguer F, Rodríguez-Alcalde D, Fullerton JM, Castellví-Bel S. **Identification of a Novel Candidate Gene for Serrated Polyposis Syndrome Germline Predisposition by Performing Linkage Analysis Combined With Whole-Exome Sequencing.** *CLINICAL AND TRANSLATIONAL GASTROENTEROLOGY.* 10(10):e00100. I.F.: 4.803

10. Vila-Navarro E, Duran-Sanchon S, Vila-Casadesús M, Moreira L, Ginès À, Cuatrecasas M, Lozano JJ, Bujanda L, Castells A, Gironella M. **Novel Circulating miRNA Signatures for Early Detection of Pancreatic Neoplasia.** *CLINICAL AND TRANSLATIONAL GASTROENTEROLOGY.* 10(4):e00029. I.F.: 4.803

11. Jiménez-Alesanco A, Marcuello M, Pastor-Jiménez M, López-Puerto L, Bonjoch L, Gironella M, Carrascal M, Abian J, de-Madaria E, Closa D. **Acute pancreatitis promotes the generation of two different exosome populations.** *SCIENTIFIC REPORTS.* 9(1):19887. I.F.: 4.011

Review / I.F.: 24.939

1. Bonjoch L, Mur P, Arnau-Collell C, Vargas-Parra G, Shamloo B, Franch-Expósito S, Pineda M, Capellà G, Erman B, Castellví-Bel S. **Approaches to functionally validate candidate genetic variants involved in colorectal cancer predisposition.** *MOLECULAR ASPECTS OF MEDICINE.* 69:27-40. I.F.: 8.313

2. Valle L, de Voer RM, Goldberg Y, Sjursen W, Försti A, Ruiz-Ponte C, Caldés T, Garré P, Olsen MF, Nordling M, Castellvi-Bel S, Hemminki K. **Update on genetic predisposition to colorectal cancer and polyposis.** *MOLECULAR ASPECTS OF MEDICINE.* 69:10-26. I.F.: 8.313

3. Grolleman J., Díaz-Gay M., Franch-Expósito S., Castellví-Bel S., de Voer R. **Somatic mutational signatures in polyposis and colorectal cancer.** *MOLECULAR ASPECTS OF MEDICINE.* 69:62-72. I.F.: 8.313

Editorial / I.F.: 8.313

1. Castellví-Bel S. **Introduction to special issue – "New insights on the molecular aspects of colorectal cancer".** *MOLECULAR ASPECTS OF MEDICINE.* 69:1. I.F.: 8.313

Clinical Guidelines / I.F.: 14.196

1. Stjepanovic N, Moreira L, Carneiro F, Balaguer F, Cervantes A, Balmaña J, Martinelli E, ESMO Guidelines Committee. **Hereditary gastrointestinal cancers: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up.** *ANNALS OF ONCOLOGY.* 30(10):1558-1571. I.F.: 14.196

GRANTS FOR RESEARCH IN PROGRESS

Castells A, Castellvi S, Camps J. **Prevencio del cancer colorectal en la poblacio de risc mitja mitjancant biomarcadors genomics i microbiomics (CRIPREV).**
Sponsored by: Generalitat de Catalunya. PERIS_Programes16 (SLT002/16/00398)
Duration: 27/03/2017-31/12/2019

Castells A, Pellise M, Balaguer F, Camps J, Castellvi S, Gironella M. **Identificacion de nuevos biomarcadores para la prevencion del cancer colorrectal.**
Sponsored by: Asociacion Espanola Contra el Cancer (AECC). Grupo Estable_2013
Duration: 01/10/2013-30/09/2019

Castellví-Bel S. **Caracterización funcional de variantes en nuevos genes candidatos en la predisposición germinal al cáncer colorrectal y el síndrome de poliposis serrada (FUNCTION4GENE).**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00878
Duration: 01/01/2018-31/12/2020

Castellví-Bel S. **TRANSCOLONCAN: Identifying biomarkers through translational research for prevention and stratification of colorectal cancer.**
Sponsored by: European Commission. H2020_CA17118
Duration: 01/10/2018-30/09/2022

DOCTORAL THESES

Castellvi S, Balaguer F. **Identification of new candidates genes for germline predisposition to familial colorectal cancer using somatic mutational profiling.**
PhD student: Marcos Díaz Gay

Castellvi S, Lozano Salvatella JC. **Variants de número de còpia al càncer colorectal: predisposició germinal i perfils genòmics tumorals.**
PhD student: Sebastià Franch Expósito

3.4 Neuronal control of metabolism (NeuCoMe)

LOCATION
CEK building, floor 5

KEYWORDS
1. **Hypothalamus**
2. **Neurons**
3. **Mitochondria**
4. **Metabolism**

RELATED DISEASES
1. **Obesity**
2. **Diabetes**

GROUP INVOLVED IN
CIBERdem
AGAUR_SGR17: 01166



GROUP LEADER
Marc Claret (IDIBAPS)
T. 93 227 54 00 (Ext.: 4552)
mclaret@clinic.cat

RESEARCHERS
Arnaud Obri (IDIBAPS)

POST-DOCTORAL RESEARCHERS
Elena Eyre (IDIBAPS)
Alicia Garcia Gomez-Valadés (IDIBAPS)
Roberta Haddad-Tóvolli (IDIBAPS)
Macarena Pozo (IDIBAPS)
Sara Ramirez (IDIBAPS)
Míriam Toledo (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Iñigo Chivite (IDIBAPS)

TECHNICIANS
Maria Milà (IDIBAPS)

PROBLEM

Humans are the result of evolution within an environment of scarcity, where physical activity and caloric restriction were common. But today's lifestyles, characterised by sedentarism and a dietary excess of fats and carbohydrates, have caused an epidemic of diabetes and obesity.

Unfortunately, non-invasive therapeutic tools are scarce and inefficient. Therefore, it is essential to understand the mechanisms that regulate metabolism and body weight in order to design safe and powerful drugs.

APPROACH

The central nervous system controls many physiological functions, including appetite and body weight.

The group aims to understand the molecular mechanisms through which specific neuronal circuits, and especially hypothalamic ones, regulate food intake, body weight and metabolism. It also investigates the relationship between food and emotional behavior.

IMPACT

The group has established that maintaining the shape of the mitochondria (the part of the cells responsible for providing energy), and therefore their function, within a specific population of neurons, is essential to respond adequately to certain hormones and nutrients. Whenever there are defects in these processes, diabetes and obesity appear.

It is currently investigating, from various perspectives, the role played by mitochondria with respect to appetite and body weight in different neuronal populations. It is also developing paradigms to study in depth the relationships between appetite, cognitive function and emotions.

RESEARCH LINES

- Cell-type specific epigenetics and obesity.

- Eating patterns during pregnancy and hypothalamic programming.

- Endothelial cells: new players in metabolic disorders.

- Feeding behavior and emotions.

- The multifaceted mitochondria: obesity, diabetes and beyond.

PUBLICATIONS

Review

1. Toledo M, Singh R. **Complement C3 and Autophagy Keep the β Cell Alive.** *CELL METABOLISM.* 29(1)4-6

2. Obri A, Claret M. **A question of identity: Tbx3 carries the POMC fag.** *NATURE METABOLISM.* 175-176

3. Obri A, Claret M. **The role of epigenetics in hypothalamic energy balance control: implications for obesity.**
CELL STRESS. 3(7):208-220

GRANTS FOR RESEARCH IN PROGRESS

Claret M. **Hypothalamic control of gut function and microbiota composition: implications for energy balance regulation.**
Sponsored by: Fundació la Caixa.
HR18-00100
Duration: 01/11/2019-31/10/2022

Claret M. **Investigando el papel de los neuroesteroides derivados de las neuronas POMC hipotalámicas como reguladores críticos del balance energético y el metabolismo.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00963
Duration: 01/01/2017-31/12/2019

Claret M. **Neuronas POMC: ¿En la interfaz entre la detección de energía y el comportamiento altruista?**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
BFU2015-72486-EXP
Duration: 01/05/2017-30/04/2020

Claret M. **MITOSENSING: Decoding mitochondrial nutrient-sensing programs in POMC neurons as key determinants of metabolic health.**
Sponsored by: European Commission.
H2020_ERC_2016_Co (725004)
Duration: 01/04/2017-31/03/2022

Claret M. **Mitochondrial fusion in endothelial cells: impact on systemic energy and glucose homeostasis.**
Sponsored by: European Foundation for the Study of Diabetes. EFSD/Lilly_2017
Duration: 15/02/2018-14/02/2020

3.5 Inflammation and liver disease

LOCATION
CEK building, floor 3

KEYWORDS
1. **Chronic liver diseases: Innate immunity**
2. **Systemic inflammation**
3. **Organ failure**
4. **Omics technologies**
5. **Macrophages**

RELATED DISEASES
1. **Chronic liver diseases**
2. **Acute on chronic liver failure**

GROUP INVOLVED IN
AGAUR_SGR17: 01166

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**7**	**58,11**	**8,30**	**57%**	**57%**



GROUP LEADER
Joan Clària (HCB)
T. 93 227 54 00 (Ext.: 4784)
jclaria@clinic.cat

EMERITUS
Vicente Arroyo (HCB)

POST-DOCTORAL RESEARCHERS
José Alcaraz (HCB)
Cristina Lopez Vicario (FCRB)
Naira Rico (HCB)
Esther Titos (HCB)
Ingrid Wei Zhang (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Mireia Casulleras (FCRB)
Marta Duran (FCRB)
Roger Flores (FCRB)

TECHNICIANS
Maria Aguilar (FCRB)
Anabel Martinez Puchol (FCRB)
Mònica Romo (IDIBAPS)
Albert Salvatella (FCRB)
Maria Belén Sanchez Rodriguez (FCRB)
Sílvia Sanz (FCRB)

PROBLEM

Chronic liver disease is, among all non-transmissible diseases, the most prevalent in our environment. This is becoming increasingly evident with the growing prevalence of chronic liver disease, associated with the global obesity pandemic.

Within this context, inflammation plays a key role, both in the early stages of the disease and in its most advanced phases, which are associated with a high mortality rate.

APPROACH

The group is interested in the study of the molecular and cellular mechanisms of the inflammatory response in liver diseases, especially in the study of inflammatory lipid mediators.

Within these, our group is leader in the study of pro-resolving lipid mediators, molecules endogenously produced by the body and capable of inhibiting excessive inflammation.

IMPACT

The group has identified new lipid mediators derived from polyunsaturated fatty acids that slow the activation of the innate immune system and promote the resolution of inflammation. One of its great challenges is to transfer these results to the prevention and treatment of liver complications.

RESEARCH LINES

- Cellular mechanisms of inflammation in chronic liver disease.

- Genetic controlof inflammation in chronic liver disease.

- Molecular mechanisms of inflammation in chronic liver disease.

PUBLICATIONS

Originals / I.F.: 58.113

1. Fernández J, Clària J, Amorós A, Aguilar F, Castro M, Casulleras M, Acevedo J, Duran-Güell M, Nuñez L, Costa M, Torres M, Horrillo R, Ruiz-Del-Árbol L, Villanueva C, Prado V, Arteaga M, Trebicka J, Angeli P, Merli M, Alessandria C, Aagaard NK, Soriano G, Durand F, Gerbes A, Gustot T, Welzel TM, Salerno F, Bañares R, Vargas V, Albillos A, Silva A, Morales-Ruiz M, Carlos García-Pagán J, Pavesi M, Jalan R, Bernardi M, Moreau R, Páez A, Arroyo V . **Effects of Albumin Treatment on Systemic and Portal Hemodynamics and Systemic Inflammation in Patients With Decompensated Cirrhosis.** *GASTROENTEROLOGY.* 157(1):149-162. I.F.: 19.233

2. Clària J, Moreau R, Fenaille F, Amorós A, Junot C, Gronbaek H, Coenraad MJ, Pruvost A, Ghettas A, Chu-Van E, López-Vicario C, Oettl K, Caraceni P, Alessandria C, Trebicka J, Pavesi M, Deulofeu C, Albillos A, Gustot T, Welzel TM, Fernández J, Stauber RE, Saliba F, Butin N, Colsch B, Moreno C, Durand F, Nevens F, Bañares R, Benten D, Ginès P, Gerbes A, Jalan R, Angeli P, Bernardi M, Arroyo V, CANONIC Study Investigators of the EASL Clif Consortium, Grifols Chair and the European Foundation for the Study of Chronic Liver Failure (EF Clif). **Orchestration of Tryptophan-Kynurenine pathway, acute decompensation and acute-on-chronic liver failure in cirrhosis.** *HEPATOLOGY.* 69(4):1686-1701. I.F.: 14.971

3. Carracedo M, Artiach G, Witasp A, Clària J, Carlström M, Laguna-Fernandez A, Stenvinkel P, Bäck M. **The G-protein coupled receptor ChemR23 determines smooth muscle cell phenotypic switching to enhance high phosphate-induced vascular calcification. CARDIOVASCULAR RESEARCH.** 115(10):1557-1566. I.F.: 7.014

4. López-Vicario C, Titos E, Walker ME, Alcaraz-Quiles J, Casulleras M, Durán-Güell M, Flores-Costa R, Pérez-Romero N, Forné M, Dalli J, Clària J. **Leukocytes from obese individuals exhibit an impaired SPM signature.** *FASEB JOURNAL.* 33(6):7072-7083. I.F.: 5.391

5. Trebicka, Jonel; Amoros, Alex; Pitarch, Carla; Titos, Esther; Alcaraz-Quiles, Jose; Schierwagen, Robert; Deulofeu, Carmen; Fernandez-Gomez, Javier; Piano, Salvatore; Caraceni, Paolo; Oettl, Karl; Sola, Elsa; Laleman, Wim; McNaughtan, Jane; Mookerjee, Rajeshwar P.; Coenraad, Minneke J.; Welzel, Tania; Steib, Christian; Garcia, Rita; Gustot, Thierry; Rodriguez Gandia, Miguel A.; Banares, Rafael; Albillos, Agustin; Zeuzem, Stefan; Vargas, Victor; Saliba, Faouzi; Nevens, Frederic; Alessandria, Carlo; de Gottardi, Andrea; Zoller, Heinz; Gines, Pere; Sauerbruch, Tilman; Gerbes, Alexander; Stauber, Rudolf E.; Bernardi, Mauro; Angeli, Paolo; Pavesi, Marco; Moreau, Richard; Claria, Joan; Jalan, Rajiv; Arroyo, Vicente;EASL-CLIF Consortium European Fdn. **Addressing Profiles of Systemic Inflammation Across the Different Clinical Phenotypes of Acutely Decompensated Cirrhosis.** *FRONTIERS IN IMMUNOLOGY.* 10:476. I.F.: 4.716

6. Lopategi A., Flores-Costa R., Rius B., López-Vicario C., Alcaraz-Quiles J., Titos E., Clària J. **Frontline Science: Specialized proresolving lipid mediators inhibit the priming and activation of the macrophage NLRP3 inflammasome**. *JOURNAL OF LEUKOCYTE BIOLOGY.* 105(1):25-36. I.F.: 4.012

7. Queck A, Thomas D, Jansen C, Schreiber Y, Rüschenbaum S, Praktiknjo M, Schwarzkopf K, Mücke M, Schierwagen R, Uschner F, Meyer C, Clària J, Zeuzem S, Geisslinger G, Trebicka J, Lange C. **Pathophysiological role of prostanoids in coagulation of the portal venous system in liver cirrhosis.** *PLOS ONE.* 14(10):e0222840. I.F.: 2.776

GRANTS FOR RESEARCH IN PROGRESS

Claria J. **Investigació hepàtica: recerca bàsica i experimental.**
Sponsored by: Generalitat de Catalunya.
AGAUR_SGR17_01449
Duration: 01/01/2017-31/12/2020

Claria J. **Mecanismos moleculares determinantes de la resolución inadecuada de la inflamación en tejido adiposo obeso. Nuevas oportunidades en la prevención de comorbilidades metabólicas.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
SAF2015-63674-R
Duration: 01/01/2016-31/12/2019

Claria J. **MICROB-PREDICT. MICROBiome-based biomarkers to PREDICT decompensation of liver cirrhosis and treatment response.**
Sponsored by: European Commission. H2020
Duration: 01/01/2019-31/12/2024

3.6 Angiogenesis in liver disease

LOCATION
CEK building, floor 4

KEYWORDS
1. **Angiogenesis**
2. **Fibrosis**
3. **Steatosis**
4. **Liver cancer**
5. **Obesity**
6. **CPEB proteins**

RELATED DISEASES
1. **Liver cirrhosis**
2. **Liver steatosis**
3. **Liver cancer**

GROUP INVOLVED IN
CIBEREHD

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**1**	**2,13**	**2,13**	**0%**	**0%**



GROUP LEADER
Mercedes Fernández Lobato (IDIBAPS)
T. 606 958 606
mercefernandez@ub.edu
mlobato@clinic.cat

POST-DOCTORAL RESEARCHERS
Javier Gallego (CIBER)
Marc Mejias (CIBER)
Salvador Naranjo (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Alexandra Balvey (IDIBAPS)
Nuria Pell (IDIBAPS)
Marta Ramírez (IDIBAPS)

PROBLEM

Chronic liver diseases, including liver steatosis, cirrhosis and cancer, affect millions of human beings and are leading causes of death and liver transplantation worldwide. They are therefore grave public health problems and consequently a field of considerable pharmaceutical interest. Worryingly, the incidence of liver disease is dramatically rising due to the global epidemics of obesity/overweight that has become a major socioeconomic challenge, affecting both adults and children.

In our group, we aim to dissect the mechanisms underpinning chronic liver disease and the link obesity-liver disease, with a particular interests in unraveling how dysregulated posttranscriptional reprogramming (leading to aberrant protein expression) facilitates disease progression and aggravation. The ultimate goal is to identify novel therapeutic targets that help design new and more effective treatments

APPROACH

We use a combination of mouse models and cell-based models (human and mouse), knockout mice, high-throughput genomic approaches, and basic molecular and cellular biology.

IMPACT

Our group has made key contributions to the understanding of chronic liver disease:

- Posttranscriptional reprogramming of metabolism is a driver of hepatic stellate cell activation in liver fibrosis (Gastroenterology 2020).

- Adaptive translational response to ER stress mediated by CPEB4 counteracts hepatic steatosis (Nature Cell Biology 2017).

- Targeted siRNA therapeutics are novel treatment tools for liver disease (Scientific Reports 2017).

- Vascular stem cells mediate a new mechanism responsible for formation of abnormal vessels in chronic liver disease (Gut 2017).

- CPEB proteins are critical for pathologic angiogenesis in chronic liver disease (Gastroenterology 2016).

- Endogenous angiogenesis inhibitors have potent antiangiogenic and antifibrogenic therapeutic activity in chronic liver disease (Gut 2015; Hepatology 2014).

- Angiogenesis is a critical hallmark of chronic liver disease with therapeutic potential (Gastroenterology 2004; Journal Hepatology 2005; Journal Hepatology 2006; Gut 2007; Hepatology 2007; Journal Hepatology 2009; Hepatology 2009; Journal of Hepatology 2010; among others).

RESEARCH LINES

We are interested in studying the following questions:

- What intrinsic (cell autonomous) mechanisms regulate the function of liver cells and their interplay with the local microenvironment or niche, and how are they deregulated during steatosis, cirrhosis and liver cancer?

- Which is the role of CPEB proteins in the reprogramming of gene expression during chronic liver disease?
- How does deregulation of pathways that control angiogenesis contribute to progression of liver disease?
- What is the significance and underlying mechanisms linking obesity with chronic liver disease?

PUBLICATIONS

Originals / I.F.: 2.126

1. Ramirez M; Pell N; Mejias M; Fernandez M. **Pericytes in the Gut.** *ADVANCES IN EXPERIMENTAL MEDICINE AND BIOLOGY.* 1122:73-100. I.F.: 2.126

Review / I.F.: 4.716

1. Ramirez-Pedraza, Marta; Fernandez, Mercedes. **Interplay Between Macrophages and Angiogenesis: A Double-Edged Sword in Liver Disease.** *FRONTIERS IN IMMUNOLOGY.* 10(2882):2882. I.F.: 4.716

GRANTS FOR RESEARCH IN PROGRESS

Fernández M. **Metabolic reprogramming in obesity-driven liver cancer: mechanisms, functions and therapeutic opportunities.**
Sponsored by: Fundació La Marató de TV3.
Duration: 01/11/2019-01/11/2023

Fernández M. **Posttranscriptional gene regulation reprogramming in obesity-driven liver cancer.**
Sponsored by: La Caixa Foundation.
Duration: 01/01/2019-01/01/2023

Fernández M. **Role and therapeutic potential of the unfolded protein response in obesity-related liver cancer.**
Sponsored by: Ministerio de Ciencia, Innovación y Universidades (MICINN).
SAF2017-87988-R
Duration: 01/01/2018-31/12/2020

Fernández M. **Posttranscriptional reprogramming in obesity-driven liver cancer: mechanisms, functions and therapeutic potential.**
Sponsored by: Ministerio de Ciencia, Innovación y Universidades (MICINN).
PRE2018-083718
Duration: 01/09/2019-01/09/2023

Fernández M. **Molecular regulation of the progression from hepatic steatosis to cirrhosis and hepatocellular carcinoma: Role and therapeutic potential of CPEB proteins.**
Sponsored by: Asociación Española Contra el Cáncer (AECC). GrupoEstable15
Duration: 01/09/2015-31/08/2020

Fernández M. **Metabolic reprogramming in obesity-driven liver cancer: mechanisms, functions and therapeutic potential.**
Sponsored by: BBVA Foundation.
Duration: 01/01/2019-01/01/2023

Fernández M. **Role and therapeutic potential of CPEB proteins in the transition from cirrhosis to hepatocellular carcinoma.**
Sponsored by: Worldwide Cancer Research (WCR). 16-0026
Duration: 01/09/2019-01/09/2023

3.7 Mitochondrial regulation of cell death and steatohepatitis

LOCATION
CEK building, floor 4

KEYWORDS
1. **Cholesterol/sphingolipids**
2. **Mitochondrial death**
3. **Oxidative stress**
4. **Alcoholic and non-alcoholic steatohepatitis (ASH/NASH)**
5. **Lipid therapies**

RELATED DISEASES
1. **Alcoholic (ASH) and non alcoholic steatohepatitis (NASH)**
2. **Hepatocellular carcinoma (HCC)**
3. **Lysosomal storage diseases (LSD)**
4. **Alzheimer disease**

GROUP INVOLVED IN
CIBEREHD
AGAUR_SGR17: 00225, 01112

AWARDS
Doctor "HONORIS CAUSA"
Institution: Universidad Autónoma Metropolitana de México
Awardee/s: José Carlos Fernández-Checa

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	10	119,20	11,92	80%	70%



GROUP LEADER
José Carlos Fernández-Checa
(IIBB-CSIC)
T. 93 227 57 09
josecarlos.fernandezcheca@iibb.csic.es

RESEARCHERS
Joan Caballeria (HCB)
Carmen García Ruiz (IIBB-CSIC)
Pilar Navarro (IIBB-CSIC)

POST-DOCTORAL RESEARCHERS
Laura Conde (CIBER)
Raquel Fucho (IIBB-CSIC)
Anna Moles (IIBB-CSIC)
Vicente Ribas (IIBB-CSIC)
Sandra Torres (IIBB-CSIC)

PRE-DOCTORAL RESEARCHERS
Naroa Insausti (IIBB-CSIC)
David Robles (IIBB-CSIC)
Paula Segalés (IIBB-CSIC)
Estel Solsona (IIBB-CSIC)

TECHNICIANS
Susana Núñez (CIBER)

PROBLEM

The group focuses on the study of the role of lipids, such as cholesterol, in regulating the function of the organelles that supply energy to cells, i.e., the mitochondria.
Good mitochondrial function is essential for cell survival. That is why the laboratory investigates how variations in mitochondrial function affect the development of liver diseases, such as steatohepatitis and its progression towards liver cancer, and neurodegenerative diseases such as Alzheimer's.

Better knowledge of the biological mechanisms that control these diseases will allow the team to design better and more specific drugs.

APPROACH

The laboratory uses mice to investigate the cellular and molecular bases related to the progression of liver disease and Alzheimer's disease. And it applies therapeutic interventions to improve the final outcome of the disorder.
It is equipped with genetically modified mice that allow it to study what role different proteins play in specific liver cells. In addition, through an innovative mouse model with a liver repopulated with human cells, it can corroborate its results within a scenario that is more similar to that of the patient.

IMPACT

The group's research explores the knowledge of the biological mechanisms that modulate mitochondrial function and how this modulation affects the progression of liver diseases and Alzheimer's disease.
One of the group's most important discoveries has been how mitochondrial cholesterol influences the development of diseases of the liver and neuronal function. The various lines of research in the laboratory will allow it to better understand the biology of these conditions, in order to design new drugs or to reuse existing ones for treatment.

RESEARCH LINES

- Contribution of sphingolipids and cholesterol in acute liver failure.

- ER stress-mitochondrial cholesterol axis in obesity-associated insulin resistance and comorbidities.

- Lysosomal proteases role during tissue remodeling and regeneration in liver and kidney injury.

- Mechanisms responsible for cholesterol transport to the mitochondria and role in NASH, hepatocellular carcinoma and Alzheimer's disease.

- Mitochondrial cholesterol and glycosphingolipids in liver fibrosis. Reciprocal regulation between HIF1a and StARD1 in steatohepatitis and hepatocellular carcinoma.

- Sphingolipid and mitochondrial oxidative-stress regulation of cell death.

- Translational research in nonalcoholic steatohepatitis (NASH): development of NASH in a humanized mouse model to identify potential targets in human NASH.

PUBLICATIONS

Originals / I.F.: 119.198

1. Duan Y; Llorente C; Lang S; Brandl K; Chu H; Jiang L; White R; Clarke T; Nguyen K; Torralba M; Shao Y; Liu J; Hernandez-Morales A; Lessor L; Rahman I; Miyamoto Y; Ly M; Gao B; Sun W; Kiesel R; Hutmacher F; Lee S; Ventura-Cots M; Bosques-Padilla F; Verna E; Abraldes J; Brown R; Vargas V; Altamirano J; Caballería J; Shawcross D; Ho S; Louvet A; Lucey M; Mathurin P; Garcia-Tsao G; Bataller R; Tu X; Eckmann L; van der Donk W. **Bacteriophage targeting of gut bacterium attenuates alcoholic liver disease.** *NATURE.* 575(7783):505-511. I.F.: 43.070

2. Torres S, Baulies A, Insausti-Urkia N, Alarcón-Vila C, Fucho R, Solsona-Vilarrasa E, Núñez S, Robles D, Ribas V, Wakefield L, Grompe M, Lucena MI, Andrade RJ, Win S, Aung TA, Kaplowitz N, García-Ruiz C, Fernández-Checa JC. **Endoplasmic Reticulum Stress-induced Upregulation of STARD1 Promotes Acetaminophen-induced Acute Liver Failure.** *GASTROENTEROLOGY.* 157(2):552-568. I.F.: 19.233

3. Aguilar-Bravo B, Rodrigo-Torres D, Ariño S, Coll M, Pose E, Blaya D, Graupera I, Perea L, Vallverdú J, Rubio-Tomás T, Dubuquoy L, Armengol C, Lo Nigro A, Stärkel P, Mathurin P, Bataller R, Caballería J, José Lozano J, Ginès P, Sancho-Bru P. **Ductular reaction cells display an inflammatory profile and recruit neutrophils in alcoholic hepatitis.** *HEPATOLOGY.* 69(5):2180-2195. I.F.: 14.971

4. Argemie; Josepmaria Latasa; Maria U Atkinson; Stephen R Blokhin; Ilya O Massey; Veronica Gue; Joel P Cabezas; Joaquin Lozano; Juan J Van Booven; Derek Bell; Aaron Cao; Sheng Vernetti; Lawrence A Arab; Juan P Ventura-Cots; Meritxell Edmunds; Lia R Fondevilla; Constantino Starkel; Peter Dubuquoy; Laurent Louvet; Alexandre Odena; Gemma Gomez; Juan L Aragon; Tomas Altamirano; Jose Caballeria; Juan Jurczak; Michael J Taylor; D Lansing Berasain; Carmen Wahlestedt; Claes Mongv; Satdarshan P Morgan; Marsha Y Sancho-Bru; Pau Mathurin; Philippe Furuya; Shinji Lackner; Carolin Rusyn; Ivan Shah; Vijay H Thursz; Mark R Mann; Jelena Avila; Matias A Bataller; Ramon. **Defective HNF4alpha-dependent gene expression as a driver of hepatocellular failure in alcoholic hepatitis.** *NATURE COMMUNICATIONS.* 10(1):3126. I.F.: 11.878

5. Solsona-Vilarrasa E., Fucho R., Torres S., Nuñez S., Nuño-Lámbarri N., Enrich C., García-Ruiz C., Fernández-Checa J.C. **Cholesterol enrichment in liver mitochondria impairs oxidative phosphorylation and disrupts the assembly of respiratory supercomplexes.** *REDOX BIOLOGY.* 24:101214. I.F.: 7.793

6. Brandt A, Nier A, Jin CJ, Baumann A, Jung F, Ribas V, García-Ruiz C, Fernández-Checa JC, Bergheim I. **Consumption of decaffeinated coffee protects against the development of early non-alcoholic steatohepatitis: Role of intestinal barrier function.** *REDOX BIOLOGY.* 21:101092. I.F.: 7.793

7. González-Casacuberta I, Juárez-Flores DL, Ezquerra M, Fucho R, Catalán-García M, Guitart-Mampel M, Tobías E, García-Ruiz C, Fernández-Checa JC, Tolosa E, Martí MJ, Grau JM, Fernández-Santiago R, Cardellach F, Morén C, Garrabou G. **Mitochondrial and autophagic alterations in skin fibroblasts from Parkinson disease patients with Parkin mutations.** *AGING-US.* 11(11):3750-3767. I.F.: 5.515

8. Gerardo-Ramírez M, Lazzarini-Lechuga R, Hernández-Rizo S, Jiménez-Salazar JE, Simoni-Nieves A, García-Ruiz C, Fernández-Checa JC, Marquardt JU, Coulouarn C, Gutiérrez-Ruiz MC, Pérez-Aguilar B, Gomez-Quiroz LE . **GDF11 exhibits tumor suppressive properties in hepatocellular carcinoma cells by restricting clonal expansion and invasion.** *BIOCHIMICA ET BIOPHYSICA ACTA-MOLECULAR BASIS OF DISEASE.* 1865(6):1540-1554. I.F.: 4.328

9. López-Pelayo H, Miquel L, Altamirano J, Bataller R, Caballeria J, Ortega L, Lligoña A, Gual A. **Treatment retention in a specialized alcohol programme after an episode of alcoholic hepatitis: Impact on alcohol relapse.** *JOURNAL OF PSYCHOSOMATIC RESEARCH.* 116:75-82. I.F.: 2.722

10. Michelena J, Alonso C, Martínez-Arranz I, Altamirano J, Mayo R, Sancho-Bru P, Bataller R, Ginès P, Castro A, Caballería J. **Metabolomics Discloses a New Non-invasive Method for the Diagnosis and Prognosis of Patients with Alcoholic Hepatitis.** *ANNALS OF HEPATOLOGY.* 18(1):144-154. I.F.: 1.895

Review / I.F.: 2.635

1. Torres S, García-Ruiz C, Fernandez-Checa J. **Mitochondrial Cholesterol in Alzheimer's Disease and Niemann–Pick Type C Disease.** *FRONTIERS IN NEUROLOGY.* 10:1168. I.F.: 2.635

Clinical Guidelines / I.F.: 1.126

1. Bataller R, Cabezas J, Aller R, Ventura-Cots M, Abad J, Albillos A, Altamirano J, Arias-Loste MT, Bañares R, Caballería J, Caballería L, Carrión JA, Diago M, Fernández Rodríguez C, Gallego R, García-Cortes M, García-Monzón C, Genescà J, Ginés P, Hernandez-Guerra M, Jorquera F, Lligoña A, Molina E, Pareja MJ, Planas R, Tomé S, Salmerón J, Romero-Gómez M. Alcohol-related liver disease. Clinical practice guidelines. **Consensus document sponsored by AEEH.** *GASTROENTEROLOGIA Y HEPATOLOGIA.* 42(10):657-676. I.F.: 1.126

GRANTS FOR RESEARCH IN PROGRESS

Fernández-Checa JC. **Contribució del metabolisme mitocondrial de oxisterols i àcids biliars a la carcinogènesi hepàtica.**
Sponsored by: Fundació la Marató de TV3.
Duration: 01/12/2019- 30/11/2021

Fernández-Checa JC. **Regulation and contribution of HIF-1 and StARD1 to steatohepatitis and hepatocellular carcinoma.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO). SAF2015-069944
Duration: 01/01/2016-31/12/2019

Fernández-Checa JC. **Enfermedades Metabólicas y Cáncer.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
RED2018-102799-T
Duration: 01/01/2019- 31/12/2020

Fernández-Checa JC. **ER stress-mitochondrial colesterol axis in obesity-associated insulin resistance and comorbidities.**
Sponsored by: Fundación BBVA.
Duration: 01/01/2018-31/12/2020

Fernández-Checa JC. **COST Action CA17112 Prospective European Drug-Induced Liver Injury Network.**
Sponsored by: European Commission. H2020.
Duration: 01/04/2018-31/03/2022

García-Ruiz C. **Investigación traslacional en esteatohepatitis no alcohólica (EHNA): desarrollo de EHNA en un modelo murino con hígado humanizado para la identificación de dianas terapéuticas.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
SAF2017-85877-R
Duration: 01/01/2018-31/12/2020

Ribas V. **Papel de colesterol mitocondrial en carcinoma hepatocelular.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
SAF2015-735579-JIN
Duration: 01/01/2017-31/12/2019

Moles A. **Identificación de nuevas dianas terapéuticas para el tratamiento del carcinoma hepatocelular: Análisis de la función de la catepsina D en el eje inflamación-fibrosis-cáncer.**
Sponsored by: Ministerio de Ciencia Innovación y Universidades (MCIU).
Duration: 01/01/2019-31/12/2021

Navarro P. **Galectinas, control de la expresión génica y cáncer: de los mecanismos moleculares a la práctica clínica.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00199
Duration: 01/01/2018-31/12/2020.

Navarro P. **Identificación de nuevos mecanismos de regulación de la hemostasia: control de la función plaquetaria a través de la proteína CPEB4.**
Sponsored by: Sociedad Española de Trombosis y Hemostasia. (SETH).
Duration: 01/01/2018-30/06/2020

3.8 Gene therapy and cancer

LOCATION
CEK building, floor 2

KEYWORDS
1. **Cancer**
2. **Oncolytic adenovirus**
3. **Organoids**
4. **Gene therapy**

RELATED DISEASES
1. **Pancreatic cancer**
2. **Glutaric aciduria**

GROUP INVOLVED IN
AGAUR_SGR17: 00861
CIBERER

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**3**	**30,80**	**10,27**	**100%**	**67%**



GROUP LEADER
Cristina Fillat (IDIBAPS)
T. 93 227 54 00 (Ext.: 4579)
cfillat@clinic.cat

RESEARCHERS
Fabio Ausania (HCB)

POST-DOCTORAL RESEARCHERS
Sabrina Gea (CIBER)

PRE-DOCTORAL RESEARCHERS
Anna Mateu (IDIBAPS)
Estela Nuñez (IDIBAPS)
Marc Otero (IDIBAPS)
Silvia Pascual (IDIBAPS)
Giulia Raimondi (IDIBAPS)

PROBLEM

Changes in the genome of cells often cause disorders such as cancer or hereditary genetic diseases. A precise knowledge of these changes and their impact on pathophysiology helps us to better understand these diseases.

In addition, a knowledge of genetic alterations is very valuable for therapeutics, because it enables innovative, often sophisticated but highly specific therapies that seek maximum efficacy to be developed.

APPROACH

The group studies the molecular and cellular bases of pancreatic cancer, taking advantage of this knowledge to design new therapies based on the use of oncolytic adenoviruses. These viruses are capable of replicating, amplifying and disintegrating cancer cells selectively and activating a response from the immune system to attack the tumour.

The group also investigates new therapeutic strategies based on gene therapy and/or gene editing, for the treatment of hereditary metabolic diseases.

IMPACT

Pancreatic cancer is a disease with a very poor prognosis: five years after diagnosis, only 7% of patients have survived. The research the group conducts allows it to advance in its knowledge of this tumour, in order to design and test new treatments to improve its progress.

In recent years, advances in gene therapy have provided new treatments for diseases that to date were incurable. In this sense, the group believes that the new gene therapy designs that it is developing will contribute towards responding to some of the hereditary metabolic diseases.

RESEARCH LINES

- Oncolytic virotherapies against pancreatic cancer.

- Preclinical gene therapy/genome editing studies for metabolic rare diseases.

- Understanding pancreatic carcinogenesis.

PUBLICATIONS

Originals / I.F.: 30.80

1. Luna J., Boni J., Cuatrecasas M., Bofill-De Ros X., Núñez-Manchón E., Gironella M., Vaquero E.C., Arbones M.L., De La Luna S., Fillat C. **DYRK1A modulates c-MET in pancreatic ductal adenocarcinoma to drive tumour growth.** *GUT.* 68(8):1465-1476. I.F.: 17.943

2. Rovira-Rigau M, Raimondi G, Marín MÁ, Gironella M, Alemany R, Fillat C. **Bioselection Reveals miR-99b and miR-485 as Enhancers of Adenoviral Oncolysis in Pancreatic Cancer.** *MOLECULAR THERAPY.* 27(1):230-243. I.F.: 8.402

3. Tort F, Ugarteburu O, Texidó L, Gea-Sorlí S, García-Villoria J, Ferrer-Cortès X, Arias Á,

Matalonga L, Gort L, Ferrer I, Guitart-Mampel M, Garrabou G, Vaz FM, Pristoupilova A, Rodríguez MIE, Beltran S, Cardellach F, Wanders RJ, Fillat C, García-Silva MT, Ribes A. **Mutations in TIMM50 cause severe mitochondrial dysfunction by targeting key aspects of mitochondrial physiology.** *HUMAN MUTATION.* 40(10):1700-1712. I.F.: 4.453

Review / I.F.: 7.23

1. Hessheimer AJ, Martínez de la Maza L, Adel Al Shwely F, Espinoza AS, Ausania F, Fondevila C. **Somatostatin and the "Small-For-Size" Liver.** *INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES.* 20:10. I.F.: 4.183

2. Ausania F, Landi F, Martínez-Pérez A, Fondevila C. **A meta-analysis of randomized controlled trials comparing laparoscopic vs open pancreaticoduodenectomy.** *HPB (Oxford).* 21(12):1613-1620. IF: 3.047

GRANTS FOR RESEARCH IN PROGRESS

Fillat C. **ONCO-SELEC: Oncoselective mechanism for gene or viral therapy.**
Sponsored by: Generalitat de Catalunya.
CERCA_Ginjol_16
Duration: 24/04/2017-23/04/2022

Fillat C. **Adenovirus oncolíticos protegidos frente anticuerpos neutralizantes y optimizados para la expresión de transgenes y reprogramación del estroma de tumores pancreáticos.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
BIO2017-89754-C2-2-R
Duration: 01/01/2018-31/12/2020

Fillat C. **Adeno-associated viral gene therapy with AAV9-GCDH to correct glutaric aciduria type I in Gcdh -/- mice.**
Sponsored by: Fundación Ramón Areces.
CIVP19S8539
Duration: 03/04/2019-02/04/2022

Vaquero EC, Ausania F, Fillat C. **Farmacotipificación de pacientes con cáncer de páncreas mediante organoides autogénicos.**
Sponsored by: Fundación Mutua Madrileña.
Duration: 30/09/2019-29/09/2022

3.9 Liver transplantation and graft viability

LOCATION
CEK building, floor 3

KEYWORDS
1. **Liver transplantation**
2. **Graft viability**
3. **Immunosuppression**
4. **Allograft tolerance**
5. **Hepatic ischemia-reperfusion injury**

RELATED DISEASES
1. **Liver metastasis from colorectal cancer**
2. **Cholangiocarcinoma**
3. **Hepatocellular carcinoma**
4. **Biliary complications**
5. **Portal hypertension and abdominal vascular diseases**
6. **Thrombotic complications**
7. **Neoplasia de novo after liver transplantation**

GROUP INVOLVED IN
CIBEREHD

AWARDS

Distinguished Career Recognition Award
Institution: Colombian Association of Hepatology
Awardee/s: Andrés Cárdenas

Award work: "Normothermic regional perfusion vs. Super rapid recovery in controlled donation after circulatory death liver transplantation".
Institution: Fundació Catalana de Trasplantament i la Reial Acadèmia de Medicina de Catalunya
Awardee/s: Amelia Judith Hessheimer

Award work: "Normothermic regional perfusion vs. Super-rapid recovery in controlled donation after circulatory death liver transplantation".
Institution: Fundació Catalanta de Trasplantament
Awardee/s: Amelia Judith Hessheimer

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**16**	**108,33**	**6,77**	**63%**	**50%**



GROUP LEADER
Constantino Fondevila (HCB)
T. 93 227 57 18
cfondevila@ub.edu

RESEARCHERS
Annabel Blasi (HCB)
Mercedes Brunet (HCB)
Andrés Cárdenas (HCB)
Jordi Felix Colmenero (HCB)
Gonzalo Crespo (HCB)
Emma Folch (IIBB-CSIC)
Juan Carlos García-Valdecasas (HCB)
Miquel A. Navasa (HCB)
Joan Roselló (IIBB-CSIC)

POST-DOCTORAL RESEARCHERS
Amelia Judith Hessheimer (HCB)
Olga Millán (CIBER)

PRE-DOCTORAL RESEARCHERS
Maryury Andrea Calvo (HCB)

TECHNICIANS
Xavier Muñoz (CIBER)

PROBLEM

Liver transplantation is the only treatment available for end-stage liver disease and some forms of liver tumors. The success of liver transplantation hinges in the short term on having an adequate supply of good-quality livers to transplant and in the long(er) term on preventing allograft rejection while simultaneously minimizing the risk for chronic diseases due to the use of immunosupression.

APPROACH

This group focuses on optimizing the number of organs available for transplantation by improving techniques of procurement and preservation as well as improving the survival and quality of life of transplanted patients. In order to achieve these aims, this group has lines of research in basic science/experimental research, translational/pre-clinical models, and clinical investigation.

This is a multidisciplinary group comprised of surgeons, hepatologists, anesthesiologists, immunologists, and biologists, with the common goal of improving scientific understanding and above all the lives of the patients we come into contact with each day.

IMPACT

Being an interdisciplinary research group give us a key vision to continue advancing into liver transplantation process research.

In relation to ischemia and graft preservation, important contributions have been made in terms of the preservation solution used to maintain the grafts after its procurement and related to the development of advanced forms of in-situ and ex-situ liver perfusion, allowing recover and transplant safely suboptimal livers, such as the ones from donors that suffer cardiac arrest.

The group has also established which patients have operational tolerance, i.e., those who require no immunosuppression, and it has defined immunosuppression status markers to help personalize the administration of immunosuppressant drugs. Another area of research has aimed to identify the cardiovascular risk factors that significantly impact on the prognosis after liver transplantations, which makes necessary to personalize immunosuppression.

Furthermore, in relation to hemostasis and coagulation, we have defined some independent risk factors for post-transplant venous thrombotic events that facilitates the management of these serious complications depending on the associated risk factors.

Biliary complicatios represents the most important source of morbidity after liver transplantation. Our group has been focused on optimizing the diagnosis and management of these detrimental complications that importantly affect the quality of life of liver transplant patients. Thus, we have been able to refine our guidelines to determine the best optimal strategy for our patients.

RESEARCH LINES

- Alloimmune response and immunosuppression.

- Operational tolerance.

- Hepatic regeneration.

- Ischemia-reperfusion injury.

- Dynamic methods of liver preservation.

- Cost-effectiveness, cost-utility, and quality-of-life studies.

PUBLICATIONS

Originals / I.F.: 108.334

1. Reverter E, Cirera I, Albillos A, Debernardi-Venon W, Abraldes JG, Llop E, Flores A, Martínez-Palli G, Blasi A, Martínez J, Turon F, García-Valdecasas JC, Berzigotti A, de Lacy AM, Fuster J, Hernández-Gea V, Bosch J, García-Pagán JC. **The prognostic role of hepatic venous pressure gradient in cirrhotic patients undergoing elective extrahepatic surgery.** *JOURNAL OF HEPATOLOGY.* 71(5):942-950. I.F.: 18.946

2. Hessheimer AJ, Coll E, Torres F, Ruíz P, Gastaca M, Rivas JI, Gómez M, Sánchez B, Santoyo J, Ramírez P, Parrilla P, Marín LM, Gómez-Bravo MÁ, García-Valdecasas JC, López-Monclús J, Boscá A, López-Andújar R, Fundora-Suárez J, Villar J, García-Sesma Á, Jiménez C, Rodríguez-Laíz G, Lladó L, Rodríguez JC, Barrera M, Charco R, López-Baena JÁ, Briceño J, Pardo F, Blanco G, Pacheco D, Domínguez-Gil B, Sánchez Turrión V, Fondevila C. **Normothermic regional perfusion vs. super-rapid recovery in controlled donation after circulatory death liver transplantation.** *JOURNAL OF HEPATOLOGY.* 70(4):658-665. I.F.: 18.946

3. Leal C, Prado V, Colan J, Chavez-Rivera K, Sendino O, Blasi A, Roura P, Juanola A, Rodriguez de Miguel C, Pavesi M, Gomez C, Guarner C, Guarner-Argente C, Fernández J, Cardenas A. **Adverse Events and Acute Chronic Liver Failure in Patients With Cirrhosis Undergoing Endoscopic Retrograde Cholangiopancreatography: A Multicenter Matched-Cohort Study.** *AMERICAN JOURNAL OF GASTROENTEROLOGY.* 114(1):89-97. I.F.: 10.241

4. Ventura-Aguiar P, Ferrer J, Paredes D, Rodriguez-Villar C, Ruiz A, Fuster J, Fondevila C, Garcia-Valdecasas JC, Esmatjes E, Adália R, Oppenheimer F, Campistol JM, Diekmann F, Ricart MJ. **Outcomes From Brain Death Donors With Previous Cardiac Arrest Accepted for Pancreas Transplantation: A Single-center Retrospective Analysis.** *ANNALS OF SURGERY.* I.F.: 9.476

5. Sabater L., Cugat E., Serrablo A., Suarez-Artacho G., Diez-Valladares L., Santoyo-Santoyo J., Martín-Pérez E., Ausania F., Lopez-Ben S., Jover-Navalon J.M., Garcés-Albir M., Garcia-Domingo M.I., Serradilla M., Pérez-Aguirre E., Sánchez-Pérez B., Di Martino M., Senra-Del-Rio P., Falgueras-Verdaguer L., Carabias A., Gómez-Mateo M.C., Ferrandez A., Dorcaratto D., Muñoz-Forner E., Fondevila C., Padillo J. **Does the Artery-first Approach Improve the Rate of R0 Resection in Pancreatoduodenectomy?: A Multicenter, Randomized, Controlled Trial.** *ANNALS OF SURGERY.* 270(5):738-746. I.F.: 9.476

6. Iavarone M, Invernizzi F, Czauderna C, Sanduzzi-Zamparelli M, Bhoori S, Amaddeo G, Manini MA, López MF, Anders M, Pinter M, Rodríguez MJB, Cristóbal MR, Soteras GA, Piñero F, Villadsen GE, Weinmann A, Crespo G, Mazzaferro V, Regnault H, Giorgio M, González-Diéguez ML, Donato MF, Varela M, Wörns MA, Bruix J, Lampertico P, Reig M. **Preliminary experience on safety of regorafenib after sorafenib failure in recurrent hepatocellular carcinoma after liver transplantation.** *AMERICAN JOURNAL OF TRANSPLANTATION.* 19(11):3176-3184. I.F.: 7.163

7. Arranz, Maria J.; Gonzalez-Rodriguez, Alex; Perez-Blanco, Josefina; Penades, Rafael; Gutierrez, Blanca; Ibanez, Laura; Arias, Barbara; Brunet, Merce; Cervilla, Jorge; Salazar, Juliana; Catalan, Rosa. **A pharmacogenetic intervention for the improvement of the safety profile of antipsychotic treatments.** *TRANSLATIONAL PSYCHIATRY.* 9(1):177. I.F.: 5.182

8. Millan, Olga; Ruiz, Pablo; Orts, Lara; Ferre, Paula; Crespo, Gonzalo; Santana, Miguel; Fortuna, Virginia; Quintairos, Luis; Navasa, Miguel; Brunet, Merce. **Monitoring of miR-181a-5p and miR-155-5p Plasmatic Expression as Prognostic Biomarkers for Acute and Subclinical Rejection in de novo Adult Liver Transplant Recipients**. *FRONTIERS IN IMMUNOLOGY.* 10(873):873. I.F.: 4.716

9. Lombardo-Quezada J, Colmenero J, López-Pelayo H, Gavotti C, Lopez A, Crespo G, Lopez E, Gual A, Lligoña A, Navasa M. **Prediction of Alcohol Relapse Among Liver Transplant Candidates With Less Than 6 Months of Abstinence Using the High-Risk Alcoholism Relapse Score**. *LIVER TRANSPLANTATION.* 25(8):1142-1154. I.F.: 4.159

10. Ruiz P, Martínez-Picola M, Santana M, Muñoz J, Pérez-Del-Pulgar S, Koutsoudakis G, Sastre L, Colmenero J, Crespo G, Navasa M. **Torque Teno Virus Is Associated With the State of Immune Suppression Early After Liver Transplantation.** *LIVER TRANSPLANTATION.* 25(2):302-310. I.F.: 4.159

11. Martínez de la Maza L, Prado V, Hessheimer AJ, Muñoz J, García-Valdecasas JC, Fondevila C. **A novel and simple formula to predict liver mass in porcine experimental models.** *SCIENTIFIC REPORTS.* 9(1):12459. I.F.: 4.011

12. Jaramillo S., Montane-Muntane M., Capitan D., Aguilar F., Vilaseca A., Blasi A., Navarro-Ripoll R. **Agreement of surgical blood loss estimation methods**. *TRANSFUSION.* 59(2):508-515. I.F.: 3.111

13. Gambato M, Gregori J, Quer J, Koutsoudakis G, González P, Caro-Pérez N, García-Cehic D, García-González N, González-Candelas F, Esteban JI, Crespo G, Navasa M, Forns X, Pérez-Del-Pulgar S. **Hepatitis C virus intrinsic molecular determinants may contribute to the development of cholestatic hepatitis after liver transplantation.** *JOURNAL OF GENERAL VIROLOGY.* 100(1):63-68. I.F.: 2.809

14. Van Reeven M., Pirenne J., Muiesan P., Fondevila C., IJzermans J., Polak W. **Policies towards donation after circulatory death liver transplantation: the need for a guideline?** *JOURNAL OF HEPATO-BILIARY-PANCREATIC SCIENCES.* 26(4):128-136. I.F.: 2.353

15. Pavel M., Reyner E., Molina V., Garcia R., Ruiz A., Roque R., Diaz A., Fuster J., Garcia-Valdecasas J. **Evolution Under Normothermic Machine Perfusion of Type 2 DCD Livers Discarded as Nontransplantable.** *JOURNAL OF SURGICAL RESEARCH.* 235:383-394. I.F.: 1.872

16. Sierra-Arango F., Castaño D.M., Forero J.D., Pérez-Riveros E.D., Ardila Duarte G., Botero M.L., Cárdenas A., De La Hoz-Valle J. **A Randomized Placebo-Controlled N-of-1**

Trial: The Effect of Proton Pump Inhibitor in the Management of Gastroesophageal Reflux Disease. *CANADIAN JOURNAL OF GASTROENTEROLOGY AND HEPATOLOGY.* 3926051. I.F.: 1.714

Review / I.F.: 25.052

1. Cillo U., Fondevila C., Donadon M., Gringeri E., Mocchegiani F., Schlitt H.J., Ijzermans J.N.M., Vivarelli M., Zieniewicz K., Olde Damink S.W.M., Groot Koerkamp B. **Surgery for cholangiocarcinoma.** *LIVER INTERNATIONAL.* 39(S1):143-155. I.F.: 5.542

2. Hessheimer AJ, Martínez de la Maza L, Adel Al Shwely F, Espinoza AS, Ausania F, Fondevila C. **Somatostatin and the "Small-For-Size" Liver.** INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES. 20:10. I.F.: 4.183

3. Lum, Erik L.; Cardenas, Andres; Martin, Paul; Bunnapradist, Suphamai. **Current Status of Simultaneous Liver-Kidney Transplantation in the United States.** *LIVER TRANSPLANTATION.* 25(5):797-806. I.F.: 4.159

4. Rodrigues S.G., Cárdenas A., Escorsell À., Bosch J. **Balloon Tamponade and Esophageal Stenting for Esophageal Variceal Bleeding in Cirrhosis: A Systematic Review and Meta-analysis.** *SEMINARS IN LIVER DISEASE.* 39(2):178-194. I.F.: 3.459

5. Ausania F., Landi F., Martínez-Pérez A., Fondevila C. **A meta-analysis of randomized controlled trials comparing laparoscopic vs open pancreaticoduodenectomy.** *HPB.* 21(12):1613-1620. I.F.: 3.047

6. Hessheimer AJ, Riquelme F, Fundora-Suárez Y, García Pérez R, Fondevila C. **Normothermic perfusion and outcomes after liver transplantation.** *TRANSPLANTATION REVIEWS.* 33(4):200-208. I.F.: 2.615

7. Olga M, Eberhard W, Pierre M, Mercè B . **Pharmacodynamic monitoring of mTOR inhibitors.** *THERAPEUTIC DRUG MONITORING.* 41(2):160-167. I.F.: 2.047

Letters / I.F.: 59.875

1. Abu Dayyeh, Barham K.; Bazerbachi, Fatah; Graupera, Isabel; Cardenas, Andres. **Endoscopic bariatric and metabolic therapies for non-alcoholic fatty liver disease.** *JOURNAL OF HEPATOLOGY.* 71(6):1246-1248. I.F.: 18.946

2. Hessheimer AJ, Coll E, Ruíz P, Gastaca M, Rivas JI, Gómez M, Sánchez B, Santoyo J, Ramírez P, Parrilla P, Marín LM, Gómez-Bravo MÁ, García-Valdecasas JC, López-Monclús J, Boscá A, López-Andújar R, Fundora-Suárez J, Villar J, García-Sesma Á, Jiménez C, Rodríguez-Laíz G, Lladó L, Rodríguez JC, Barrera M, Charco R, López-Baena JÁ, Briceño J, Pardo F, Blanco G, Pacheco D, Domínguez-Gil B, Sánchez Turrión V, Fondevila C . **The UK DCD Risk Score: Still no consensus on futility in DCD liver transplantation.** *JOURNAL OF HEPATOLOGY, SUPPLEMENT.* 70(5):1034-1035. I.F.: 18.946

3. Hessheimer AJ, Coll E, Ruíz P, Gastaca M, Rivas JI, Gómez M, Sánchez B, Santoyo J, Ramírez P, Parrilla P, Marín LM, Gómez-Bravo MÁ, García-Valdecasas JC, López-Monclús J, Boscá A, López-Andújar R, Fundora-Suárez Y, Villar J, García-Sesma Á, Jiménez C, Rodríguez-Laíz G, Lladó L, Rodríguez JC, Barrera M, Charco R, López-Baena JÁ, Briceño J, Pardo F, Blanco G, Pacheco D, Domínguez-Gil B, Sánchez Turrión V, Fondevila C . **Reply to: "Normothermic regional perfusion - What is the benefit?".** *JOURNAL OF HEPATOLOGY, SUPPLEMENT.* 71(2):443-445. I.F.: 18.946

4. Llach J, Gómez-Hernando M, Colmenero J, Forns X. **Fanconi syndrome due to tenofovir disoproxil fumarate (TDF) after liver transplantation.** *DIGESTIVE AND LIVER DISEASE.* 51(9):1352-1353. I.F.: 3.037

Clinical Guidelines / I.F.: 10.606

1. De Martin E, Hessheimer A, Chadha R, Kabacam G, Rajanayagam J, Kirchner V, Kalisvaart M, Scalera I, Bhat M, Contreras A, Bhangui P. **Report of the 24th Annual Congress of the International Liver Transplantation Society.** *TRANSPLANTATION.* 103(3):465-469. I.F.: 4.593

2. Biancofiore G., Blasi A., De Boer M., Franchini M., Hartmann M., Lisman T., Liumbruno G., Porte R., Saner F., Senzolo M., Werner M. **Perioperative hemostatic management in the cirrhotic patient: A position paper on behalf of the Liver Intensive Care Group of Europe (LICAGE).** *MINERVA ANESTESIOLOGICA.* 85(7):782-798. I.F.: 2.840

3. Brunet M., Van Gelder T., Åsberg A., Haufroid V., Hesselink D., Langman L., Lemaitre F., Marquet P., Seger C., Shipkova M., Vinks A., Wallemacq P., Wieland E., Woillard J., Barten M., Budde K., Colom H., Dieterlen M., Elens L., Johnson-Davis K., Kunicki P., Macphee I., Masuda S., Mathew B., Millán O., Mizuno T., Moes D., Monchaud C., Noceti O., Pawinski T., Picard N., Van Schaik R., Sommerer C., Vethe N., De Winter B., Christians U., Bergan S. **Therapeutic Drug Monitoring of Tacrolimus-Personalized Therapy: Second Consensus Report.** *THERAPEUTIC DRUG MONITORING.* 41(3):261-307. I.F.: 2.047

4. Escorsell À., Castellote J., Sánchez-Delgado J., Charco R., Crespo G., Fernández J.. Management of acute liver failure. **Clinical guideline from the Catalan Society of Digestology.** *GASTROENTEROLOGIA Y HEPATOLOGIA.* 42(1):51-64. I.F.: 1.126

Consortium Publications / I.F.: 4.715

1. Pericàs JM, Nathavitharana R, Garcia-de-la-Mària C, Falces C, Ambrosioni J, Almela M, García-González J, Quintana E, Marco F, Moreno A, Bayer AS, Miró JM, Karchmer AW, Hospital Clínic Endocarditis Study Group. **Endocarditis Caused by Highly Penicillin-Resistant Viridans Group Streptococci: Still Room for Vancomycin-Based Regimens.** *ANTIMICROBIAL AGENTS AND CHEMOTHERAPY.* 63(8). I.F.: 4.715

GRANTS FOR RESEARCH IN PROGRESS

Brunet M. **Evaluación del impacto de la aloreactividad en la evolución del injerto y de la reversibilidad de la fibrosis tras el tratamiento de la hepatitis C post-transplante hepático.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI14/01055
Duration: 01/01/2015-30/06/2020

Colmenero JF. **Caracterización molecular e histológicas del daño aloinmune contra el injerto tras el trasplante hepático: identificación de factores predictivos de mal pronóstico y dianas terapéuticas.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/01125
Duration: 01/01/2019-31/12/2021

Fondevila C. **Evaluación de la regeneración hepatocelular tras hepatectomía mayor en un modelo clínico y otro experimental. Utilidad del tratamiento con somatostanina y debutamina en un modelo porcino de cirugía hepática extrema.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/01092
Duration: 01/01/2016-30/06/2020

Fondevila C. **Precondicionamiento portal en injertos hepáticos pequeños mediante perfusión normotérmica ex situ en un modelo porcino.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00894
Duration: 01/01/2019-31/12/2021

García-Valdecasas JC. **Evaluation of the feasibilty of normothermic regional perfusion followed by ex-vivo normothermic machine perfusion in Type II DCD (Donation after Cardiac Death) Liver Transplants.**
Sponsored by: Fundació La Caixa. LCF/PR/GN15/10280001
Duration: 01/05/2016-30/04/2020

DOCTORAL THESES

Cardenas A. **Esdeveniments adversos posteriors a la colangiografia retròfrada endoscòpica en els pacients amb cirrosi hepàtica i en el receptors de trasplantament hepàtic.**
PhD student: Carlos Leal Valdivieso

3.10 Viral, toxic and metabolic hepatopathies

LOCATION
CEK building, floor 4

KEYWORDS
1. **Hepatitis C virus**
2. **Direct-acting antivirals (DAA)**
3. **Hepatitis B virus**
4. **Antiviral immune responses**
5. **Wilson's disease**
6. **DILI**

RELATED DISEASES
1. **Hepatitis B & D**
2. **Hepatitis C**
3. **Hepatitis A & E**
4. **Wilson's disease**

GROUP INVOLVED IN
CIBEREHD
AGAUR_SGR17: 01753

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	17	104,03	6,12	59%	41%



GROUP LEADER
Xavier Forns (HCB)
T. 93 227 54 99
xforns@clinic.cat

RESEARCHERS
Josep Costa (HCB)
Sabela Lens (HCB)
María Carlota Londoño (HCB)
Zoe Mariño (HCB)
Sofía Pérez del Pulgar (CIBER)

POST-DOCTORAL RESEARCHERS
Ester Garcia Pras (CIBER)
Georgios Koutsoudakis (FCRB)

PRE-DOCTORAL RESEARCHERS
Mireia Garcia Lopez (IDIBAPS)
Elena Perpiñán (CIBER)
Sergio Rodríguez Tajes (HCB)

TECHNICIANS
Thais Leonel (CIBER)

NURSING STAFF
Concepció Bartres (HCB)
Anna Miralpeix (FCRB-IDIBAPS)

PROBLEM

Viral hepatitis, mainly hepatitis C and B, is the main cause of cirrhosis, hepatocellular carcinoma and liver mortality worldwide. In the case of hepatitis B virus infection (HBV, with or without HDV), there is no curative treatment, so conducting research in this area is a challenge.
Apart from diseases caused by viruses, liver toxicity due to drugs is a reality that is increasingly prevalent in our society and requires special attention. Finally, metabolic diseases caused by copper accumulation (Wilson disease) or iron (hemochromatosis) are rare disorders that can evolve into cirrhosis if they are not diagnosed and treated early.

APPROACH

In the field of viral hepatitis, advances in knowledge of the interaction between the virus and the immune response are key to understanding the natural history of the disease and the development of new therapeutic targets.

In the case of metabolic and toxic liver disease, epidemiological studies and the search for factors (genetic or environmental) that intervene in the disease's development are expanding fields.

IMPACT

The group has made significant contributions on the impact of curing hepatitis C, especially in patients with advanced hepatopathy and associated extrahepatic manifestations.

In the future, our studies will help to better understand the immunological factors involved in the evolution of hepatitis and to more accurately identify patients at the greatest risk of complications arising from these diseases.

RESEARCH LINES

- Brain metabolic and functional connectivity dysfunction in patients with chronic hepatitis C and reversibility after viral eradication with direct acting antivirals.

- Clinical and biological characterization of patients with Wilson's disease.

- Clinical and virological analysis of population outbreaks of hepatitis A in Barcelona.

- Clinical impact of HCV eradication in patients with advanced liver disease.

- Clinical, virological and immunological predictors of response after antiviral treatment interruption.

- Efficacy of new antiviral regimens against HCV: relevance of viral and immune factors in liver disease progression.

- Interplay between HBV, HDV and host factors: impact on liver disease progression

- Molecular mechanisms and clinical relevance of the persistence of cccDNA in chronic HBV infection.

- Natural history of chronic HBV infection in inactive carriers and patients in the 'grey zone'.

- Strategies of hepatitis C microelimination in our geographical area.

PUBLICATIONS

Originals / I.F.: 104.03

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GRANTS FOR RESEARCH IN PROGRESS

Forns X. **Hepatopaties viriques. Tòxiques i metabòliques.**
Sponsored by: Generalitat de Catalunya.
AGAUR_SGR17_01753
Duration: 01/01/2017-31/12/2020

Forns X. **Estudio de la disfunción de la respuesta inmune adaptativa periférica e intrahepática en las diferentes fases de la infección crónica por el virus de la hepatitis B.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00079
Duration: 01/01/2019-31/12/2021

Forns X. **Programa de formación para la interpretación de biopsias hepáticas dirigida a Hepatólogos.**
Sponsored by: Gilead Sciences. GLD18_0128
Duration: 01/02/2019-31/01/2020

Forns X. **Virological and immunological factors associated with hepatitis C and hepatitis B virus infection recurrence after treatment discontinuation.**
Sponsored by: Gilead Sciences.
GLD15/00274
Duration: 07/03/2016-06/03/2018

Pérez del Pulgar S. **Estudio de la persistencia del cccDNA durante la infección por el VHB in vivo, e in vitro mediante un bioreactor que simula el microambiente hepático.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00111
Duration: 01/01/2017-31/12/2019

Lens S. **Defining the best strategy for global HCV screening, linkage-to-care education and prevention in PWID population and validation of a new diagnostic dried blood spot test.**
Sponsored by: : Gilead Sciences.
IN-ES-987-5349
Duration: 01/12/2018-30/11/2020

Londoño MC. **Identificación de biomarcadores para predecir el éxito de la retirada de la inmunosupresión en pacientes con hepatitis autoinmune.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00955
Duration: 01/01/2018-31/12/2020

Mariño Z. **Brain metabolic and functional connectivity dysfunction in patients with chronic hepatitis C and reversibility after viral eradication with direct acting antivirals.**
Sponsored by: Gilead Sciences.
GLD17/00273
Duration: 18/01/2018-31/01/2020

3.11 Regulation of liver microcirculation in cirrhosis and hepatic vascular diseases

LOCATION
CEK building, floor 4

KEYWORDS
1. **Portal hypertension**
2. **Cirrhosis**
3. **Variceal bleeding**
4. **Idiopathic**
5. **Portal vein thrombosis**
6. **Tips**

RELATED DISEASES
1. **Portal hypertension**
2. **Hepatic vascular diseases**
3. **Idiopathic portal hypertension**
4. **Non-cirrhotic portal vein thrombosis**
5. **Budd-chiary syndrome**

GROUP INVOLVED IN
CIBEREHD
AGAUR_SGR17: 00517

AWARDS
Rising Star Award
Institution: Sociedad Española de Patologia Digestiva (SEPD)
Awardee/s: Virginia Hernández Gea

Young investigator Award
Institution: European Association for the Study of the Liver (EASL)
Awardee/s: Virginia Hernández Gea

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	10	165,13	16,51	100%	70%



GROUP LEADER
Juan Carlos García-Pagán (HCB)
T. 93 227 54 00 (Ext.: 5790)
jcgarcia@clinic.cat

RESEARCHERS
Ramón Deulofeu (HCB)
Àngels Escorsell (HCB)
M. Rosa Gilabert (HCB)
Virginia Hernández Gea (HCB)
Montserrat Marí (IIBB-CSIC)

POST-DOCTORAL RESEARCHERS
Genís Campreciós (CIBER)
Tiago Da Silva (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Anna Baiges (HCB-FCRB)
Estefanía de Gregorio (IDIBAPS)
Jose Alberto Ferrusquía (IDIBAPS)
Erica Lafoz (FCRB)
Marta Magaz (HCB)
Maria Ruart (IDIBAPS)
Fanny Turon (HCB)

TECHNICIANS
Héctor García Calderó (CIBER-FCRB)

NURSING STAFF
Nini Johana Bustos (CIBER)
Lara Orts (CIBER)

ADMINISTRATIVE STAFF
Oliva Ros (IDIBAPS)

PROBLEM

The group's research focuses on the etiology, pathophysiology, diagnosis, staging and treatment of all portal hypertension (PHT) causes, which is defined by an increased pressure in the portal vein (the vein that carries blood to the liver), and is the most serious complication common to all liver diseases.

The development of PHT leads to variceal bleeding, development of ascites or hepatic encephalopathy, all of them life threatening complications.
Although the most frequent cause of PHT is cirrhosis, many other diseases such as Budd Chiari syndrome, idiopathic portal hypertension or portal vein thrombosis (known as non-cirrhotic portal hypertension or hepatic vascular diseases) can also evolve with portal hypertension. These diseases, that are considered rare minority diseases, usually affect young patients and, if not treated properly, can markedly reduce their survival.

APPROACH

The group approaches portal hypertension from different angles: improvement of PHT knowledge with molecular-cellular studies, studies in preclinical models of the diseases as well as human interventional studies and clinical trials.

Molecular-cellular studies and preclinical models focus on reproducing the disease and the mechanisms that regulate the liver cells, evaluating which components are responsible for the increase in PHT and the appearance of complications so that new therapeutic targets and treatments can be developed. From the clinical point of view, the group is pioneer in the application of new diagnostic methods among patients with PHT. The group has actively participated in the development of non – invasive methods that facilitate the diagnosis of PHT, especially useful in the outpatient clinic evaluation.

Regarding invasive methods such as performance of transjugular liver biopsies, hepatic pressures measurement, placing of TIPS and recanalization of the portal vein in patients with extensive thromboses our group works as a referral center both in Catalunya and in Europe. This versatile and dynamic approach enables our group to further improve our knowledge in the prognosis, diagnosis techniques and treatment options for these patients.

IMPACT

The ultimate goal of the research performed in our group is to understand how PHT develops at different levels. We seek to clarify the mechanisms responsible for its

appearance in order to find new therapeutic targets easy to apply in clinical practice. From a more clinical point of view, the group also focuses on improving diagnostic methods and the identification of patients at risk of developing complications, as well as implementing management, treatment and follow-up strategies that significantly reduce the incidence of complications from these diseases, therefore increasing patient survival.

RESEARCH LINES

- Physiopathology, natural history, prognosis and management for portal hypertension.

- Precision medicine in the management of decompensated cirrhosis.

- Role of TIPS and of Portal vein recannalization in the management of complications of portal hypertension .

- Hepatic vascular diseases (Budd-Chiari syndrome, portal vein thrombosis, idiopathic non-cirrhotic portal hypertension): physiopathology, prognosis and management.

- Discovery of diagnostic bio-markers for idiopathic portal hypertension and for risk-stratification.

- Mechanisms in liver inflammation and fibrosis.

PUBLICATIONS

Originals / I.F.: 165.127

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Impact of pneumoperitoneum on intra-abdominal microcirculation blood flow: an experimental randomized controlled study of two insufflator models during transanal total mesorectal excision: An experimental randomized multi-arm trial with parallel treatment design. *SURGICAL ENDOSCOPY AND OTHER INTERVENTIONAL TECHNIQUES.* I.F.: 3.209

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2. Hernández-Gea V, Garcia-Pagan JC. **Preemptive TIPS in Child-Pugh C patients.** *HEPATOLOGY.* 7(2):753-754. I.F.: 14.971

3. Hernández-Gea V, Garcia-Pagan JC . **Reply Letter 17-2110.R2.** *HEPATOLOGY.* 69(3):1360-1361. I.F.: 14.971

4. Ferrusquía-Acosta J, Hernández-Gea V, Turón F, García-Pagán JC. **Budd-Chiari syndrome with short-length stenosis: still room for the angioplasty and wait-and-see strategy.** *LANCET GASTROENTEROLOGY & HEPATOLOGY.* 4(11):823-823. I.F.: 12.856

Editorial / I.F.: 14.971

1. Baiges A, Garcia-Pagán JC. **Predicting Heart Failure After TIPS: Still More Questions Than Answers.** *HEPATOLOGY.* 70(6):1889-1891. I.F.: 14.971

Clinical Guidelines / I.F.: 1.126

1. Escorsell À., Castellote J., Sánchez-Delgado J., Charco R., Crespo G., Fernández J. **Management of acute liver failure. Clinical guideline from the Catalan Society of Digestology.** *GASTROENTEROLOGIA Y HEPATOLOGIA.* 42(1):51-64. I.F.: 1.126

GRANTS FOR RESEARCH IN PROGRESS

Garcia-Pagán JC. **Hemodinàmica hepàtica i hipertensió portal.**
Sponsored by: Generalitat de Catalunya. AGAUR_SGR17_00517
Duration: 01/01/2017-31/12/2021

García-Pagán JC. **Hipertensión Portal Idiopática. Fisiopatología e identificación de dianas terapéuticas.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO). SAF2016-75767-R
Duration: 30/12/2016-29/12/2019

García-Pagán JC. **Estudio prospectivo multicéntrico, aleatorizado del efecto de Rivaroxaban sobre la supervivencia y el desarrollo de complicaciones de la hipertensión portal en pacientes con cirrosis.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). ICI14/00133
Duration: 01/01/2015-31/12/2019

García-Pagán JC. **Proyecto Integrado de Excelencia. Targeting endothelial dysfunction in highly prevalent diseases: characterization and validation of prognostic biomarkers and identification of potential therapeutic strategies.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PIE15/00027
Duration: 01/01/2016-31/11/2020

García Pagán JC. **Plataforma Red Nacional de Biobancos.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PT17/0015/0016
Duration: 01/01/2018-31/12/2020

Hernandez-Gea V. **La autofagia endotelial gobierna la respuesta de la célula hepática estrellada al daño hepático: regeneración o fibrosis? Análisis del secretoma endotelial para el desarrollo de nuevos tratamientos antifibroticos.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00398
Duration: 01/01/2018-31/12/2020

DOCTORAL THESES

Garcia-Pagan JC, Hernandez-Gea V. **Gradiente de presión portal en la cirrosis. Relevancia de los aspectos técnicos en su valor pronóstico.**
PhD student: Gilberto De Almeida Silva Junior

3.12 Chronic liver diseases: molecular mechanisms and clinical consequences

LOCATION
CEK building, floor 3

KEYWORDS
1. **Chronic liver diseases**
2. **Alcohol**
3. **NAFLD**
4. **Cirrhosis**
5. **Inflammation**

RELATED DISEASES
1. **Cirrhosis and associated complications; ascites, hepatic encephalopathy, bacterial infections**
2. **Non-alcoholic fatty liver disease and non-alcoholic steatohepatitis**
3. **Alcoholic liver disease**
4. **Liver Fibrosis**

GROUP INVOLVED IN
AGAUR_SGR17: 01281

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	18	273,118	15,17	78%	67%



GROUP LEADER
Pere Ginès (HCB)
T. 93 227 17 13
pgines@clinic.cat

RESEARCHERS
Núria Fabrellas (UB)
Javier Fernández Gómez (HCB)
Isabel Graupera (HCB)
Elsa Solà (HCB)

POST-DOCTORAL RESEARCHERS
Martin Bonacci (IDIBAPS-FCRB)
Maria del Mar Coll (CIBER)

PRE-DOCTORAL RESEARCHERS
Emma Avitable (IDIBAPS)
Adrià Carpio (UB)
Maria Hernandez Tejero (FCRB)
Adrià Juanola (HCB)
Laura Napoleone (IDIBAPS)
Elisa Pose (IDIBAPS)
Cristina Sole (HCB)

NURSING STAFF
Fatima Aziz (HCB)
Marta Carol (IDIBAPS)
Marta Cervera (FCRB)
Gloria de Prada (HCB)
Martina Perez Guasch (HCB)

ADMINISTRATIVE STAFF
Roser Poblet (IDIBAPS)
Nicola Carol Van Berckel (HCB-FCRB)

PROBLEM

Cirrhosis is a common disease with high morbidity and mortality rates. The only definitive treatment is a liver transplant. The disease evolves from a compensated phase, in which the patient shows no symptoms and presents a good prognosis, to patients who present complications and a poor outcome. Multiorgan failure with a high mortality rate may also occur in certain patients.

It is therefore very important to research the pathophysiological mechanisms that explain the disease's progression in order to find therapeutic targets and stop its course.

APPROACH

The main research interests of the group are the pathophysiologic mechanisms that explain the disease progression. It starts with the intestinal microbiome and analyses the hepatic transcriptome and systemic and hepatic inflammation.

It studies different biomarkers to determine the prognosis of patients with cirrhosis and its complications, such as renal failure. It trials new treatments, such as albumin, for patients with complications of cirrhosis and conducts therapeutic studies to try to prevent the progression of the disease. An important research interest of the group is the evaluation of methods for screening for liver fibrosis in the general population.

IMPACT

Patients with cirrhosis present an abnormal intestinal microbiome and hepatic transcriptome, with increased expression of proinflammatory genes and increased systemic inflammation.

In one of the projects, the patients receive anti-inflammatory treatment (statins) and treatment for the alterations in the microbiome (rifaximin) and the number of complications these patients present is expected to decline, along with the incidence of acute –on-chronic liver failure. Furthermore, using transient elastography, the group identifies patients at early stages of the disease in order to provide them with early treatment.

RESEARCH LINES

- Analyze different biomarkers to predict patients' outcomes and prognosis.

- Characterization of systemic and hepatic inflammation and gut microbiome in patients with cirrhosis, encompassing all stages of the disease.

- Screening for liver fibrosis. A population-based study in european countries. The 'LiverScreen' project.

- Studying different treatment strategies to halt disease progression. The ´LiverHope´ project.

- Role of adipose tissue macrophages in Non-alcoholic fatty liver disease

PUBLICATIONS

Originals / I.F.: 273.118

1. Younossi, Zobair M.; Ratziu, Vlad; Loomba, Rohit; Rinella, Mary; Anstee, Quentin M.; Goodman, Zachary; Bedossa, Pierre; Geier, Andreas; Beckebaum, Susanne; Newsome, Philip N.; Sheridan, David; Sheikh, Muhammad Y.; Trotter, James; Knapple, Whitfield; Lawitz, Eric; Abdelmalek, Manal F.; Kowdley, Kris V.; Montano-Loza, Aldo J.; Boursier, Jerome; Mathurin, Philippe; Bugianesi, Elisabetta; Mazzella, Giuseppe; Olveira, Antonio; Cortez-Pinto, Helena; Graupera, Isabel; Orr, David; Gluud, Lise Lotte; Dufour, Jean-Francois; Shapiro, David; Campagna, Jason; Zaru, Luna; MacConell, Leigh; Shringarpure, Reshma; Harrison, Stephen; Sanyal, Arun J.; REGENERATE Study Investigators. **Obeticholic acid for the treatment of non-alcoholic steatohepatitis: interim analysis from a multicentre, randomised, placebo-controlled phase 3 trial.** *LANCET.* 394(10215):2184-2196. I.F.: 59.102

2. Christophersen A., Lund E.G., Snir O., Solà E., Kanduri C., Dahal-Koirala S., Zühlke S., Molberg Ø., Utz P.J., Rohani-Pichavant M., Simard J.F., Dekker C.L., Lundin K.E.A., Sollid L.M., Davis M.M. **Distinct phenotype of CD4 + T cells driving celiac disease identified in multiple autoimmune conditions.** *NATURE MEDICINE.* 25(5):734-737. I.F.: 30.641

3. Fernández J, Clària J, Amorós A, Aguilar F, Castro M, Casulleras M, Acevedo J, Duran-Güell M, Nuñez L, Costa M, Torres M, Horrillo R, Ruiz-Del-Árbol L, Villanueva C, Prado V, Arteaga M, Trebicka J, Angeli P, Merli M, Alessandria C, Aagaard NK, Soriano G, Durand F, Gerbes A, Gustot T, Welzel TM, Salerno F, Bañares R, Vargas V, Albillos A, Silva A, Morales-Ruiz M, Carlos García-Pagán J, Pavesi M, Jalan R, Bernardi M, Moreau R, Páez A, Arroyo V. **Effects of Albumin Treatment on Systemic and Portal Hemodynamics and Systemic Inflammation in Patients With Decompensated Cirrhosis.** *GASTROENTEROLOGY.* 157(1):149-162. I.F.: 19.233

4. Piano S, Singh V, Caraceni P, Maiwall R, Alessandria C, Fernandez J, Soares EC, Kim DJ, Kim SE, Marino M, Vorobioff J, Barea RCR, Merli M, Elkrief L, Vargas V, Krag A, Singh SP, Lesmana LA, Toledo C, Marciano S, Verhelst X, Wong F, Intagliata N, Rabinowich L, Colombato L, Kim SG, Gerbes A, Durand F, Roblero JP, Bhamidimarri KR, Boyer TD, Maevskaya M, Fassio E, Kim HS, Hwang JS, Gines P, Gadano A, Sarin SK, Angeli P, International Club of Ascites Global Study Group. **Epidemiology and Effects of Bacterial Infections in Patients With Cirrhosis Worldwide.** *GASTROENTEROLOGY.* 156(5):1368-1380.e10. I.F.: 19.233

5. Fernández J, Prado V, Trebicka J, Amoros A, Gustot T, Wiest R, Deulofeu C, Garcia E, Acevedo J, Fuhrmann V, Durand F, Sánchez C, Papp M, Caraceni P, Vargas V, Bañares R, Piano S, Janicko M, Albillos A, Alessandria C, Soriano G, Welzel TM, Laleman W, Gerbes A, De Gottardi A, Merli M, Coenraad M, Saliba F, Pavesi M, Jalan R, Ginès P, Angeli P, Arroyo V, European Foundation for the Study of Chronic Liver Failure (EF-Clif). **Multidrug-resistant bacterial infections in patients with decompensated cirrhosis and with acute-on-chronic liver failure in Europe.** *JOURNAL OF HEPATOLOGY, SUPPLEMENT.* 70(3):398-411. I.F.: 18.946

6. Hernaez R, Kramer JR, Liu Y, Tansel A, Natarajan Y, Hussain KB, Ginès P, Solà E, Moreau R, Gerbes A, El-Serag HB, Kanwal F . **Prevalence and short-term mortality in a national US cohort with acute-on-chronic liver failure.** *JOURNAL OF HEPATOLOGY, SUPPLEMENT.* 70(4):639-647. I.F.: 18.946

7. Serra-Burriel M, Graupera I, Torán P, Thiele M, Roulot D, Wai-Sun Wong V, Neil Guha I, Fabrellas N, Arslanow A, Expósito C, Hernández R, Lai-Hung Wong G, Harman D, Darwish Murad S, Krag A, Pera G, Angeli P, Galle P, Aithal GP, Caballeria L, Castera L, Ginès P, Lammert F, investigators of the LiverScreen Consortium. **Transient elastography for screening of liver fibrosis: cost-effectiveness analysis from six prospective cohorts in Europe and Asia.** *JOURNAL OF HEPATOLOGY.* 71(6):1141-1151. I.F.: 18.946

8. Aguilar-Bravo B, Rodrigo-Torres D, Ariño S, Coll M, Pose E, Blaya D, Graupera I, Perea L, Vallverdú J, Rubio-Tomás T, Dubuquoy L, Armengol C, Lo Nigro A, Stärkel P, Mathurin P, Bataller R, Caballería J, José Lozano J, Ginès P, Sancho-Bru P. **Ductular reaction cells display an inflammatory profile and recruit neutrophils in alcoholic hepatitis.** *HEPATOLOGY.* 69(5):2180-2195. I.F.: 14.971

9. Clària J, Moreau R, Fenaille F, Amorós A, Junot C, Gronbaek H, Coenraad MJ, Pruvost A, Ghettas A, Chu-Van E, López-Vicario C, Oettl K, Caraceni P, Alessandria C, Trebicka J, Pavesi M, Deulofeu C, Albillos A, Gustot T, Welzel TM, Fernández J, Stauber RE, Saliba F, Butin N, Colsch B, Moreno C, Durand F, Nevens F, Bañares R, Benten D, Ginès P, Gerbes A, Jalan R, Angeli P, Bernardi M, Arroyo V, CANONIC Study Investigators of the EASL Clif Consortium, Grifols Chair and the European Foundation for the Study of Chronic Liver Failure (EF Clif). **Orchestration of Tryptophan-Kynurenine pathway, acute decompensation and acute-on-chronic liver failure in cirrhosis.** *HEPATOLOGY.* 69(4):1686-1701. I.F.: 14.971

10. Huelin P, Solà E, Elia C, Solé C, Risso A, Moreira R, Carol M, Fabrellas N, Bassegoda O, Juanola A, de Prada G, Albertos S, Piano S, Graupera I, Ariza X, Napoleone L, Pose E, Filella X, Morales-Ruiz M, Rios J, Fernández J, Jiménez W, Poch E, Torres F, Ginès P. **Neutrophil gelatinase-associated lipocalin for assessment of acute kidney injury in cirrhosis.** *HEPATOLOGY.* 70(1):319-333. I.F.: 14.971

11. Leal C, Prado V, Colan J, Chavez-Rivera K, Sendino O, Blasi A, Roura P, Juanola A, Rodriguez de Miguel C, Pavesi M, Gomez C, Guarner C, Guarner-Argente C, Fernández J, Cardenas A. **Adverse Events and Acute Chronic Liver Failure in Patients With Cirrhosis Undergoing Endoscopic Retrograde Cholangiopancreatography: A Multicenter Matched-Cohort Study.** *AMERICAN JOURNAL OF GASTROENTEROLOGY.* 114(1):89-97. I.F.: 10.241

12. Bazerbachi F, Haffar S, Wang Z, Cabezas J, Arias-Loste MT, Crespo J, Darwish-Murad S, Ikram MA, Olynyk JK, Gan E, Petta S, Berzuini A, Prati D, de Lédinghen V, Wong VW, Del Poggio P, Chávez-Tapia NC, Chen YP, Cheng PN, Yuen MF, Das K, Chowdhury A, Caballeria L, Fabrellas N, Ginès P, Kumar M, Sarin SK, Conti F, Andreone P, Sirli R, Cortez-Pinto H, Carvalhana S, Sugihara T, Kim SU, Parikh P, Chayama K, Corpechot C, Kim KM, Papatheodoridis G, Alsebaey A, Kamath PS, Murad MH, Watt KD. **Range of Normal Liver stiffness and Predictors of**

Suspected Advanced Fibrosis in Apparently Healthy Individuals: A Pooled Analysis of 16,082 Participants. *CLINICAL GASTROENTEROLOGY AND HEPATOLOGY.* 17(1):54-64.e1. I.F.: 7.958

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14. Escoda O, Reverter E, To-Figueras J, Casals G, Fernández J, Nogué S. **Potential value of urinary amatoxin quantification in patients with hepatotoxic mushroom poisoning.** *LIVER INTERNATIONAL.* 39(6):1128-1135. I.F.: 5.542

15. Trebicka, Jonel; Amoros, Alex; Pitarch, Carla; Titos, Esther; Alcaraz-Quiles, Jose; Schierwagen, Robert; Deulofeu, Carmen; Fernandez-Gomez, Javier; Piano, Salvatore; Caraceni, Paolo; Oettl, Karl; Sola, Elsa; Laleman, Wim; McNaughtan, Jane; Mookerjee, Rajeshwar P.; Coenraad, Minneke J.; Welzel, Tania; Steib, Christian; Garcia, Rita; Gustot, Thierry; Rodriguez Gandia, Miguel A.; Banares, Rafael; Albillos, Agustin; Zeuzem, Stefan; Vargas, Victor; Saliba, Faouzi; Nevens, Frederic; Alessandria, Carlo; de Gottardi, Andrea; Zoller, Heinz; Gines, Pere; Sauerbruch, Tilman; Gerbes, Alexander; Stauber, Rudolf E.; Bernardi, Mauro; Angeli, Paolo; Pavesi, Marco; Moreau, Richard; Claria, Joan; Jalan, Rajiv; Arroyo, Vicente;EASL-CLIF Consortium European Fdn. **Addressing Profiles of Systemic Inflammation Across the Different Clinical Phenotypes of Acutely Decompensated Cirrhosis.** *FRONTIERS IN IMMUNOLOGY.* 10(MAR):476. I.F.: 4.716

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17. Bossen L, Ginès P, Vilstrup H, Watson H, Jepsen P. **Serum sodium as a risk factor for hepatic encephalopathy in patients with cirrhosis and ascites.** *JOURNAL OF GASTROENTEROLOGY AND HEPATOLOGY.* 34(5):914-920. I.F.: 3.632

18. Michelena J, Alonso C, Martínez-Arranz I, Altamirano J, Mayo R, Sancho-Bru P, Bataller R, Ginès P, Castro A, Caballería J. **Metabolomics Discloses a New Non-invasive Method for the Diagnosis and Prognosis of Patients with Alcoholic Hepatitis.** *ANNALS OF HEPATOLOGY.* 18(1):144-154. I.F.: 1.895

Review / I.F.: 20.561

1. Pose E, Trebicka J, Mookerjee RP, Angeli P, Ginès P. **Statins: old drugs as new therapy for liver diseases?** *JOURNAL OF HEPATOLOGY.* 70(1):194-202. I.F.: 18.946

2. Solà E., Ginès P. **Hypervolemic hyponatremia (Liver).** *FRONTIERS OF HORMONE RESEARCH.* 52:104-112. I.F.: 1.615

Letters / I.F.: 37.892

1. Solà E, Solé C, Ginès P. **Reply to: Midodrine and albumin in decompensated cirrhosis: Down but not out.** *JOURNAL OF HEPATOLOGY.* 70(4):812-812. I.F.: 18.946

2. Abu Dayyeh, Barham K.; Bazerbachi, Fatah; Graupera, Isabel; Cardenas, Andres. **Endoscopic bariatric and metabolic therapies for non-alcoholic fatty liver disease.** *JOURNAL OF HEPATOLOGY.* 71(6):1246-1248. I.F.: 18.946

Editorial / I.F.: 41.648

1. Francoz C., Sola E. **Assessment of renal function in cirrhosis: Sarcopenia, gender and ethnicity matter.** *JOURNAL OF HEPATOLOGY, SUPPLEMENT.* 70(5):828-830. I.F.: 18.946

2. Solà E, Solé C, Ginès P. **New strategies for the management of decompensated cirrosis: long-term albumin administration for everyone?** *HEPATOLOGY.* 69(5):2289-2291. I.F.: 14.971

3. Solà E, Ginès P. **Editorial: evaluating cirrhosis progression-lessons from the heart.** *ALIMENTARY PHARMACOLOGY & THERAPEUTICS.* 50(6):709-710. I.F.: 7.731

Clinical Guidelines / I.F.: 2.403

1. Caballeria L., Augustin S., Broquetas T., Morillas R., Vergara M., Virolés S., Hernández M., Serra I., Goday A., Vila L., Siso-Almirall A., Solans R., Fernández-Real J., Carrión J., Graupera I., Ginès P. **Recommendations for the detection, diagnosis and follow-up of patients with non-alcoholic fatty liver disease in primary and hospital care.** *MEDICINA CLINICA.* 153(4):169-177. I.F.: 1.277

2. Escorsell À., Castellote J., Sánchez-Delgado J., Charco R., Crespo G., Fernández J. **Management of acute liver failure. Clinical guideline from the Catalan Society of Digestology.** *GASTROENTEROLOGIA Y HEPATOLOGIA.* 42(1):51-64. I.F.: 1.126

GRANTS FOR RESEARCH IN PROGRESS

Fabrellas N. **Cribado poblacional de fibrosis hepática con elastografía transitoria en personas con factores de riesgo de enfermedad hepática e índice de grasa hepática elevado. Estudio de validación.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/01330
Duration: 01/01/2019-31/12/2021

Fernández-Gómez J. **Impacto clínico y coste/eficacia de estrategias de vigilancia epidemiológica y de optimización farmacoterapéutica antibiótica en la cirrosis descompensada.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00885
Duration: 01/01/2017-31/12/2019

Ginés P. **Grup de Hepatologia Recerca Clínica.**
Sponsored by: Generalitat de Catalunya. AGAUR_SGR17_01281
Duration: 01/01/2017-31/12/2020

Ginés P. **Síndrome de insuficiencia hepática crónica agudizada en la cirrosis. Relación con el microbioma y la inflamación.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). FIS PI16/00043
Duration: 01/01/2017 -31/12/2020

Ginés P. **CARBALIVE: Clinical evaluation of carbons of controlled porosity as a new therapy for the treatment of liver cirrhosis and non-alcoholic fatty liver disease.**

Sponsored by: European Commission.
H2020_PHC-2014-2s
Duration: 01/05/2015-31/10/2019

Ginés P. **LIVERHOPE: SIMVASTIN and RIFAXIMIN as New Therapy for patients with decompensated cirrhosis.**
Sponsored by: European Commission.
H2020_SC1_16abr1s
Duration: 01/01/2017-31/12/2021

Ginés P. **MICROBiome-based biomarkers to PREDICT decompensation of liver cirrhosis and treatment.**
Sponsored by: European Commission.
H2020-SC1_18_1s
Duration: 17/04/2018-16/04/2024

Graupera I. **Caracterización del eje tejido adiposo-hígado en la enfermedad hepática por hígado graso no alcohólico. Macrófagos infiltrantes del tejido adiposo como diana terapéutica.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00862
Duration: 01/01/2019-31/12/2021

Graupera I. **Enfermedad por hígado graso no alcohólico, una epidemia con el pie en el acelerador.**
Sponsored by: Gilead Sciences. GLD18_0173
Duration: 23/05/2019-30/12/2019

Solà E. **Caracterización del papel de la respuesta inmunológica en la progresión de la cirrosis hepática mediante inmunología de sistemas: evaluación de nuevas estrategias terapéuticas.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00727
Duration: 01/01/2019-31/12/2021

DOCTORAL THESES

Gines P. **Paper dels biomarcadors renals en la nova proposta de classificació d'Acute kidney Injury (AKI) en pacients amb cirrosi hepática.**
PhD student: Patricia Huelin Álvarez

Gines P, Sola E. **Inflamació sistèmica i cirrosi hepàtica. Implicació en el pronòstic i fisiopatologia de la insuficiència hepàtica aguda sobre crònica i de la síndrome hepatorenal.**
PhD student: Cristina Solé Martí

3.13 Liver vascular biology

LOCATION
CEK building, floor 4

KEYWORDS
1. **Chronic liver diseases**
2. **Portal hypertension**
3. **Liver microcirculation**
4. **Liver fibrosis**
5. **Liver sinusoidal endothelial cells**
6. **Liver cells secretome**
7. **Aging**
8. **Liver mechanobiology**

RELATED DISEASES
1. **Cirrhosis of the liver**
2. **Advanced chronic liver diseases**
3. **Fatty liver disease**
4. **Non-alcoholic steatohepatitis**

GROUP INVOLVED IN
CIBEREHD
AGAUR SGR17:00517

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**16**	**196,64**	**12,29**	**100%**	**44%**



GROUP LEADER
Jordi Gracia-Sancho (IDIBAPS)
T. 93 227 54 00 (Ext.: 4306)
jordi.gracia@idibaps.org

EMERITUS
Jaume Bosch Genover (IDIBAPS)

POST-DOCTORAL RESEARCHERS
Anabel Fernández Iglesias (CIBER)

PRE-DOCTORAL RESEARCHERS
Laia Abad (IDIBAPS)
Raquel Maeso (IDIBAPS)
Nico Manicardi (IDIBAPS)
Martí Ortega (IDIBAPS)

PROBLEM

Liver diseases represent a serious social problem, with a health prevalence comparable to that of respiratory diseases. By way of example, over the last ten years, chronic liver disease, also known as cirrhosis, has led to the death of more than 35,000 men and 10,000 women in Spain.

The cells that are part of the liver's blood vessels, mainly sinusoidal endothelial cells, stellate cells and resident macrophages, play a key role in the development and progression of liver disease. Therefore, they can be therapeutic targets to be taken into account for the treatment and improvement of patients with liver damage.

APPROACH

The group studies the molecular and biomechanical processes that regulate the status and function of these sinusoidal cells, as well as hepatic intercellular communication mechanisms in health situations, in response to acute liver damage, in chronic liver disease (cirrhosis and steatohepatitis) and in ageing. The results obtained are applied to discover new therapeutic targets and to develop new therapies that improve microcirculation, fibrosis and liver function.

To achieve this, the group uses a wide range of experimental methods, which include tissues and primary cells (humans or rodents), models of liver disease in vivo and in vitro, cellular culture through liver-on-a-chip technology, and massive analysis of omics data, among others.

IMPACT

The group has discovered the KLF2 autophagy pathway as a key mechanism in the regulation of liver cell health. It is a finding that proposes the use of statins, which activate this pathway, as components for the treatment of cirrhosis, both in the early and very advanced stages.

In the field of ageing, it has described the changes suffered by liver microcirculation in situations of old age, both in health and acute liver damage as well as during chronic liver disease. These advances have shown that the protective agent, simvastatin, would be useful in the subpopulation of older patients. In the field of new technologies, it has developed the first human liver-on-a-chip. This innovation has already been transferred to a company and, therefore, has been placed at the service of society.

Latest research discovered the role of liver stiffness regulating liver cells phenotype in cirrhosis, thus playing a key role in its pathophysiology & treatment. In addition, we demonstrated the potential of using regenerative medicine for the amelioration of portal hypertension.

RESEARCH LINES

- Aging & liver diseases.

- Role of sinusoidal cells in the progression and regression of liver diseases.

- Sinusoidal communications in liver disease.

- Sinusoidal mechanobiology in liver diseases.

PUBLICATIONS

Originals / I.F.: 196.639

1. Villanueva, Candid; Albillos, Agustin; Genesca, Joan; Garcia-Pagan, Joan C.; Calleja, Jose L.; Aracil, Carles; Banares, Rafael; Morillas, Rosa M.; Poca, Maria; Penas, Beatriz; Augustin, Salvador; Abraldes, Juan G.; Alvarado, Edilmar; Torres, Ferran; Bosch, Jaume; Torras, X.; Cadafalch, J.; Ardevol, A.; Graupera, I.; Pavel, O.; Diez, X.; Vargas, H.; Pernas, J. C.; Barcons, M.; Gallego, A.; Soriano, G.; Gordillo, J.; Santalo, M.; Benito, S.; Guarner, C.; Tellez, L.; Martinez, J.; Rodriguez-Gandia, M. A.; Mesonero, F.; Martin, C.; Millan, L.; Pons, M.; Torrens, M.; Berzigotti, A.; Seijoo, S.; Hernandez-Gea, V.; Turon, F.; Llach, J.; Bru, C.; Escorsell, A.; Llop, E.; Perello, C.; Minana, J. M.; Zaragoza, N.; Buenestado, J.; Rene, J. M.; Ripoll, C.; Garcia-Lledo, J.; Catalina, M. V.; Rincon, D.; Planas, R. PreDesCi Study Investigators. **β blockers to prevent decompensation of cirrhosis in patients with clinically significant portal hypertension (PREDESCI): a randomised, double-blind, placebo-controlled, multicentre trial.** *LANCET.* 393(10181):1597-1608. I.F.: 59.102

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16. Bravo, Miren; Raurell, Imma; Hide, Diana; Fernández-Iglesias, Anabel; Gil, Mar; Barberà, Aurora; Salcedo Maria Teresa; Agustin, Salvador; Genescà, Joan; Martell, Maria. **Restoration of liver sinusoidal cell phenotypes by statins improves portal hypertension and histology in rats with NASH.** *SCIENTIFIC REPORTS.* 9(1):20183. I.F.: 4.011

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3. Cornide-Petronio ME, Jiménez-Castro MB, Gracia-Sancho J, Peralta C. **New Insights into the Liver-Visceral Adipose Axis During Hepatic Resection and Liver Transplantation.** *CELLS.* 8(9):E1100. I.F.: 5.656

4. Jiménez-Castro MB, Cornide-Petronio ME, Gracia-Sancho J, Peralta C. **Inflammasome-Mediated Inflammation in Liver Ischemia-Reperfusion Injury.** *CELLS.* 8(10):E1131. I.F.: 5.656

5. Jiménez-Castro MB, Casillas-Ramírez A, Negrete-Sánchez E, Avalos-de León CG, Gracia-Sancho J, Peralta C. **Adipocytokines in Steatotic Liver Surgery/Transplantation.** *TRANSPLANTATION.* 103(1):71-77. I.F.: 4.593

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7. Álvarez-Mercado AI, Gulfo J, Romero Gómez M, Jiménez-Castro MB, Gracia-Sancho J, Peralta C. **Use of steatotic grafts in liver transplantation: Current status**. *LIVER TRANSPLANTATION.* 25(5):771-786. I.F.: 4.159

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1. Bosch J., Berzigotti A. **Letter: nonselective beta-blockers, endoscopic therapy and portal vein thrombosis in cirrhosis.** *ALIMENTARY PHARMACOLOGY AND THERAPEUTICS.* 49(10):1370-1371. I.F.: 7.731

GRANTS FOR RESEARCH IN PROGRESS

Gracia-Sancho J. **Capilarización del endotelio sinusoidal hepático en la cirrosis: caracterización integral para el descubrimiento de nuevas dianas terapéuticas.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00012
Duration: 01/01/2018-31/12/2020

Gracia-Sancho J. **Capillarization of the liver sinusoidal endothelium: Orchestration by miRNAs.**
Sponsored by: Gilead Sciences. GILEAD_IR-S_16_02
Duration: 02/08/2016-01/08/2019

3.14 Fetal and perinatal medicine

LOCATION
Maternitat building

KEYWORDS
1. **Prenatal diseases**
2. **Intrauterine growth restriction**
3. **Fetal programming**
4. **Fetal brain damage**
5. **Prematurity**

RELATED DISEASES
1. **Preeclampsia**
2. **Intrauterine growth restriction**
3. **Congenital diaphragmatic hernia**
4. **Twin-to-twin transfusion syndrome**
5. **Spina bifida**
6. **Preterm delivery**
7. **Preterm rupture of membranes**
8. **Chorioamnionitis**
9. **Congenital heart disease**
10. **Fetal alcohol syndrome**
11. **AIDS (acquired immunodeficiency syndrome)**
12. **Congenital cytomegalovirus infection**
13. **Assisted reproductive technogies**

GROUP INVOLVED IN
CIBERER
AGAUR_SGR17: 01531, 01734

AWARDS
Extraordinary Prize of Doctorate in Medicine
Institution: Universitat de Barcelona (UB)
Awardee/s: Francesca Crovetto

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**45**	**164,78**	**3,66**	**51%**	**27%**



GROUP LEADER
Eduard Gratacós (HCB)
T. 93 227 99 46
gratacos@clinic.cat

RESEARCHERS
Gemma Arca (IDIBAPS)
Antoni Borrell (HCB-IDIBAPS)
Francesc Botet (HCB-IDIBAPS)
Elena Casals (HCB-IDIBAPS)
Maria Teresa Cobo (HCB-IDIBAPS)
Fátima Crispi (HCB-IDIBAPS)
Elisenda Eixarch (HCB-IDIBAPS)
Josep Figueras (HCB-IDIBAPS)
Francesc Figueras (HCB-IDIBAPS)
Oscar García Algar (HCB-IDIBAPS)
Olga Gomez del Rincón (HCB-IDIBAPS)
Anna Gonce (HCB-IDIBAPS)
Marta López Rojano (HCB-IDIBAPS)
Jose Mª Martinez Crespo (HCB-IDIBAPS)
Montserrat Palacio (HCB-IDIBAPS)

POST-DOCTORAL RESEARCHERS
Ángela Arranz (HCB-FCRB)
Francesca Crovetto (FCRB)
Brenda Valenzuela (FCRB)
Monica Zamora (FCRB)

PRE-DOCTORAL RESEARCHERS
Paz Ahumada (UB)
Maria Laura Boutet (UB)
Nadine Margit Hahner (UB)
Ameth Hawkins (UB)
Mari Kinoshita (UB)
Talita Micheletti (UB)
Lucas Monteiro (UB)
Ana Moreno (UB)
Ayako Nakaki (IDIBAPS)
Marta Rial (IDIBAPS)
Alvaro Sepulveda (UB)
Ximena Francisca Torres (HCB)
Kilian Vellvé (FCRB)
Lina Youssef (UB)

TECHNICIANS
Carla Loreiro (FCRB)
Miriam Osorio (FCRB)
Sergio Quesada (FCRB)
Ana Belen Sanchez García (FCRB)
Vasili Sircheli (FCRB)

ADMINISTRATIVE STAFF
Maria Teresa Aguilera (FCRB)
Maria Mercedes Alonso (FCRB)
Elisenda Bonet (FCRB)
Ester Cardet (FCRB)
Marta Dacal (FCRB)
Pedro Lorente (FCRB)
Aitor Molina (FCRB)
Isil Tekeli (FCRB)
Iris Uribesalgo (FCRB)

COLLABORATORS
Mar Bennasar (HCB)
Alba Camacho (FCRB)
Elena Monterde (HCB)
Clara Murillo (HCB)
Julia Ponce (HCB)
Claudia Rueda (HCB)

VISITING SCIENTISTS
Annalisa Cancemi (University of Parma, Italy)
Karen Castillo (Universidad Central de Ecuador)
Giulia Casu (Policlinico de Milano, Italy)
Angeles Yadira Juárez (Hospital General de México)
Diana Lucía Lip (Hospital Nacional Edgardo Rebagliati Martins, Perú)
Silvana Karina Santamaria (Universidad Central de Ecuador)

PROBLEM

The group views the foetus as a patient. Therefore, while it is in the uterus, certain diseases can be diagnosed and treated so that, in the future, any sequelae will be minimal or will completely disappear.
The group's research focuses particularly on the heart and the brain because foetal programming is key during the development of these organs. The group is also developing new intrauterine treatments that can revert or mitigate certain foetal disorders.

APPROACH

The group is made up of 72 people of 14 different nationalities, trained in different scientific disciplines. The research areas are foetal cardiac programming, prematurity, foetal neurodevelopment, foetal therapy and surgery, placental diseases and the influence of the environment during pregnancy.

To ensure the correct development of these areas, the group has created a structure with the following four platforms: biobank, animal platform, postnatal follow-up and management.

IMPACT

The results obtained in the research areas show that it is very important to perform careful, specialized follow-up of the pregnancy. This makes it possible to detect possible deficiencies in the creation of the foetus's vital organs.

RESEARCH LINES

- Environment and pregnancy complications.
- Fetal brain development.
- Fetal programming.
- Fetal therapy & surgery.
- Inflammation in preterm birth.
- Placental disease.
- Prematurity.

PUBLICATIONS

Originals / I.F.: 164.778

1. Torrents-Barrena J., Piella G., Masoller N., Gratacós E., Eixarch E., Ceresa M., González Ballester M. **Fully automatic 3D reconstruction of the placenta and its peripheral vasculature in intrauterine fetal MRI.** *MEDICAL IMAGE ANALYSIS.* 54:263-279. I.F.: 8.880

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18. Burgos-Artizzu XP, Perez-Moreno Á, Coronado-Gutierrez D, Gratacos E, Palacio M. **Evaluation of an improved tool for non-invasive prediction of neonatal respiratory morbidity based on fully automated fetal lung ultrasound analysis.** *SCIENTIFIC REPORTS.* 9(1):1950. I.F.: 4.011

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23. Benkarim O., Piella G., Hahner N., Eixarch E., González Ballester M., Sanroma G. **Patch spaces and fusion strategies in patch-based label fusion.** *COMPUTERIZED MEDICAL IMAGING AND GRAPHICS.* 71:79-89. I.F.: 3.298

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29. Torrents-Barrena J., Monill N., Piella G., Gratacós E., Eixarch E., Ceresa M., González Ballester M. **Assessment of Radiomics and Deep Learning for the Segmentation of Fetal and Maternal Anatomy in Magnetic Resonance Imaging and Ultrasound.** *ACADEMIC RADIOLOGY.* S1076-6332(19):30575-6. I.F.: 2.267

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GRANTS FOR RESEARCH IN PROGRESS

Borrell A. **Secuenciación del exoma completo (SEC) en fetos con anomalías fetales estructurales.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/01153
Duration: 01/01/2018-31/12/2020

Cobo T. **Validación de biomarcadores proteómicos y metabolómicos de**

inflamación intraamniótica en el parto prematuro en muestras cervico-vaginales y desarrollo de algoritmos clínicos predictores.
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00344
Duration: 01/01/2016-31/12/2019

Crispi F. **Impacto de las técnicas de reproducción asistida en la programación cardiovascular fetal, resultado perinatal y epigenética fetal.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00675
Duration: 01/01/2018-31/12/2020

Eixarch E. **Desarrollo de herramientas predictivas para la identificación precoz de las alteraciones del neurodesarrollo de origen prenatal basadas en el estudio del desarrollo cortical fetal.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00861
Duration: 01/01/2017-31/12/2020

Figueras F. **Papel del factor de crecimineto placentario en el manejo de la preeclampsia no severa: estudio aleatorizado. Estudio MAP.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00903
Duration: 01/01/2016-30/06/2020

García-Algar O. **App VisualTEAF: una nova eina diagnòstica del TEAF (Trastorn de l'Espectre Alcohòlic Fetal).**
Sponsored by: Barcelona Mobile Ventures. COLLIDER19_002
Duration: 01/09/2019-30/06/2020

Garcia Algar O. **Alteraciones epigenéticas generadas por exposición prenatal al alcohol en pacientes con SAF (síndrome alcohol fetal). Antioxidante epigalocatequina (EGCG) como herramienta terapéutica.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00566
Duration: 17/03/2017-31/12/2019

Garcia Algar O. **Red de Salud Materno-Infantil y del desarrollo.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). RD16/0022/0002
Duration:04/01/2017-31/12/2021

García-Algar O. **VISUAL FASD: Herramienta basada en aplicaciones móviles para la evaluación de la dismorfología del FASD.**
Sponsored by: Fundación Telefónica. PROYVOL18_01
Duration: 01/04/2018-31/03/2019

García-Algar O. T**rastorno del Espectro Alcohólico Fetal (TEAF): validación clínica de la App diagnóstica VisualFASD.**
Sponsored by: Fundación Probitas. ACCSOCIAL19
Duration: 01/01/2019-31/12/2019

Gomez del Rincón O. **Evaluación pronóstica de las cardiopatías congénitas desde la etapa prenatal mediante ecocardiografía avanzada y biomarcadores plasmáticos.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00263
Duration: 01/01/2016-30/06/2020

Gratacós E. **Grup de medicina Maternofetal i Reproductiva mixta Hospital Clínic de Barcelona i Hospital Sant Joan de Déu.**
Sponsored by: Generalitat de Catalunya. AGAUR_SGR17_01531
Duration: 01/01/2017-31/12/2020

Gratacós E. **Prevenció de les conseqüències neurològiques i cardiovasculars de les patologies fetals.**
Sponsored by: Fundació la Caixa. LCF/PR/GN14/10270005
Duration: 01/01/2015-31/12/2019

Gratacós E. **Desenvolupament de noves eines diagnòstiques i terapèutiques personalitzades per prevenir i tractar les malalties fetals i les seves conseqüencies en la salut.**
Sponsored by: Fundació la Caixa. 3199-18
Duration: 06/11/2018-

Gratacós E. I**dentificación de moduladores y dianas terapéuticas en el remodelado y enfermedad cardiovascular del adulto asociada a retraso de crecimiento intrauterino.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00130
Duration: 01/01/2016-30/06/2020

Gratacós E, Crispi F. **Targeting endothelial dysfunction in highly prevalent diseases: characterization and validation of prognostic biomarkers and identification of potential therapeutic strategies.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PIE15/00027
Duration. 01/01/2016-31/11/2020

Gratacós E. **Caracterización fenotípica para una nueva clasificación clínica de la restricción de crecimiento fetal.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00073
Duration: 01/01/2019-31/12/2021

Gratacós E. **Erasmus Mundus Joint Doctorate in Fetal and Perinatal Medicine. FetalMed-PhD.**
Sponsored by: European Commission. Erasmus +
Duration: 01/08/2013-31/10/2021

Palacio M. **Impacto de la detección y tratamiento precoz de las gestantes portadoras asintomáticas de vaginosis bacteriana, en la tasa de parto pretérmino (VB-PREM): ensayo clínico multicéntrico.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00975
Duration: 01/01/2018-31/12/2020

DOCTORAL THESES

Crispi F. **Impact of fetal growth restriction on cardiovascular structure and function across life course.**
PhD student: Álvaro Gabriel Sepúlveda Martínez

Crispi F, Hansson S. **Preeclampsia a cardiovascular risk factor?**
PhD student: Grigorios Kalapotharakos

Eixarch E, Vermeesch J. **Genomic Analysis of Congenital Diaphragmatic Hernia.**
PhD student: Molka Kammoum

Gratacos E, Eixarch E. **Assessment of cortical development in fetuses whit isolated non-severe ventriculomegaly and its correlation with neurodevelopmental outcome.**
PhD student: Nadine Margit Hahner

Palacio M, Bonet-Carne E, Deprest J. **Quantitative ultrasound texture analysis for its use on prematurity.**
PhD student: Alvaro Perez

Palacio M. **Evaluación de los factores clínicos y ecográficos predictivos del resultado de la inducción del parto en gestaciones únicas.**
PhD student: Federico Migliorelli Falcone

3.15 Metabolic bone disease

LOCATION
HCB building, floor 4B

KEYWORDS
1. **Osteoporosis**
2. **Paget's disease of bone**
3. **Bone turnover markers**
4. **Hepatic osteodystrophy**

RELATED DISEASES
1. **Osteoporosis**
2. **Paget's disease of bone**
3. **Bone disease associated with chronic cholestasis**
4. **Glucocorticoid-induced osteoporosis**

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**5**	**22,67**	**4,53**	**80%**	**0%**



GROUP LEADER
Núria Guañabens (HCB)
T. 93 227 54 00 (Ext.: 1735)
nguana@clinic.cat

RESEARCHERS
Joan Caballeria (HCB)
Lluisa Álvarez Domínguez (HCB)
Ana Isabel Monegal (HCB)
Pilar Peris (HCB)

PROBLEM

Metabolic bone diseases, particularly osteoporosis, have important health implications, since they are often behind many fractures. Despite their relevance, metabolic bone diseases form a poorly studied health issue.

APPROACH

The group has studied the effects of cholestasis on bone tissue, both at the clinical and experimental levels. The group also has a deep experience in the study of osteoporosis in patients with end-stage liver disease and following a liver transplant.

Study of the interactions between the liver and bones has allowed it to identify the risk factors and cellular mechanisms involved, as well as to analyse various treatment options.

Our group has also analyzed the usefulness of the biochemical markers of bone turnover in the evaluation of metabolic bone disorders. With this, we have expanded the knowledge in the biochemical approach not only of osteoporosis, but also of other metabolic bone diseases such as Paget's disease of bone.

IMPACT

The group has shown that patients with cholestatic liver disease have a high prevalence of osteoporosis. It has also been identified the risk factors for developing fractures in this context.

In the experimental field the group has described how substances retained in cholestasis produce a damaging effect on osteoblasts, the bone-forming cells, which explains the deficit in bone formation (the main mechanism of osteoporosis associated with cholestasis). More recently, we have analyzed their effects on osteocytic cell lines and the group is currently studying the effects of the products retained in cholestasis on osteoclasts, the cells responsible for bone resorption

RESEARCH LINES

- Pathogenesis of osteoporosis and fracture development in primary biliary cholangitis and other chronic cholestatic disorders.

- Osteoporosis in end-stage liver disease and after liver trasplant.

- Evaluation of bone turnovermarkers in Paget's disease of bone.

- Glucocorticoid-induced osteoporosis.

PUBLICATIONS

Originals / I.F.: 22.668

1. Ebeling PR, Akesson K, Bauer DC, Buchbinder R, Eastell R, Fink HA, Giangregorio L, Guanabens N, Kado D, Kallmes D, Katzman W, Rodriguez A, Wermers R, Wilson HA, Bouxsein ML. **The Efficacy and Safety of Vertebral Augmentation: A Second ASBMR Task Force Report.** *JOURNAL OF BONE AND MINERAL RESEARCH.* 34(1):3-21. I.F.: 5.711

2. Florez H, Hernández-Rodríguez J, Muxi A, Carrasco JL, Prieto-González S, Cid MC, Espinosa G, Gómez-Puerta JA, Monegal A, Guañabens N, Peris P. **Trabecular bone score improves fracture risk assessment in glucocorticoid-induced osteoporosis.** *RHEUMATOLOGY.* I.F.: 5.149

3. Florez H, Ramírez J, Monegal A, Guañabens N, Peris P. **Spontaneous vertebral fractures after denosumab discontinuation: A case collection and review of the literature.** *SEMINARS IN ARTHRITIS AND RHEUMATISM.* 49(2):197-203. I.F.: 5.072

4. Guañabens N., Filella X., Florez H., Ruiz-Gaspá S., Conesa A., Peris P., Monegal A., Torres F. **Tartrate-resistant acid phosphatase 5b, but not periostin, is useful for assessing Paget's disease of bone.** *BONE.* 124:132-136. I.F.: 4.360

5. Cronin, Owen; Forsyth, Laura; Goodman, Kirsteen; Lewis, Steff C.; Keerie, Catriona; Walker, Allan; Porteous, Mary; Cetnarskyj, Roseanne; Ranganath, Lakshminarayan R.; Selby, Peter L.; Hampson, Geeta; Chandra, Rama; Ho, Shu; Tobias, Jon H.; Young-Min, Steven; McKenna, Malachi J.; Crowley, Rachel K.; Fraser, William D.; Gennari, Luigi; Nuti, Ranuccio; Brandi, Maria Luisa; Del Pino-Montes, Javier; Devogelaer, Jean-Pierre; Durnez, Anne; Isaia, Giancarlo; Di Stefano, Marco; Guanabens, Nuria; Blanch, Josep; Seibel, Markus J.; Walsh, John P.; Kotowicz, Mark A.; Nicholson, Geoffrey C.; Duncan, Emma L.; Major, Gabor; Horne, Anne; Gilchrist, Nigel L.; Boers, Maarten; Murray, Gordon D.; Charnock, Keith; Wilkinson, Diana; Russell, R. Graham G.; Ralston, Stuart H. **Zoledronate in the prevention of Paget's (ZiPP): protocol for a randomised trial of genetic testing and targeted zoledronic acid therapy to prevent SQSTM1-mediated Paget's disease of bone.** *BMJ OPEN.* 9(9):e030689. I.F.: 2.376

Review / I.F.: 8.341

1. Adami G, Saag K, Chapurlat R, Guañabens N, Haugeberg G, Lems W, Matijevic R, Peel N, Poddubnyy D, Geusens P. **Balancing benefits and risks in the era of biologics.** *THERAPEUTIC ADVANCES IN MUSCULOSKELETAL DISEASE.* 11:1759720X19883973. I.F.: 5.045

2. Guañabens N, Moro-Álvarez MJ, Casado E, Blanch-Rubió J, Gómez-Alonso C, Díaz-Guerra GM, Del Pino-Montes J, Valero Díaz de Lamadrid C, Peris P, Muñoz-Torres M, SEIOMM Working Group. **The next step after anti-osteoporotic drug discontinuation: an up-to-date review of sequential treatment.** ENDOCRINE. 64(3):441-455. I.F.: 3.296

Letters / I.F.: 5.711

1. Ebeling PR, Akesson K, Bauer DC, Buchbinder R, Eastell R, Fink HA, Giangregorio L, Guanabens N, Kado D, Kallmes D, Katzman W, Rodriguez A, Wermers R, Wilson HA, Bouxsein ML. **Response Letter to the Editor-Diamond et al, JBMR.** *JOURNAL OF BONE AND MINERAL RESEARCH.* 34(6):1185-1186. I.F.: 5.711

Case Reports / I.F.: 1.897

1. Rodriguez-García SC, Castellanos-Moreira R, Muxí A, Del Amo M, Peris P, Guañabens N. **Imaging Follow-up of SAPHO Syndrome Treated With Zoledronic Acid.** *J CLIN RHEUMATOL.* I.F.: 1.897

Clinical Guidelines / I.F.: 5.711

1. Ralston SH, Corral-Gudino L, Cooper C, Francis RM, Fraser WD, Gennari L, Guañabens N, Javaid MK, Layfield R, O'Neill TW, Russell RGG, Stone MD, Simpson K, Wilkinson D, Wills R, Zillikens MC, Tuck SP. **Diagnosis and Management of Paget's Disease of Bone in Adults: A Clinical Guideline.** *JOURNAL OF BONE AND MINERAL RESEARCH.* 34(4):579-604. I.F.: 5.711

GRANTS FOR RESEARCH IN PROGRESS

Guañabens N. **Efectos de la bilirrubina y ácidos biliares sobre las células reguladoras del remodelado óseo. Estudio in vitro en células osteocitarias MLO-A5/MLO-Y4.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI14/00478
Duration: 01/01/2015-30/06/2019

Guañabens N. **Efectos de la bilirrubina y ácidos biliares sobre osteoclastos humanos in vitro y sobre el patrón de expresión de MicroRNAs implicados en la osteoclastogénesis.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00444
Duration: 01/01/2018-31/12/2020

3.16 Endocrine disorders: crosstalk between molecular, metabolic and therapeutic determinants

LOCATION
CEK building, floor 5

KEYWORDS
1. **Endocrine tumours**
2. **Steroids**

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	2	6,82	3,41	100%	0%



GROUP LEADER
Felicia Alexandra Hanzu (HCB-IDIBAPS)
T. 93 227 54 00 (Ext.: 9846)
fhanzu@clinic.cat

POST-DOCTORAL RESEARCHERS
Gloria Beatriz Aranda (IDIBAPS)
Irene Halperin (HCB)
Mireia Mora (HCB)
Mattia Squarcia(HCB)

PRE-DOCTORAL RESEARCHERS
Guillermo Garcia Eguren (IDIBAPS)

TECHNICIANS
Oriol Giro (FCRB)

PROBLEM

The group studies molecular, metabolic and therapeutic aspects of complex endocrine disorders within the context of research on endocrine tumours and on steroids.

APPROACH

The group's research work is organized into two programmes: the steroids programme and the endocrine tumours programme. The former studies the molecular and epigenetic mechanisms that cause severe and persistent damage to the target tissues of steroidal hormones.

The endocrine tumours programme researches genetic and molecular factors, biomarkers and new diagnostic and therapeutic strategies.

The basic goal of the group's research is translation of the knowledge derived from basic research to clinical practice.

IMPACT

As a result of the research carried out to date, the group has provided evidence, in a translational ex vivo-in vitro model, of endothelial activation and inflammation on the action of circulating factors that remain after endogenous tumour hypercortisolism.

In parallel, a new animal model of reversible exogenous Cushing syndrome has shown the persistence of the harmful metabolic effects that result from excess steroids.

In terms of technological innovation, work is being carried out on the differential diagnosis and minimally invasive percutaneous treatment of benign and malignant thyroid nodules.

RESEARCH LINES

- Molecular and epigenetic mechanisms responsible for the persistent deleterious effects in target tissue exposed to steroidal hormones.

- Translational approach in humans and animal models.

PUBLICATIONS

Originals / I.F.: 6.823

1. Garcia-Eguren G, Giró O, Romero MDM, Grasa M, Hanzu FA. **Chronic hypercortisolism causes more persistent visceral adiposity than HFD-induced obesity.** *JOURNAL OF ENDOCRINOLOGY.* 242(2):65-77. I.F.: 4.381

2. Bernardo-Castiñeira C, Sáenz-de-Santa-María I, Valdés N, Astudillo A, Balbín M, Pitiot AS, Jiménez-Fonseca P, Scola B, Tena I, Molina-Garrido MJ, Sevilla MA, Beristein E, Forga L, Villabona C, Oriola J, Halperin I, Suarez C, Chiara MD. **Clinical significance and peculiarities of succinate dehydrogenase B and hypoxia inducible factor 1α expression in parasympathetic versus sympathetic paragangliomas.** *HEAD AND NECK.* 41(1):79-91. I.F.: 2.442

GRANTS FOR RESEARCH IN PROGRESS

Hanzu F. **Cambios epigenéticos inducidos por el síndrome cushing en la plasticidad y el kinoma del tejido adipso. Modelo animal y estudio en humanos.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00859
Duration: 01/01/2016-31/07/2019

Mora M. **LUCA: Laser and Ultrasound Co-Analyzer for thyroid nodules.**
Sponsored by: European Commission. H2020_ICT_2015
Duration: 01/02/2016-31/01/2020

3.17 Translational research group in new therapeutic and diagnostic strategies in liver diseases

LOCATION
CEK building, floor 3

KEYWORDS
1. **Liver fibrosis**
2. **Cirrhosis**
3. **Nanomedicine**
4. **Liver regeneration**
5. **Sinusoidal endothelial cells**
6. **Lymphatic endothelial cells**
7. **Inflammation**
8. **Macrophages**
9. **Laboratory medicine**

RELATED DISEASES
1. **Cirrhosis**
2. **MAFLD**
3. **Metabolic syndrome**
4. **Hepatocellular carcinoma**
5. **Heart failure**

GROUP INVOLVED IN
AGAUR_SGR17: 00858
CIBEREHD: CB06/04/0020

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	12	85,39	7,12	75%	33%



GROUP LEADER
Wladimiro Jiménez (HCB)
T. 93 227 54 00 (Ext.: 2199)
wjimenez@clinic.cat

RESEARCHERS
Gregori Casals (HCB)
Guillermo Fernandez Varo (CIBER)
Manuel Morales Ruiz (HCB)

POST-DOCTORAL RESEARCHERS
Pedro Melgar (IDIBAPS)
Jordi Ribera (CIBER)

PRE-DOCTORAL RESEARCHERS
Bernat Córdoba (IDIBAPS)
Alazne Moreno (IDIBAPS)
Marina Parra (HCB)
Meritxell Perramón (IDIBAPS)
Irene Portolés (IDIBAPS)

TECHNICIANS
Carmen Cano (HCB)
Cristina Diez Hernández (HCB)
Carmen Belén González Marin (IDIBAPS)

PROBLEM

Liver diseases are a serious health problem globaly, especially in Europe. These are very prevalent disorders and they come with high social and economic costs.
The main causes are chronic infections for hepatitis B or C, alcoholism and MAFLD, all of which are rising worldwide.

Chronic liver damage involves the development of liver fibrosis and portal hypertension, complications that can lead to more severe disorders such as cirrhosis, hepatocellular carcinoma, hyponatremia and ascites. In spite of the advances in the understanding of the cellular and molecular mechanisms that govern liver disease, there are still no effective therapies that slow down its progression.

APPROACH

The group is addressing this problem from a multifactorial perspective, especially based on the use of gene therapy or new materials such as nanoparticles. Its main objective is to design complementary therapies with biocompatible nanomaterials that can be applied as a treatment for liver disease in humans.

IMPACT

The basic treatment for a person with acute or chronic liver failure is a liver transplant, a solution som e limitations due to the shortage of organ donors for this type of patients. Therefore, it is necessary to identify new therapeutic tools capable of stopping or reversing the progression of the phenomena that promote fibrosis in liver disease. The group's research is highly translational, because it is opening up new therapeutic pathways for liver disease.

RESEARCH LINES

- Establish new therapies for the normalisation of the intrahepatic vasculature in cirrhotic livers.

- Evaluation of new strategies to modify the activity of specific Akt targets that have a therapeutic potential to stimulate functional liver regeneration in cirrhotic livers.

- Evaluation of the therapeutic potential of cerium oxide nanoparticles in experimental models of hepatocellular carcinoma and liver steatosis.

- Diagnostic utility of the lipidome in liver diseases.

- Photothermal therapy for liver fibrosis.

- Liver organogenesis.

- Evaluation of the utility of collagen matrix implants containing endothelial cells as a cell therapy to stimulate the regenerative layer of cirrhotic livers.

- Identification of non-invasive biomarkers of liver injury and new signalling pathways of liver fibroproliferative processes.

- Modulation of macrophages to liver damage, regeneration and cancer through functionalised nanoparticles and gene therapy.

PUBLICATIONS

Originals / I.F.: 85.393

1. Fernández J, Clària J, Amorós A, Aguilar F, Castro M, Casulleras M, Acevedo J, Duran-Güell M, Nuñez L, Costa M, Torres M, Horrillo R, Ruiz-Del-Árbol L, Villanueva C, Prado V, Arteaga M, Trebicka J, Angeli P, Merli M, Alessandria C, Aagaard NK, Soriano G, Durand F, Gerbes A, Gustot T, Welzel TM, Salerno F, Bañares R, Vargas V, Albillos A, Silva A, Morales-Ruiz M, Carlos García-Pagán J, Pavesi M, Jalan R, Bernardi M, Moreau R, Páez A, Arroyo V. **Effects of Albumin Treatment on Systemic and Portal Hemodynamics and Systemic Inflammation in Patients With Decompensated Cirrhosis.** *GASTROENTEROLOGY.* 157(1):149-162. I.F.: 19.233

2. Huelin P, Solà E, Elia C, Solé C, Risso A, Moreira R, Carol M, Fabrellas N, Bassegoda O, Juanola A, de Prada G, Albertos S, Piano S, Graupera I, Ariza X, Napoleone L, Pose E, Filella X, Morales-Ruiz M, Rios J, Fernández J, Jiménez W, Poch E, Torres F, Ginès P. **Neutrophil gelatinase-associated lipocalin for assessment of acute kidney injury in cirrhosis.** *HEPATOLOGY.* 70(1):319-333. I.F.: 14.971

3. Zaffaroni G, Okawa S, Morales-Ruiz M, Del Sol A. **An integrative method to predict signalling perturbations for cellular transitions.** *NUCLEIC ACIDS RESEARCH.* 47(12):e72. I.F.: 11.147

4. Solé C, Solà E, Huelin P, Carol M, Moreira R, Cereijo U, Mas JM, Graupera I, Pose E, Napoleone L, dePrada G, Juanola A, Fabrellas N, Torres F, Morales-Ruiz M, Farrés J, Jiménez W, Ginès P. **Characterization of inflammatory response in hepatorenal syndrome.** *LIVER INTERNATIONAL.* 39(7):1246-1255. I.F.: 5.542

5. Escoda O, Reverter E, To-Figueras J, Casals G, Fernández J, Nogué S. **Potential value of urinary amatoxin quantification in patients with hepatotoxic mushroom poisoning.** *LIVER INTERNATIONAL.* 39(6):1128-1135. I.F.: 5.542

6. Córdoba-Jover B, Arce-Cerezo A, Ribera J, Pauta M, Oró D, Casals G, Fernández-Varo G, Casals E, Puntes V, Jiménez W, Morales-Ruiz M. **Cerium oxide nanoparticles improve liver regeneration after acetaminophen-induced liver injury and partial hepatectomy in rats.** *JOURNAL OF NANOBIOTECHNOLOGY.* 17(1):112. I.F.: 5.345

7. Valenzuela-Alcaraz B, Serafini A, Sepulveda-Martínez A, Casals G, Rodríguez-López M, Garcia-Otero L, Cruz-Lemini M, Bijnens B, Sitges M, Balasch J, Gratacós E, Crispi F . **Postnatal persistence of fetal cardiovascular remodeling associated with assisted reproductive technologies: a cohort study.** *BJOG: AN INTERNATIONAL JOURNAL OF OBSTETRICS AND GYNAECOLOGY.* 126(2):291-298. I.F.: 5.193

8. Parra-Robert M, Casals E, Massana N, Zeng M, Perramón M, Fernández-Varo G, Morales-Ruiz M, Puntes V, Jiménez W, Casals G. **Beyond the Scavenging of Reactive Oxygen Species (ROS): Direct Effect of Cerium Oxide Nanoparticles in Reducing Fatty Acids Content in an In Vitro Model of Hepatocellular Steatosis.** *BIOMOLECULES.* 9(9):E425. I.F.: 4.694

9. Carvajal S., Perramón M., Casals G., Oró D., Ribera J., Morales-Ruiz M., Casals E., Casado P., Melgar-Lesmes P., Fernández-Varo G., Cutillas P., Puntes V., Jiménez W. **Cerium oxide nanoparticles protect against oxidant injury and interfere with oxidative mediated kinase signaling in human-derived hepatocytes**. *INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES.* 20(23):E5959. I.F.: 4.183

10. Carvajal S, Perramón M, Oró D, Casals E, Fernández-Varo G, Casals G, Parra M, González de la Presa B, Ribera J, Pastor Ó, Morales-Ruíz M, Puntes V, Jiménez W. **Cerium oxide nanoparticles display antilipogenic effect in rats with non-alcoholic fatty liver disease**. *SCIENTIFIC REPORTS.* 9(1):12848. I.F.: 4.011

11. Ribera J, Rodríguez-Vita J, Cordoba B, Portolés I, Casals G, Casals E, Jiménez W, Puntes V, Morales-Ruiz M. **Functionalized cerium oxide nanoparticles mitigate the oxidative stress and proinflammatory activity associated to the portal vein endothelium of cirrhotic rats.** *PLOS ONE.* 14(6):e0218716. I.F.: 2.776

12. Bosch X., Jáuregui B., Villamor N., Morales-Ruiz M., Ortiz-Pérez J., Borràs R., Penela D., Soto-Iglesias D., Perea R., Doltra A., Prat-González S., Jiménez W., Mira Á., Lasalvia L., Berruezo A. **Monocyte Subsets Are Differently Associated with Infarct Size, Left Ventricular Function, and the Formation of a Potentially Arrhythmogenic Scar in Patients with Acute Myocardial Infarction.** *JOURNAL OF CARDIOVASCULAR TRANSLATIONAL RESEARCH.* I.F.: 2.756

Review / I.F.: 5.656

1. Melgar-Lesmes, Pedro; Perramon, Meritxell; Jimenez, Wladimiro. **Roles of the Hepatic Endocannabinoid and Apelin Systems in the Pathogenesis of Liver Fibrosis.** *CELLS.* 8:11. I.F.: 5.656

GRANTS FOR RESEARCH IN PROGRESS

Casals G. **Evaluación de las propiedades antioxidantes y antiinflamatorias de las nanopartículas de óxido de cerio como nueva estrategia terapéutica en la esteatosis hepática.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00777
Duration: 01/01/2016-31/12/2019

Jiménez W. **Desenvolupament i aplicació de nanopartícules de ceri en el tractament del carcinoma hepatocel.lular.**
Sponsored by: Generalitat de Catalunya. AGAUR_SGR18_00187
Duration: 01/05/2019-31/10/2020

Jiménez W. **Utilidad terapéutica de las Nanopartículas de Óxido de Cerio en las enfermedades hepáticas.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO). SAF2015-64126-R
Duration: 01/01/2016-31/03/2019

Jiménez W. **Utilidad terapéutica y de nuevos tratamientos para las enfermedades hepáticas: RNA de interferencia para PTTG1, nanopartículas de carbono grafito y donadores de óxido nítrico.**
Sponsored by: Ministerio de Ciencia Innovación y Universidades (MCIU). RTI2018-094734-B-C21
Duration: 01/01/2019-31/12/2021

Morales M. **Estimulación de la regeneración funcional de hígados cirróticos mediante la normalización vascular intrahepática y la modulación de dianas de Akt.**
Sponsored by: Ministerio de Economia y Competitividad (MINECO). SAF2016-75358-R
Duration: 30/12/2016-29/06/2020

3.18 Translational research in hepatic oncology

LOCATION
CEK building, floor 3

KEYWORDS
1. **Hepatocellular carcinoma (HCC)**
2. **Intrahepatic cholangiocarcinoma (iCCA)**
3. **Molecular targeted therapies in liver cancer**
4. **Immunotherapies in liver cancer**
5. **Molecular and Immune classification of HCC and iCCA**
6. **Cancer drivers and signalling pathways**
7. **Biomarkers predictors of response and primary resistance to molecular therapies in HCC**

RELATED DISEASES
1. **Liver cancer**
2. **Hepatocellular carcinoma (HCC)**
3. **Intrahepatic cholangiocarcinoma (ICCA)**
4. **Other primary liver and biliary tree tumors**

GROUP INVOLVED IN
HUNTER
HEP-CAR
AGAUR SGR: 2017-SGR-01358

AWARDS
Richard W. Sherbaniuk & Dr Ronald H.Wensel Lectureship Award in Gastroenterology
Institution: University of Alberta. Edmonton, Canada.
Awardee/s: Josep M. Llovet

Recognition award as one of "The WORLD's Most Influential Scientific Minds 2019" *(top 1% most cited investigator).*
Institution: Clarivate Analytict
Awardee/s: Josep M. Llovet

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**8**	**180,59**	**22,57**	**100%**	**88%**



GROUP LEADER
Josep M. Llovet (ICREA-IDIBAPS)
T. 93.227 9155
jmllovet@clinic.cat

POST-DOCTORAL RESEARCHERS
Roser Pinyol (IDIBAPS)
Catherine Willoughby (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Carmen Andreu (IDIBAPS)
Roger Esteban (IDIBAPS)
Robert Montal (IDIBAPS)
Carla Montironi (HCB)
Sara Torrecilla (IDIBAPS)
Laura Torrens (IDIBAPS)

TECHNICIANS
Judit Peix (FCRB)

ADMINISTRATIVE STAFF
Sara Bayarri (IDIBAPS)
Ariadna Farré (IDIBAPS)

COLLABORATORS
Jordi Abril (FCRB)
Ugne Balaseviciute (FCRB)
Marta Piqué (FCRB)

PROBLEM

Liver cancer is a major public health issue, with an estimated incidence of one million cases in 2025. Surgery and local-regional treatments cure the disease in a small number of cases, but most patients progress to advanced stages. Patients at advanced stages can be treated with molecular therapies and/or immunotherapies, which expand their survival around one and a half years.

APPROACH

The group has defined the molecular and immunological classification of hepatocellular carcinoma and has characterised certain therapeutic targets.

The most pressing challenges to improve the treatment of patients with hepatocellular carcinoma and cholangiocarcinoma are: identification of molecular markers – with tissue and liquid biopsy – for early diagnosis; identification of the pro-carcinogenic microenvironment as the therapeutic target in patients with cirrhosis of the liver; examination of genomic alterations to detect the presence of new genotoxic agents; identification of the biomarkers denoting response or primary resistance to new therapies, basically immunological treatments; identification of new therapeutic targets by methylation deregulation; identification of drugs which, when combined, have synergistic effects, and improving knowledge about the mechanisms involved in the origin, progression and dissemination of these cancers.

IMPACT

The long-term objective is to improve survival rates and quality of life in patients with liver cancer, as well as to improve prevention. Secondary objectives include increasing knowledge of the way in which the disease develops, molecular alterations and treatment of these tumours.

The impact of the group's studies may help improve the prevention and treatment of liver cancer by identifying the biomarkers that predict the response to immunological therapies, and those that predict resistance. This will also make it possible to identify the best therapeutic combinations for use in clinical trials and to identify new treatment paradigms. For this purpose, the group will use cutting-edge technology , such as next generation sequencing and single cell sequencing.

RESEARCH LINES

- Translational research in liver cancer.

- Establishment of molecular approaches to improve surveillance, diagnosis and therapeutic strategies in HCC.

- Establish and refine the molecular and immune classification of HCC and iCCA.

- Identify novel biomarkers of response and primary resistance to molecular and immune therapies in HCC and iCCA.

- Study of the molecular pathogenesis of NASH-HCC.

- Understand the subpopulations of immune cells involved in pathogenesis and response to therapies based on single cell sequencing.

- Explore the molecular mechanisms to enhance the immune response with combination therapies with multikinase inhibitors.

- Identification of drivers and pathways as targets for therapies in HCC and iCCA.

- Liquid biopsy approaches for early detection and prediction of response in HCC.

PUBLICATIONS

Originals / I.F.: 180.592

1. Zhu, Andrew X.; Kang, Yoon-Koo; Yen, Chia-Jui; Finn, Richard S.; Galle, Peter R.; Llovet, Josep M.; Assenat, Eric; Brandi, Giovanni; Pracht, Marc; Lim, Ho Yeong; Rau, Kun-Ming; Motomura, Kenta; Ohno, Izumi; Merle, Philippe; Daniele, Bruno; Shin, Dong Bok; Gerken, Guido; Borg, Christophe; Hiriart, Jean-Baptiste; Okusaka, Takuji; Morimoto, Manabu; Hsu, Yanzhi; Abada, Paolo B.; Kudo, Masatoshi; REACH-2 Study Investigators. **Ramucirumab after sorafenib in patients with advanced hepatocellular carcinoma and increased alpha-fetoprotein concentrations (REACH-2): a randomised, double-blind, placebo-controlled, phase 3 trial.** *LANCET ONCOLOGY.* 20(2):282-296. I.F.: 35.386

2. Malehmir, Mohsen; Pfister, Dominik; Gallage, Suchira; Szydlowska, Marta; Inverso, Donato; Kotsiliti, Elena; Leone, Valentina; Peiseler, Moritz; Surewaard, Bas G. J.; Rath, Dominik; Ali, Adnan; Wolf, Monika Julia; Drescher, Hannah; Healy, Marc E.; Dauch, Daniel; Kroy, Daniela; Krenkel, Oliver; Kohlhepp, Marlene; Engleitner, Thomas; Olkus, Alexander; Sijmonsma, Tjeerd; Volz, Julia; Deppermann, Carsten; Stegner, David; Helbling, Patrick; Nombela-Arrieta, Cesar; Rafiei, Anahita; Hinterleitner, Martina; Rall, Marcel; Baku, Florian; Borst, Oliver; Wilson, Caroline L.; Leslie, Jack; O'Connor, Tracy; Weston, Christopher J.; Adams, David H.; Sheriff, Lozan; Teijeiro, Ana; Prinz, Marco; Bogeska, Ruzhica; Anstee, Natasha; Bongers, Malte N.; Notohamiprodjo, Mike; Geisler, Tobias; Withers, Dominic J.; Ware, Jerry; Mann, Derek A.; Augustin, Hellmut G.; Vegiopoulos, Alexandros; Milsom, Michael D.; Rose, Adam J.; Lalor, Patricia F.; Llovet, Josep M.; Pinyol, Roser; Tacke, Frank; Rad, Roland; Matter, Matthias; Djouder, Nabil; Kubes, Paul; Knolle, Percy A.; Unger, Kristian; Zender, Lars; Nieswandt, Bernhard; Gawaz, Meinrad; Weber, Achim; Heikenwalder, Mathias. **Platelet GPIb alpha is a mediator and potential interventional target for NASH and subsequent liver cancer.** *NATURE MEDICINE.* 25(4):641-655. I.F.: 30.641

3. Kim R.D., Sarker D., Meyer T., Yau T., Macarulla T., Park J.W., Choo S.P., Hollebecque A., Sung M.W., Lim H.Y., Mazzaferro V., Trojan J., Zhu A.X., Yoon J.H., Sharma S., Lin Z.Z., Chan S.L., Faivre S., Feun L.G., Yen C.J., Dufour J.F., Palmer D.H., Llovet J.M., Manoogian M., Tugnait M., Stransky N., Hagel M., Kohl N.E., Lengauer C., Sherwin C.A., Schmidt-Kittler O., Hoeflich K.P., Shi H., Wolf B.B., Kang Y.K. **First-in-Human Phase I Study of Fisogatinib (BLU-554) Validates Aberrant FGF19 Signaling as a Driver Event in Hepatocellular Carcinoma.** *CANCER DISCOVERY.* 9(12):1696-1707. I.F.: 26.370

4. De Galarreta, Marina Ruiz Bresnahan, Erin Molina-Sanchez, Pedro Lindblad, Katherine E. Maier, Barbara Sia, Daniela Puigvehi, Marc Miguela, Vernica Casanova-Acebes, Maria Dhainaut, Maxime Villacorta-Martin, Carlos Singhi, Aatur D. Moghe, Akshata von Felden, Johann Grinspan, Lauren Tal Wang, Shuang Kamphorst, Alice O. Monga, Satdarshan P. Brown, Brian D. Villanueva, Augusto Llovet, Josep M. Merad, Miriam Lujambio, Amaia. **β-Catenin Activation Promotes Immune Escape and Resistance to Anti-PD-1 Therapy in Hepatocellular Carcinoma.** *CANCER DISCOVERY.* 9(8):1124-1141. I.F.: 26.370

5. Teufel M, Seidel H, Köchert K, Meinhardt G, Finn RS, Llovet JM, Bruix J. **Biomarkers associated with response to regorafenib in patients with hepatocellular carcinoma.** *GASTROENTEROLOGY.* 156(6):1731-1741. I.F.: 19.233

6. Moeini A, Torrecilla S, Tovar V, Montironi C, Andreu-Oller C, Peix J, Higuera M, Pfister D, Ramadori P, Pinyol R, Solé M, Heikenwälder M, Friedman SL, Sia D, Llovet JM. **An Immune Gene Expression Signature Associated With Development of Human Hepatocellular Carcinoma Identifies Mice That Respond to Chemopreventive Agents.** *GASTROENTEROLOGY.* 157(5):1383-1397.e11. I.F.: 19.233

7. Pinyol R, Montal R, Bassaganyas L, Sia D, Takayama T, Chau GY, Mazzaferro V, Roayaie S, Lee HC, Kokudo N, Zhang Z, Torrecilla S, Moeini A, Rodriguez-Carunchio L, Gane E, Verslype C, Croitoru AE, Cillo U, de la Mata M, Lupo L, Strasser S, Park JW, Camps J, Solé M, Thung SN, Villanueva A, Pena C, Meinhardt G, Bruix J, Llovet JM. **Molecular predictors of prevention of recurrence in HCC with sorafenib as adjuvant treatment and prognostic factors in the phase 3 STORM trial.** *GUT.* 68(6):1065-1075. I.F.: 17.943

8. Montal R, Andreu-Oller C, Bassaganyas L, Esteban-Fabró R, Moran S, Montironi C, Moeini A, Pinyol R, Peix J, Cabellos L, Villanueva A, Sia D, Mazzaferro V, Esteller M, Llovet JM. **Molecular portrait of high alpha-fetoprotein in hepatocellular carcinoma: implications for biomarker-driven clinical trials.** *BRITISH JOURNAL OF CANCER.* 121(4):340-343. I.F.: 5.416

Review / I.F.: 41.777

1. Llovet JM, Montal R, Villanueva A. **Randomized trials and endpoints in advanced HCC: Role of PFS as a surrogate of survival.** *JOURNAL OF HEPATOLOGY.* 70(6):1262-1277. I.F.: 18.946

2. Pinyol R, Sia D, Llovet JM. **Immune Exclusion-Wnt/CTNNB1 Class Predicts Resistance to Immunotherapies in HCC.** *CLINICAL CANCER RESEARCH.* 25(7):2021-2023. I.F.: 8.911

3. Yarchoan, Mark; Agarwal, Parul; Villanueva, Augusto; Rao, Shuyun; Dawson, Laura A.; Llovet, Josep M.; Finn, Richard S.; Groopman, John D.; El-Serag, Hashem B.; Monga, Satdarshan P.; Wang, Xin Wei; Karin, Michael; Schwartz, Robert E.; Tanabe, Kenneth K.; Roberts, Lewis R.; Gunaratne, Preethi H.; Tsung, Allan; Brown, Kimberly A.; Lawrence, Theodore S.; Salem, Riad; Singal, Amit G.; Kim, Amy K.; Rabiee, Atoosa; Resar, Linda; Hoshida, Yujin; He, Aiwu Ruth; Ghoshal, Kalpana; Ryan, Patrick B.; JaYee, Elizabeth M.; Guha,

Chandan; Mishra, Lopa; Coleman, C. Norman; Ahmed, Mansoor M. **Recent Developments and Therapeutic Strategies against Hepatocellular Carcinoma.** *CANCER RESEARCH.* 79(17):4326-4330. I.F.: 8.378

4. Galle PR, Foerster F, Kudo M, Chan SL, Llovet JM, Qin S, Schelman WR, Chintharlapalli S, Abada PB, Sherman M, Zhu AX. **Biology and Significance of Alpha-Fetoprotein in Hepatocellular Carcinoma.** *LIVER INTERNATIONAL.* 39(12):2214-2229. I.F.: 5.542

5. Montironi C, Montal R, Llovet JM. **New Drugs Effective in the Systemic Treatment of Hepatocellular Carcinoma.** *CLINICAL LIVER DISEASE.* 14:56-61. I.F.: n/a

6. Puigvehí M, Moctezuma-Velázquez C, Villanueva A, Llovet JM. **The oncogenic role of hepatitis delta virus in hepatocellular carcinoma.** *JOURNAL OF HEPATOLOGY REPORTS.* 1:120-130. I.F.: n/a

Letters / I.F.: 35.386

1. Zhu A.X., Finn R.S., Galle P.R., Llovet J.M., Kudo M. **Ramucirumab in advanced hepatocellular carcinoma in REACH-2: the true value of α-fetoprotein**. *LANCET ONCOLOGY.* 20(4):e191. I.F.: 35.386

GRANTS FOR RESEARCH IN PROGRESS

Llovet JM. **Laboratori de Recerca Translacional en Oncología Hepàtica.**
Sponsored by: Generalitat de Catalunya.
AGAUR_SGR17_01358
Duration: 01/01/2017-30/09/2021

Llovet JM. **Mecanismos de resistencia adquirida a sorafenib en el carcinoma hepatocelular.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
SAF2016-76390-R
Duration: 30/12/2016-29/12/2019

Llovet JM, Montal R. **Integrative molecular classification of extrahepatic cholangiocarcinoma.**
Sponsored by: Sociedad Española de Oncología Médica (SEOM). RETORNO_18_01
Duration:26/10/2018-31/10/2019

Llovet JM. **HUNTER: Hepatocellular Carcinoma Expediter Network.**
Sponsored by: Cancer Research UK, Fondazione AIRC and Fundación Científica de la Asociación Española Contra el Cáncer (AECC). AccAward17
Duration: 01/12/2018-30/11/2023

Llovet JM. **HEP-CAR: Mechanisms underlying hepatocellular carcinoma pathogenesis and impact of co-morbidities.**
Sponsored by: European Commission.
H2020-PHC-2015-2s
Duration: 01/01/2016-31/12/2019

Llovet JM. **CRISH-2: Co-cReating Innovative Solutions for Health 2.0.**
Sponsored by: European Commission.
EITHealth_2018_18053
Duration: 01/01/2018-31/12/2019

3.19 Gynecological endocrinology and human reproduction

LOCATION
HCB building

KEYWORDS
1. **Human papillomavirus**
2. **Endometrial cancer**
3. **Assisted reproductive technologies**
4. **Recurrent miscarriage**
5. **Gynecological laparoscopy**
6. **Endometriosis**

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**16**	**50,82**	**3,18**	**31%**	**6%**



GROUP LEADER
María Ángeles Martínez Zamora (HCB)
T. 93 227 54 36
mazamora@clinic.cat

RESEARCHERS
Immaculada Alonso (HCB)
Francesc Carmona (HCB)
Camil Castelo Branco (HCB)
Marta del Pino (HCB)
Berta Díaz Feijoo (HCB)
Francisco J Fabregues (HCB)
Dolors Manau (HCB)
Aureli Torné (HCB)

POST-DOCTORAL RESEARCHERS
Gemma Casals (HCB)
Meritxell Munmany (HCB)
Cristina Ros (HCB)

PRE-DOCTORAL RESEARCHERS
Meritxell Gracia (HCB)
Mariona Rius (HCB)

NURSING STAFF
Ana Carrión (HCB)

STRATEGIC OBJECTIVES

The global aim of this research group for the coming years is to advance in the knowledge of different aspects relating to the physiopathology of human reproduction: from endocrinological considerations to the most important benign and malignant pathological processes of the female reproductive system, as well as the investigation and treatment of human reproduction failure.

MAIN LINES OF RESEARCH

1. **Reproductive failure markers:** To find new markers of hemostasis alterations in early and advanced pregnancy in patients with or without antiphospholipid syndrome and in endometriosis patients. To assess the usefulness of immunohistochemical and proteomic parameters in the human endometrium as markers of endometrial receptiveness.

2. **Ovarian dysfunction and stimulation/hyperstimulation:** Investigation of the possibilities of ultrasound, hormonal, endocrinemetabolic and genetic markers in relation to the prediction of ovarian response. To assess the role of the ovarian follicular cells in the pathogenesis of ovarian hyperstimulation syndrome in order to improve the results of assisted reproduction techniques.

3. **Optimization of the surgical management of diseases of the reproductive apparatus:** To analyze the role of the surgical variables allowing improvement of the results and reduction of the morbidity in the surgical treatment of benign and malignant gynaecological disorders. To define the prognostic value of human papillomavirus detection and viral typing as progression markers of precancerous lesions of the cervix, vagina and vulva.

PUBLICATIONS

Originals / I.F.: 50.814

1. Nicolás I., Marimon L., Barnadas E., Saco A., Rodríguez-Carunchio L., Fusté P., Martí C., Rodriguez-Trujillo A., Torne A., del Pino M., Ordi J. **HPV-negative tumors of the uterine cervix.** *MODERN PATHOLOGY.* 32(8):1189-1196. I.F.: 6.365

2. Leeman A, Del Pino M, Marimon L, Torné A, Ordi J, Ter Harmsel B, Meijer CJLM, Jenkins D, Van Kemenade FJ, Quint WGV. **Reliable identification of women with CIN3+ using hrHPV genotyping and methylation markers in a cytology-screened referral population.** *INTERNATIONAL JOURNAL OF CANCER.* 144(1):160-168. I.F.: 4.982

3. Vink, Frederique J.; Meijer, Chris J. L. M.; Clifford, Gary M.; Poljak, Mario; Ostrbenk, Anja; Petry, Karl Ulrich; Rothe, Beate; Bonde, Jesper; Pedersen, Helle; de Sanjose, Silvia; Torres, Montserrat; del Pino, Marta; Quint, Wim G., V; Cuschieri, Kate; Boada, Elia Alcaniz; van Trommel, Nienke E.; Lissenberg-Witte, Birgit, I; Floore, Arno N.; Hesselink, Albertus T.; Steenbergen, Renske D. M.; Bleeker, Maaike C. G.; Heideman, Danielle A. M. **FAM19A4/miR124-2 methylation in invasive cervical cancer: A retrospective cross-sectional worldwide study.** *INTERNATIONAL JOURNAL OF CANCER.* I.F.: 4.982

4. Saco A., Alòs S., Esteve R., Suárez-Lledó M., Martínez C., Perez F.M., Vega N., Martí C., Torne A., Ordi J., del Pino M. **Atypical cytological changes mimicking SIL of the uterine cervix in allogenic hematopoietic stem cell transplantation recipients treated with busulfan.** *CANCER CYTOPATHOLOGY.* I.F.: 4.425

5. Pino M., Sierra A., Marimon L., Delgado C., Rodriguez-Trujillo A., Barnadas E., Saco A., Torné A., Ordi J. **CADM1, MAL, and miR124 Promoter Methylation as Biomarkers of Transforming Cervical Intrapithelial Lesions.** *INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES.* 20:9. I.F.: 4.183

6. Valiensi S., Belardo M., Pilnik S., Izbizky G., Starvaggi A., Castelo Branco C. **Sleep quality and related factors in postmenopausal women.** *MATURITAS.* 123:73-77. I.F.: 3.654

7. Santamaría G., Bargalló X., Ganau S., Alonso I., Muñoz M., Mollà M., Fernández P., Prat A. **Multiparametric MR imaging to assess response following neoadjuvant systemic treatment in various breast cancer subtypes: Comparison between different definitions of pathologic complete response.** *EUROPEAN JOURNAL OF RADIOLOGY.* 117:132-139. I.F.: 2.948

8. Munrós J, Tàssies D, Reverter JC, Martin L, Pérez A, Carmona F, Martínez-Zamora MÁ. **Circulating Neutrophil Extracellular Traps Are Elevated in Patients With Deep Infiltrating Endometriosis.** *REPRODUCTIVE SCIENCES.* 26(1):70-76. I.F.: 2.559

9. Castelo-Branco C., Cancelo Hidalgo M.J., Palacios S., Ciria-Recasens M., Fernández-Pareja A., Carbonell-Abella C., Manasanch J., Haya-Palazuelos J. **Efficacy and safety of ossein-hydroxyapatite complex versus calcium carbonate to prevent bone loss.** *CLIMACTERIC.* 1-7. I.F.: 2.533

10. Del Pino M, Martí C, Gaber J, Svanholm-Barrie C, Rodríguez-Carunchio L, Rodriguez-Trujillo A, Carreras N, Fuertes I, Barnadas E, Marimón L, Blanco JL, Persing DH, Torné A, Ordi J. **mRNA Detection in Anal Cytology: A Feasible Approach for Anal Cancer Screening in Men Who Have Sex with Men Living With HIV.** *DIAGNOSTICS.* 9:4. I.F.: 2.489

11. Munrós J, Martínez-Zamora MA, Tàssies D, Reverter JC, Rius M, Gracia M, Ros C, Carmona F. **Total circulating microparticle levels after laparoscopic surgical treatment for endometrioma: a pilot, prospective, randomized study comparing stripping with CO2 laser vaporization.** *JOURNAL OF MINIMALLY INVASIVE GYNECOLOGY.* 26(3):450-455. I.F.: 2.414

12. Vidal-Sicart S., Seva A., Campos F., Sánchez N., Alonso I., Pahisa J., Caparrós X., Perissinotti A., Paredes P., van Leeuwen F. **Clinical use of an opto-nuclear probe for hybrid sentinel node biopsy guidance: first results.** *INTERNATIONAL JOURNAL OF COMPUTER ASSISTED RADIOLOGY AND SURGERY.* 14(2):409-416. I.F.: 2.155

13. Diaz-Feijoo, Berta; Temprana-Salvador, Jordi; Franco-Camps, Silvia; Manrique, Susana; Colas, Eva; Perez-Benavente, Asuncion; Gil-Moreno, Antonio. **Clinical management of early-stage cervical cancer: The role of sentinel lymph node biopsy in tumors ≤ 2 cm.** *EUROPEAN JOURNAL OF OBSTETRICS & GYNECOLOGY AND REPRODUCTIVE BIOLOGY.* 241:30-34. I.F.: 2.024

14. Gracia M., Nonell R., Ros C., Rius M., Quintas L., Martínez-Zamora M., Carmona F. **Sonographic and hysteroscopic endometrial examination in women treated with ulipristal acetate: Exploratory findings at a tertiary referral center.** *EUROPEAN JOURNAL OF OBSTETRICS, GYNECOLOGY AND REPRODUCTIVE BIOLOGY.* 232:40-45. I.F.: 2.024

15. Coloma J., Martínez-Zamora M., Collado A., Gràcia M., Rius M., Quintas L., Carmona F. **Prevalence of fibromyalgia among women with deep infiltrating endometriosis.** *INTERNATIONAL JOURNAL OF GYNECOLOGY AND OBSTETRICS.* 146(2):157-163. I.F.: 1.671

16. Cardenas Armas D., Peñarrubia J., Goday A., Guimerá M., Vidal E., Manau D., Fabregues F. **Frozen-thawed blastocyst transfer in natural cycle increase implantation rates compared artificial cycle.** *GYNECOLOGICAL ENDOCRINOLOGY.* 35(10):873-877. I.F.: 1.406

Review / I.F.: 1.406

1. Petrenko AP, Castelo-Branco C, Marshalov DV, Salov IA, Shifman EM. **Ovarian hyperstimulation syndrome.** *GYNECOLOGICAL ENDOCRINOLOGY.* 35(8):651-656. I.F.: 1.406

GRANTS FOR RESEARCH IN PROGRESS

Del Pino M. **Valor de la detección del ARNm de los biomarcadores CDKN2A, MKi67, TOP2A en la prevención secundaria del cáncer de cuello de útero.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00772
Duration: 01/01/2018-31/12/2020

Torné A. **Estudi multicèntric sobre el procés assistencial del càncer d'ovari a l'atenció primària de Catalunya: Avaluació de dues intervencions per reduir el retard diagnòstic.**
Sponsored by: Generalitat de Catalunya. PERIS_SLT002/16/00200
Duration: 27/03/2017-31/12/2019

DOCTORAL THESES

Carmona F. **Papel de la histeroscopia y otras herramientas de diagnóstico y tratamiento en el manejo de patología uterina benigna.**
PhD student: Meritxell Gracia Quero

Martinez-Zamora MA, Tassies D. **Nous mecanismes en la fisiopatologia de l'endometriosi profunda.**
PhD student: Jordina Munrós Feliu

3.20 Hepatocellular signaling and cancer

LOCATION
IIBB-CSIC lab#631

KEYWORDS
1. **Liver microenvironment**
2. **Chemotherapy**
3. **Drug resistance**
4. **Mitochondria**
5. **Antioxidants**
6. **Sphingolipids**
7. **Cell death**
8. **Autophagy**
9. **Inflammasome**

RELATED DISEASES
1. **Hepatocellular carcinoma**
2. **NAFLD**
3. **Liver fibrosis**
4. **Liver metastasis**

GROUP INVOLVED IN
CIBEREHD
AGAUR_SGR17: 00177

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**1**	**7,79**	**7,79**	**100%**	**100%**



GROUP LEADER
Albert Morales (IIBB-CSIC)
T. 93 363 83 00 (Ext.: 363)
amorales@clinic.cat

POST-DOCTORAL RESEARCHERS
Anna Tutusaus (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Blanca Cucarull (IIBB-CSIC)

PROBLEM

The introduction of molecular therapy is a great step forward in medicine that is not properly applied in the treatment of liver cancers, due to its complexity.
The poor efficiency of chemotherapy and development of resistance to treatment often lead to therapeutic failure.
Changes in the hepatic microenvironment during chronic liver disease promote the growth of primary liver tumours and the implantation of metastasis from other organs.
For this reason, it is necessary to test pharmacological therapies that combat resistance to treatment and attack metastasis in order to subsequently introduce them into clinical practice.

APPROACH

Chemotherapy promotes the development of cell alterations that give rise to resistance to treatment. Once identified, these can be treated with specific drugs.
In cell models and animals, the group identifies specific targets that condition the efficacy of treatment and make it possible to select the disease that best responds to chemotherapy.
There are therapies that combat the tumour microenvironment or immunotherapies that increase the efficacy of current chemotherapy on the liver tumour.

IMPACT

The group's objectives are to identify markers that can anticipate the efficacy of the different treatments available for patients with liver tumours, and develop new therapies targeted at tumour microenvironment proteins and immunotherapy as an alternative to, or in combination with, current chemotherapy.

RESEARCH LINES

- Identification of specific signatures in blood to categorize HCC patients for each specific therapy.

- Microenvironment-directed therapies to block the development of HCC and liver metastasis.

- Molecular therapies to improve HCC management, and help to overcome sorafenib resistance.

PUBLICATIONS

Originals / I.F.: 7.793

1. De Dios C, Bartolessis I, Roca-Agujetas V, Barbero-Camps E, Mari M, Morales A, Colell A. **Oxidative inactivation of amyloid beta-degrading proteases by cholesterol-enhanced mitochondrial stress.** *REDOX BIOLOGY.* 26:101283. I.F.: 7.793

Review / I.F.: 4.868

1. Roca-Agujetas V., De Dios C., Lestón L., Marí M., Morales A., Colell A. **Recent Insights into the Mitochondrial Role in Autophagy and Its Regulation by Oxidative Stress.** *OXIDATIVE MEDICINE AND CELLULAR LONGEVITY.* 3809308. I.F.: 4.868

GRANTS FOR RESEARCH IN PROGRESS

Morales A. **Regulación terapéutica de la transición EMT/MET y la quimioresistencia en enfermedad hepática crónica.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
SAF2015-66515-R
Duration: 01/01/2016-30/06/2019

Morales A. **Terapias moleculares dirigidas al microambiente en fibrosis y cáncer. Sponsored by: Ministerio de Ciencia, Innovación y Universidades (MCIU).**
RTI2018-095672-B-I00
Duration: 01/01/2019-30/06/2021

DOCTORAL THESES

Morales A. **Participación de las Catepsinas B y S en la respuesta inflamatoria hepática.**
PhD student: Estefanía de Gregorio Robles

3.21 Pathogenesis and prevention of diabetes

LOCATION
CEK building, floor 5

KEYWORDS
1. **Islet amyloid polypeptide (IAPP)/amylin**
2. **Beta-cell dysfunction**
3. **MicroRNAs**
4. **Exosomes**
5. **Endothelial dysfunction**
6. **Exercise and nutrition**

RELATED DISEASES
1. **Diabetes**
2. **Obesity**

GROUP INVOLVED IN
CIBERDEM
AGAUR_SGR17: 01390

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**5**	**33,61**	**6,72**	**80%**	**20%**



GROUP LEADER
Anna Novials (IDIBAPS)
T. 93 227 54 00 (Ext.: 4153)
anovials@clinic.cat

RESEARCHERS
Antonio Ceriello (IDIBAPS)
Marcelina Párrizas (CIBER)
Joan Marc Servitja (IDIBAPS)

POST-DOCTORAL RESEARCHERS
Gema Alcarraz (IDIBAPS)
Laura Brugnara (CIBER)
Valeria de Nigris (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Carlos Castaño (CIBER)
Sara De Pablo (IDIBAPS)
Daniela Josefa Díaz Catalán (CONICYT)
Serafín Murillo (CIBER)

COLLABORATORS
Ana Isabel Garcia Diez (HCB)

PROBLEM

Diabetes is a disease characterised by chronic hyperglycaemia (high levels of glucose in the blood), due to a defect in the secretion and/or the action of insulin.

Today it is a serious global health problem due to its prevalence (more than 425 million people are affected), its economic cost and the number of deaths it causes due to the complications that arise. Similarly, there is an increase in the number of young people suffering from it.

Therefore, it is necessary to know the mechanisms that trigger it and to establish new strategies for prevention and treatment.

APPROACH

Combining clinical and basic research, the group conducts studies in animal models and in humans to better understand diabetes and to create innovative methods of treatment and prevention.

Its lines of research focus on preventing and controlling diabetes with lifestyle interventions; the search for markers to predict the development of diabetes and the complications that arise from it; the study of endothelial dysfunction related to diabetes and vascular complications and the molecular mechanisms of deterioration of b-pancreatic cells during the disease's progression; as well as the search for therapeutic targets.

IMPACT

The group has identified molecules, called microRNAs, that appear altered in the blood of prediabetic patients. In this context, the researchers have reported that a type of vesicles known as exosomes transporting microRNAs mediate the cross-talk between organs in prediabetic settings.

The group has also identified microRNAs expressed under stress conditions that induce pancreatic beta-cell dysfunction. Current research on microRNAs and exosomes is being performed in order to advance in treatments that prevent and revert diabetes.

Other studies of the group have demonstrated that anti-inflammatory molecules and inhibitors of endoplasmic-reticulum stress protect pancreatic beta-cells in mouse models of type 2 diabetes, opening the door to their use for the treatment of diabetes.

The group has also tracked the eating and physical exercise patterns of patients with type 1 diabetes to help them improve control over the disease and, therefore, their quality of life.

RESEARCH LINES

- Circulating microRNAs as potential biomarkers and therapeutic targets in type 2 diabetes.

- Exosomes as mediators of organ cross-talk.

- Impact of lifestyle on diabetes.

- Mechanisms and treatment of endothelial dysfunction in type 2 diabetes.

- Bace2, a new therapeutic target for the treatment of type 2 diabetes and obesity.

- ER stress inhibitors and anti-inflammatory molecules as therapeutic agents against type 2 diabetes.

PUBLICATIONS

Originals / I.F.: 33.612

1. Ceriello A, Rossi MC, De Cosmo S, Lucisano G, Pontremoli R, Fioretto P, Giorda C, Pacilli A, Viazzi F, Russo G, Nicolucci A, AMD-Annals Study Group. **Overall Quality of Care Predicts the Variability of Key Risk Factors for Complications in Type 2 Diabetes: An Observational, Longitudinal Retrospective Study.** *DIABETES CARE.* 42(4):514-519. I.F.: 15.270

2. La Sala L, Mrakic-Sposta S, Tagliabue E, Prattichizzo F, Micheloni S, Sangalli E, Specchia C, Uccellatore AC, Lupini S, Spinetti G, de Candia P, Ceriello A. **Circulating microRNA-21 is an early predictor of ROS-mediated damage in subjects with high risk of developing diabetes and in drug-naïve T2D.** *CARDIOVASCULAR DIABETOLOGY.* 18(1):18. I.F.: 5.948

3. Bujaldon E, Cornide-Petronio ME, Gulfo J, Rotondo F, Ávalos de León C, Negrete-Sánchez E, Gracia-Sancho J, Novials A, Jiménez-Castro MB, Peralta Uroz C. **Relevance of VEGFA in rat livers subjected to partial hepatectomy under ischemia-reperfusion.** *JOURNAL OF MOLECULAR MEDICINE-JMM.* 97(9):1299-1314. I.F.: 4.746

4. Viazzi F, Bonino B, Mirijello A, Fioretto P, Giorda C, Ceriello A, Guida P, Russo GT, De Cosmo S, Pontremoli R, AMD-Annals Study Group. **Long-term blood pressure variability and development of chronic kidney disease in type 2 diabetes.** *JOURNAL OF HYPERTENSION.* 37(4):805-813. I.F.: 4.209

5. Parrizas M., Mundet X., Castaño C., Canivell S., Cos X., Brugnara L., Giráldez-García C., Regidor E., Mata-Cases M., Franch-Nadal J., Novials A. **miR-10b and miR-223-3p in serum microvesicles signal progression from prediabetes to type 2 diabetes.** *JOURNAL OF ENDOCRINOLOGICAL INVESTIGATION.* 43(4):451-459. I.F.: 3.439

Review / I.F.: 70.995

1. Ceriello A, Monnier L, Owens D. **Glycaemic variability in diabetes: clinical and therapeutic implications.** *THE LANCET DIABETES AND ENDOCRINOLOGY.* 7(3):221-230. I.F.: 24.540

2. Cosentino F, Ceriello A, Baeres FMM, Fioretto P, Garber A, Stough WG, George JT, Grant PJ, Khunti K, Langkilde AM, Plutzky J, Rydén L, Scheen A, Standl E, Tuomilehto J, Zannad F. **Addressing cardiovascular risk in type 2 diabetes mellitus: a report from the European Society of Cardiology Cardiovascular Roundtable.** *EUROPEAN HEART JOURNAL.* 40(34):2907-2919. I.F.: 23.239

3. Evans M, Ceriello A, Danne T, De Block C, DeVries JH, Lind M, Mathieu C, Nørgaard K, Renard E, Wilmot EG. **Use of fast-acting insulin aspart in insulin pump therapy in clinical practice.** *DIABETES, OBESITY AND METABOLISM.* 21(9):2039-2047. I.F.: 6.133

4. Ceriello A., De Nigris V., Iijima H., Matsui T., Gouda M. **The Unique Pharmacological and Pharmacokinetic Profile of Teneligliptin: Implications for Clinical Practice.** *DRUGS.* 79(7):733-750. I.F.: 4.993

5. Castaño C, Novials A, Párrizas M . **Exosomes and diabetes.** *DIABETES-METABOLISM RESEARCH AND REVIEWS.* 35(3):e3107. I.F.: 4.758

6. Viazzi F., Russo G., Ceriello A., Fioretto P., Giorda C., De Cosmo S., Pontremoli R. **Natural history and risk factors for diabetic kidney disease in patients with T2D: lessons from the AMD-annals.** *JOURNAL OF NEPHROLOGY.* 32(4):517-525. I.F.: 3.698

7. De Candia, Paola; Prattichizzo, Francesco; Garavelli, Silvia; De Rosa, Veronica; Galgani, Mario; Di Rella, Francesca; Spagnuolo, Maria Immacolata; Colamatteo, Alessandra; Fusco, Clorinda; Micillo, Teresa; Bruzzaniti, Sara; Ceriello, Antonio; Puca, Annibale A.; Matarese, Giuseppe. **Type 2 Diabetes: How Much of an Autoimmune Disease?** *FRONTIERS IN ENDOCRINOLOGY.* 10:451. I.F.: 3.634

Editorial / I.F.: 5.948

1. Schnell O, Standl E, Catrinoiu D, Itzhak B, Lalic N, Rahelic D, Skrha J, Valensi P, Ceriello A. **Report from the 4th Cardiovascular Outcome Trial (CVOT) Summit of the Diabetes & Cardiovascular Disease (D&CVD) EASD Study Group.** *CARDIOVASCULAR DIABETOLOGY.* 18(1):30-30 I.F.: 5.948

GRANTS FOR RESEARCH IN PROGRESS

Ceriello A. **Role of released and exosomial microRNAs, inflammatory and diabetes associated (RExMIDAs), in endothelial metabolic memory.**
Sponsored by: Fundació la Marató de TV3.
TV3_Diabet_16
Duration: 10/03/2017-09/03/2020

Novials A, Servitja JM. **BACE2, una nueva diana terapéutica para el tratamiento de la diabetes tipo 2 y la obesidad.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00879
Duration: 01/01/2018-31/12/2020

Novials A. **Els microRNAs exosomals induïts per l'exercici com a reguladors del metabolisme en humans i ratolins.**
Sponsored by: Fundació Acadèmica de les Ciències Mèdiques. ACADEMIA18_001
Duration: 24/05/2018-23/05/2020

DOCTORAL THESES

Servitja JM, Novials A. **Pancreatic islet inflammation and stress-induced β-cell failure: potential strategies to recover β-cell function.**
PhD student: Júlia Rodriguez Comas

Servitja JM, Novials A. **Effect of chaperones on pancreatic islet amyloid deposition and glucose homeostasis.**
PhD student: Sara de Pablo Pons

3.22 Inflammatory bowel disease

LOCATION
CEK building, floor 3

KEYWORDS
1. **Inflammatory bowel diseases**
2. **Cell therapy**
3. **Cross-sectional imaging**
4. **Biomarkers**

RELATED DISEASES
1. **Ulcerative colitis**
2. **Crohn's disease**
3. **Lympmocythic colitis**
4. **Colagenous colitis**

GROUP INVOLVED IN
CIBEREHD
AGAUR_SGR17: 00992

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**22**	**195,27**	**8,88**	**73%**	**55%**



GROUP LEADER
Julián Panés (HCB)
T. 93 227 54 18
jpanes@clinic.cat

RESEARCHERS
Faust Feu (HCB)
Gloria Lacima (HCB)
Josep Llach (HCB)
Ingrid Ordas (HCB)
Elena Ricart (HCB)
Maria Azucena Salas (IDIBAPS)

POST-DOCTORAL RESEARCHERS
Ana Maria Corraliza (IDIBAPS)
Isabella Dotti (IDIBAPS)
Susana Jurado (CIBER)
Marisol Veny (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Jesús Castro (HCB)
Agnès Fernández Clotet (IDIBAPS)
Alba Garrido (IDIBAPS)
Aida Mayorgas (IDIBAPS)
Elisa Melón (IDIBAPS)
Lluís Revilla (CIBER)

TECHNICIANS
Montserrat Arroyes (IDIBAPS)
Miriam Esteller (CIBER)
Marta Martínez Picola (IDIBAPS)
Maria Carme Masamunt (CIBER)

NURSING STAFF
Rebeca Barastegui (HCB)
Marta Gallego (HCB)
Àngel Giner (FCRB)
Cristina Prieto (IDIBAPS)

VISITING SCIENTISTS
Bruno Lima (Universidad de Campinas, Brazil)
Taylor Stauffer (Boston College, EUA)

PROBLEM

Crohn's disease and ulcerative colitis are diseases that begin in childhood and youth and become chronic. They cause a marked impairment in quality of life in all spheres.

The fact that patients present few specific symptoms (diarrhoea or abdominal pain) leads to a significant delay in establishing a diagnosis and also hinders monitoring.

In recent years, new treatments are being developed, but they are only effective for a certain percentage of patients, and there are no tools able to predict the response.

APPROACH

The laboratory is an international reference point in translational research aimed at finding out the molecular and cellular mechanisms involved in the development and course of Crohn's disease and ulcerative colitis.

It uses techniques such as transcriptional analysis in human samples (determining the genes that are being regulated at all times), analysis of immune cells and their responses to different stimuli or therapies, and the culture of stem cells from the intestinal epithelium. These cultures allow to study the impact of the disease on different epithelial functions, such as the response to the intestinal microbiota.

The group has developed imaging techniques that allow non-invasive and precise monitoring. The group has introduced highly effective cell therapies for cases in which the disease does not respond to available drugs (such as the use of mesenchymal cells for the treatment of perianal fistulas) and the transplantation of progenitor cells in patients with severe Crohn's disease who cannot undergo surgery.

IMPACT

The magnetic resonance index for the evaluation of Crohn's disease developed by the group is currently the most commonly used, in both clinical trials and in regular clinical practice.

The group has identified biomarkers linked to disease remission and alternative therapeutic targets for patients who do not respond to current treatments.

In Crohn's disease, it has discovered the presence of immune responses directed against components of the intestinal microbiota and has studied therapeutic options. The group has revealed the deregulation of the epithelial barrier in ulcerative colitis that affects stem cells (progenitors of the entire intestinal wall), which makes them a potential new therapeutic target.

The group has improved many aspects of the safety of transplantation of hematopoietic progenitors making this procedure more acceptable and generalized. The group is working to optimise the use of mesenchymal cells (a type of stem cell) for the treatment of perianal fistulas, after demonstrating that with a single application, half of the fistulising lesions are cured.

RESEARCH LINES

- Cell therapies in refractory inflammatory bowel disease.

- Cross-sectional imaging for assessment of inflammatory bowel disease.

- Therapeutic targets and biomarkers in inflammatory bowel disease.

PUBLICATIONS

Originals / I.F.: 195.272

1. Ordás I, Rimola J, Alfaro I, Rodríguez S, Castro-Poceiro J, Ramírez-Morros A, Gallego M, Giner À, Barastegui R, Fernández-Clotet A, Masamunt M, Ricart E, Panés J. **Development and Validation of a Simplified Magnetic Resonance Index of Activity for Crohn's disease.** *GASTROENTEROLOGY.* 157(2):432-439.e1. I.F.: 19.233

2. Hindryckx P, Jairath V, Zou G, Feagan BG, Sandborn WJ, Stoker J, Khanna R, Stitt L, van Viegen T, Shackelton LM, Taylor SA, Santillan C, Mearadji B, D'Haens G, Richard MP, Panes J, Rimola J. **Development and Validation a Magnetic Resonance Index for Assessing Fistulas in Patients With Crohn's Disease.** *GASTROENTEROLOGY.* 157(5):1233-1244.e5. I.F.: 19.233

3. D'Haens G, Rieder F, Feagan BG, Higgins PDR, Panes J, Maaser C, Rogler G, Löwenberg M, van der Voort R, Pinzani M, Peyrin-Biroulet L, Danese S, IOIBD Fibrosis Working Group. **Challenges in the Pathophysiology, Diagnosis and Management of Intestinal Fibrosis in Inflammatory Bowel Disease.** *GASTROENTEROLOGY.* S0016-5085(19):41035-4. I.F.: 19.233

4. De Barrios, Oriol; Sanchez-Moral, Lidia; Cortes, Marlies; Ninfali, Chiara; Profitos-Peleja, Nuria; Martinez-Campanario, M. C.; Siles, Laura; del Campo, Rosa; Jesus Fernandez-Acenero, Maria; Darling, Douglas S.; Castells, Antoni; Maurel, Joan; Salas, Azucena; Dean, Douglas C.; Postigo, Antonio. **ZEB1 promotes inflammation and progression towards inflammation-driven carcinoma through repression of the DNA repair glycosylase MPG in epithelial cells.** *GUT.* 68(12):2129-2141. I.F.: 17.943

5. Allez M, Auzolle C, Ngollo M, Bottois H, Chardiny V, Corraliza AM, Salas A, Perez K, Stefanescu C, Nancey S, Buisson A, Pariente B, Fumery M, Sokol H, Tréton X, Barnich N, Seksik P, Le Bourhis L, REMIND Study Group. **T cell clonal expansions in ileal Crohn's disease are associated with smoking behaviour and postoperative recurrence.** *GUT.* 68(11):1961-1970. I.F.: 17.943

6. Sandborn WJ, Panés J, D'Haens GR, Sands BE, Su C, Moscariello M, Jones T, Pedersen R, Friedman GS, Lawendy N, Chan G. **Safety of Tofacitinib for Treatment of Ulcerative Colitis, Based on 4.** *CLINICAL GASTROENTEROLOGY AND HEPATOLOGY.* 17(8):1541-1550. I.F.: 7.958

7. Corraliza AM, Ricart E, López-García A, Carme Masamunt M, Veny M, Esteller M, Mayorgas A, Le Bourhis L, Allez M, Planell N, Visvanathan S, Baum P, España C, Cabezón-Cabello R, Benítez-Ribas D, Rovira M, Panés J, Salas A. **Differences in peripheral and tissue immune cell populations following hematopoietic stem cell transplantation in Crohn's disease patients.** *JOURNAL OF CROHN'S AND COLITIS.* 13(5):634-647. I.F.: 7.827

8. Panés J, Lindsay JO, Teich N, Lindgren S, Colombel JF, Cornillie F, Flynn HA, Huyck S, Stryszak P, Yao R, Philip G, Reinisch W. **Five-year Safety Data From OPUS, A European Observational Safety Registry For Adults With Ulcerative Colitis Treated With Originator Infliximab [Remicade®] Or Conventional Therapy.** *JOURNAL OF CROHN'S AND COLITIS.* 13(9):1148-1157. I.F.: 7.827

9. Panés J, D'Haens GR, Higgins PDR, Mele L, Moscariello M, Chan G, Wang W, Niezychowski W, Su C, Maller E. **Long-term safety and tolerability of oral tofacitinib in patients with Crohn's disease: results from a phase 2, open-label, 48-week extension study.** *ALIMENTARY PHARMACOLOGY AND THERAPEUTICS.* 49(3):265-276. I.F.: 7.731

10. Sandborn WJ, Panés J, Sands BE, Reinisch W, Su C, Lawendy N, Koram N, Fan H, Jones TV, Modesto I, Quirk D, Danese S. **Venous thromboembolic events in the tofacitinib ulcerative colitis clinical development programme.** *ALIMENTARY PHARMACOLOGY & THERAPEUTICS.* 50(10):1068-1076. I.F.: 7.731

11. Chaparro M, Garre A, Ricart E, Iglesias-Flores E, Taxonera C, Domènech E, Gisbert JP; ENEIDA study group. **Differences between childhood- and adulthood-onset inflammatory bowel disease: the CAROUSEL study from GETECCU.** *ALIMENTARY PHARMACOLOGY & THERAPEUTICS.* 49(4):419-428. I.F.: 7.515

12. Calafat M, Mañosa M, Cañete F, Ricart E, Iglesias E, Calvo M, Rodríguez-Moranta F, Taxonera C, Nos P, Mesonero F, Martín-Arranz MD, Mínguez M, Gisbert JP, García-López S, de Francisco R, Gomollón F, Calvet X, Garcia-Planella E, Rivero M, Martínez-Cadilla J, Argüelles F, Arias L, Cimavilla M, Zabana Y, Domènech E; ENEIDA registry of GETECCU. **Increased risk of thiopurine-related adverse events in elderly patients with IBD.** *ALIMENTARY PHARMACOLOGY & THERAPEUTICS.* 50(7):780-788. I.F.: 7.515

13. Garcés-Durán R, García-Rodríguez A, Córdova H, Cuatrecasas M, Ginès À, González-Suárez B, Araujo I, Llach J, Fernández-Esparrach G. **Association between a regular arrangement of collecting venules and absence of Helicobacter pylori infection in a European population.** *GASTROINTESTINAL ENDOSCOPY.* 90(3):461-466. I.F.: 7.229

14. Rivero-Sánchez L, López Vicente J, Hernandez Villalba L, Puig I, Arnau-Collell C, Moreno L, Díaz M, Rodriguez de Miguel C, Ocaña T, Moreira L, Cuatrecasas M, Carballal S, Sánchez A, Ortiz O, Llach J, Balaguer F, Pellisé M, EndoCAR group from the Spanish Gastroenterology Association and the Spanish Society of Digestive Endoscopy. **Endocuff-assisted colonoscopy for surveillance of serrated polyposis syndrome: a multicenter randomized controlled trial.** *ENDOSCOPY.* 51(7):637-645. I.F.: 6.381

15. Sánchez-Montes C, Sánchez FJ, Bernal J, Córdova H, López-Cerón M, Cuatrecasas M, Rodríguez de Miguel C, García-Rodríguez A, Garcés-Durán R, Pellisé M, Llach J, Fernández-Esparrach G. **Computer-aided prediction of polyp histology on white light colonoscopy using surface pattern analysis.** *ENDOSCOPY.* 51(3):261-265. I.F.: 6.381

16. Quintanilla I, López-Cerón M, Jimeno M, Cuatrecasas M, Zabalza M, Moreira L, Alonso V, Rodríguez de Miguel C, Muñoz J, Castellvi-Bel S, Llach J, Castells A, Balaguer F, Camps J, Pellisé M. **Rectal Aberrant Crypt Foci in Humans Are Not Surrogate Markers for Colorectal Cancer Risk.** *CLINICAL AND TRANSLATIONAL GASTROENTEROLOGY.* 10(6):e00047. I.F.: 4.803

17. Avivar-Valderas, Alvaro Martin-Martin, Cristina Ramirez, Cristina Del Rio, Borja Menta, Ramon Mancheno-Corvo, Pablo Ortiz-Virumbrales, Maitane Herrero-Mendez, Angel Panes, Julian Garcia-Olmo, Damian Luis Castaner, Jose Palacios, Itziar Lombardo, Eleuterio Dalemans, Wilfried DelaRosa, Olga. **Dissecting Allo-Sensitization After Local Administration of Human Allogeneic Adipose Mesenchymal Stem Cells in Perianal Fistulas of Crohn's Disease Patients.** *FRONTIERS IN IMMUNOLOGY.* 10:1244. I.F.: 4.716

18. Cañete F, Mañosa M, Casanova MJ, González-Sueyro RC, Barrio J, Bermejo F, Nos P, Iglesias-Flores E, García-Planella E, Pérez-Calle JL, Vicente R, Vera M, Ramos L, Rivero M, De Francisco R, Montserrat A, Benítez O, Navarro P, Taxonera C, Hinojosa E, Márquez-Mosquera L, Navarro-Llavat M, Ramírez-de la Piscina P, Gomollón F, Rodríguez-Alonso L, Núñez-Alonso A, Fernández-Salazar L, Almela P, Ríos León R, De Castro L, Gisbert JP, Ricart E, Cabré E, Domènech E, ENEIDA registry by GETECCU. **Adalimumab or Infliximab for the Prevention of Early Postoperative Recurrence of Crohn Disease: Results From the ENEIDA Registry.** *INFLAMMATORY BOWEL DISEASES.* 25(11):1862-1870. I.F.: 4.005

19. Chaparro, Maria; Donday, Maria G.; Barreiro-de Acosta, Manuel; Domenech, Eugeni; Esteve, Maria; Garcia-Sanchez, Valle; Nos, Pilar; Panes, Julian; Martinez, Concepcion; Gisbert, Javier P.;EXIT Study Grp GETECCU. **Anti-tumour necrosis factor discontinuation in inflammatory bowel disease patients in remission: study protocol of a prospective, multicentre, randomized clinical trial.** *THERAPEUTIC ADVANCES IN GASTROENTEROLOGY.* 12:1-10. I.F.: 3.961

20. Aterido A., Palau N., Domènech E., Nos Mateu P., Gutiérrez A., Gomollón F., Mendoza J.L., Garcia-Planella E., Barreiro-de Acosta M., Muñoz F., Vera M., Saro C., Esteve M., Andreu M., Chaparro M., Panés J., García-Sánchez V., López-Lasanta M., Pluma A., Codó L., García-Montero A., Manyé J., Gisbert J.P., Marsal S., Julià A. **Genetic association between CD96 locus and immunogenicity to anti-TNF therapy in Crohn's disease.** *PHARMACOGENOMICS JOURNAL.* 19(6):547-555. I.F.: 3.503

21. Alfaro, Ignacio Carme Masamunt, Maria Planell, Nuria Lopez-Garcia, Alicia Castro, Jesus Gallego, Marta Barastegui, Rebeca Giner, Angel Vara, Alejandro Salas, Azucena Ricart, Elena Panes, Julian Ordas, Ingrid. **Endoscopic response to tumor necrosis factor inhibitors predicts long term benefits in Crohn's disease.** *WORLD JOURNAL OF GASTROENTEROLOGY.* 25(14):1764-1774. I.F.: 3.411

22. Bonin S, Pracella D, Barbazza R, Dotti I, Boffo S, Stanta G. **PI3K/AKT Signaling in Breast Cancer Molecular Subtyping and Lymph Node Involvement.** *DISEASE MARKERS.* 7832376. I.F.: 2.761

Review / I.F.: 4.261

1. Bettenworth D, Bokemeyer A, Baker M, Mao R, Parker CE, Nguyen T, Ma C, Panés J, Rimola J, Fletcher JG, Jairath V, Feagan BG, Rieder F, Stenosis Therapy and Anti-Fibrotic Research (STAR) Consortium. **Assessment of Crohn's disease-associated small bowel strictures and fibrosis on cross-sectional imaging: a systematic review.** *GUT.* 68(6):1115-1126. I.F.: 17.943

2. Reinisch W., Gottlieb K., Colombel J., Danese S., Panaccione R., Panes J., Peyrin-Biroulet L., Rubin D., Sands B., Schreiber S., Vermeire S., Mulberg A., Sandborn B. **Comparison of the EMA and FDA Guidelines on Ulcerative Colitis Drug Development.** *CLINICAL GASTROENTEROLOGY AND HEPATOLOGY.* 17(9):1673-1679.e1. I.F.: 7.958

3. García-Olmo D, Van Assche G, Tagarro I, Diez MC, Richard MP, Khalid JM, van Dijk M, Bennett D, Hokkanen SRK, Panés J. **Prevalence of Anal Fistulas in Europe: Systematic Literature Reviews and Population-Based Database Analysis.** *ADVANCES IN THERAPY.* 36(12):3503-3518. I.F.: 3.260

4. Fernández-Clotet A, Castro-Poceiro J, Panés J. J**AK inhibition: the most promising agents in the IBD pipeline?** *CURRENT PHARMACEUTICAL DESIGN.* 25(1):32-40. I.F.: 2.412

5. Panés J, Gisbert JP. **Efficacy of tofacitinib treatment in ulcerative colitis.** *GASTROENTEROLOGIA Y HEPATOLOGIA.* 42(6):403-412. I.F.: 1.126

GRANTS FOR RESEARCH IN PROGRESS

Panés J. **Taxonomy, Treatment, Targets and Remission. Identification of the Molecular Mechanisms of non-response to Treatments, Relapses and Remission in Autoimmune, Inflammatory, and Allergic Conditions.**
Sponsored by: European Commission.
IMI2-2018-14
Duration: 01/07/2019-31/08/2026

Ricart E. **Molecular subtypes for targeted therapies in alcoholic hepatitis.**
Sponsored by: Instituto de salud Carlos III (ISCIII). PI17/00513
Duration: 01/01/2018-31/12/2020

Salas A. **Mecanismes cel·lulars i moleculars de la malaltia inflamatòria intestinal.**
Sponsored by: Generalitat de Catalunya.
AGAUR_SGR17_00992
Duration: 01/01/2017-31/12/2020

Salas A, Panés J. **Transplante autólogo de células madre hematopoyéticas en la enfermedad de Crohn: factores moleculares, inmunes y microbiológicos implicados en el control de la enfermedad.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
SAF2015-66379-R
Duration: 01/01/2016-31/12/2019

Salas A, Panés J. **Caracterización de la base celular de la enfermedad inflamatoria intestinal mediante secuenciación de células individuales.**
Sponsored by: Ministerio de Ciencia Innovación y Universidades (MCIU).
RTI2018-096946-B-I00
Duration: 01/01/2019-31/12/2021

Salas A. **New NEW DEAL: New siRNA Nanotherapy for Inflammatory Bowel Diseases, targeting Janus kinase 3.**
Sponsored by: European Commission.
H2020_NMBP16-17
Duration: 01/01/2017-31/12/2020

Salas A. **Cellular mechanisms in Crohn's Disease: unravelling new therapeutic avenues.**
Sponsored by: The Leona M & Harry B Helmsley Charitable Trust. HelmselyCT_13
Duration: 01/08/2014-31/03/2019

Salas A. **Integrative analysis of the intestinal epithelium and the mucosal environment in pediatric versus adult onset Crohn's Disease.**
Sponsored by: European Crohn's & Colitis Organisation ECCO.
Duration: 01/01/2019-31/12/2019

Salas A, Panés J. **Early detection of perianal fistulizing disease-Pathophysiology and Imaging.**
Sponsored by: The Leona M & Harry B Helmsley Charitable Trust. HelmselyCT_19
Duration: 25/11/2019-24/11/2022

DOCTORAL THESES

Salas A. **Immune mechanisms involved in inducing remission in Crohn's disease patients undergoing hematopoietic stem cell transplant.**
PhD student: Ana M. Corraliza Márquez

3.23 Cholestasis

LOCATION
HCB building, floor 4B

KEYWORDS
1. **Primary biliary cholangitis**
2. **Primary sclerosing cholangitis**
3. **Autoimmune hepatitis**
4. **Cholestasis**
5. **Metabolic bone disease**
6. **Pruritus**

RELATED DISEASES
1. **Primary biliary cholangitis**
2. **Primary sclerosing cholangitis**
3. **Autoimmune hepatitis**

GROUP INVOLVED IN
CIBERehd
ERN-Rare Liver
IPSCSG
IAIHSG
Global-PBC

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	7	78,42	11,20	86%	86%



GROUP LEADER
Albert Parés (HCB)
T. 93 227 57 53
apares@clinic.cat

POST-DOCTORAL RESEARCHERS
Susana Jurado (FCRB)

PRE-DOCTORAL RESEARCHERS
Anna Reig (FCRB)

NURSING STAFF
Pilar Sesé (HCB)

PROBLEM

The autoimmune cholestasis diseases, which include primary biliary cholangitis, primary sclerosing cholangitis and autoimmune hepatitis, are rare, but their prevalence is growing. Their development, presentation, course, prognosis and treatment are still little known.

The group's goal is to improve knowledge of all these aspects, and to address new therapeutic strategies. The group also emphasises better knowledge regarding the origin, development and treatment of manifestations associated with autoimmune cholestasis diseases, such as pruritus and osteoporosis.

APPROACH

The group analyses the clinical characteristics and the prognostic indicators of these diseases to delimit the subgroup of patients that requires innovative therapies. To find out about the origin and development of pruritus, it conducts metabolomic studies in patients who receive different known treatments or those under evaluation, such as fibrates. Knowledge of the metabolic pathology of the bone is partially addressed, through experimental procedures with specific bone cell lines.
From the clinical point of view, new first- and second-line treatment options are being evaluated to prevent the loss of bone mass and relieve pruritus.

IMPACT

The group has defined criteria for therapeutic response to ursodeoxycholic acid in primary biliary cholangitis and has described which patients need a second-line treatment (second option).

The group has demonstrated the efficacy of fibrates and their role in pruritus associated with cholestasis. For primary sclerosing cholangitis it has defined several phenotypes and prognostic factors, and for autoimmune hepatitis the group is analysing which patients can stop taking immunomodulators (agents that act on the mechanisms of the immune response).

As regards osteoporosis related to cholestasis, the group has shown that, basically, it depends on impaired bone formation.

RESEARCH LINES

- Course and prognosis in primary sclerosing cholangitis.

- Development of new prognostic scores in primary biliary cholangitis.

- Epidemiology and natural history of chronic cholestatic disorders in adults.

- Evaluation of the factors of treatment response, and new treatment regimens in patients with suboptimal response to ursodeoxycholic acid.

- Presentation, course and prognosis of autoimmune hepatitis.

- Pruritus in chronic cholestasis: pathogenesis and treatment.

PUBLICATIONS

Originals / I.F.: 78.42

1. Montano-Loza AJ, Hansen BE, Corpechot C, Roccarina D, Thorburn D, Trivedi P, Hirschfield G, McDowell P, Poupon R, Dumortier J, Bosch A, Giostria E, Conti F, Parés A, Reig A, Floreani A, Russo FP, Goet JC, Harms MH, van Buuren H, Van den Ende N, Nevens F, Verhelst X, Donato MF, Malinverno F, Ebadi M, Mason AL, Global PBC Study Group. **Factors Associated With Recurrence of Primary Biliary Cholangitis After Liver Transplantation and Effects on Graft and Patient Survival.** *GASTROENTEROLOGY.* 156(1):96-107.e1. I.F.: 19.233

2. Harms MH, van Buuren HR, Corpechot C, Thorburn D, Janssen HLA, Lindor KD, Hirschfield GM, Parés A, Floreani A, Mayo MJ, Invernizzi P, Battezzati PM, Nevens F, Ponsioen CY, Mason AL, Kowdley KV, Lammers WJ, Hansen BE, van der Meer AJ. **Ursodeoxycholic Acid Therapy and Liver Transplant-free Survival in Patients with Primary Biliary Cholangitis.** *JOURNAL OF HEPATOLOGY.* 71(2):357-365. I.F.: 18.946

3. Umeshappa CS, Singha S, Blanco J, Shao K, Nanjundappa RH, Yamanouchi J, Parés A, Serra P, Yang Y, Santamaria P. **Suppression of a broad spectrum of liver autoimmune pathologies by single peptide-MHC-based nanomedicines.** *NATURE COMMUNICATIONS.* 10(1):2150. I.F.: 11.878

4. Cheung AC, Lammers WJ, Murillo Perez CF, van Buuren HR, Gulamhusein A, Trivedi PJ, Lazaridis KN, Ponsioen CY, Floreani A, Hirschfield GM, Corpechot C, Mayo MJ, Invernizzi P, Battezzati PM, Parés A, Nevens F, Thorburn D, Mason AL, Carbone M, Kowdley KV, Bruns T, Dalekos GN, Gatselis NK, Verhelst X, Lindor KD, Lleo A, Poupon R, Janssen HLA, Hansen BE, Global PBC Study Group. **Effects of Age and Sex of on Response to Ursodeoxycholic Acid and Transplant-free Survival in Patients With Primary Biliary Cholangitis.** *CLINICAL GASTROENTEROLOGY AND HEPATOLOGY.* 17(10):2076-2084.e2. I.F.: 7.958

5. Llovet LP, Horta D, Eliz MG, Berenguer M, Fábrega E, Sáez-Royuela F, García-Retortillo M, Torrijos YS, Romero-Gómez M, Fernández C, Domínguez EG, Parés A, Londoño MC. **Presentation and Outcomes of Pregnancy in Patients With Autoimmune Hepatitis.** *CLINICAL GASTROENTEROLOGY AND HEPATOLOGY.* S1542-3565(19):30003-5. I.F.: 7.958

6. Murillo-Perez, Carla F.; Hirschfield, Gideon M.; Corpechot, Christophe; Floreani, Annarosa; Mayo, Marlyn J.; van der Meer, Adriaan; Ponsioen, Cyriel Y.; Lammers, Willem J.; Pares, Albert; Invernizzi, Pietro; Carbone, Marco; Battezzati, Pier Maria; Nevens, Frederik; Kowdley, Kris V.; Thorburn, Douglas; Mason, Andrew L.; Trivedi, Palak J.; Lindor, Keith D.; Bruns, Tony; Dalekos, George N.; Gatselis, Nikolaos K.; Verhelst, Xavier; Janssen, Harry L. A.; Hansen, Bettina E.; Gulamhusein, Aliya; GLOBAL PBC Study Grp. **Fibrosis stage is an independent predictor of outcome in primary biliary cholangitis despite biochemical treatment response.** *ALIMENTARY PHARMACOLOGY & THERAPEUTICS.* 50(10):1127-1136. I.F.: 7.731

7. Norman, Gary L.; Reig, Anna; Vinas, Odette; Mahler, Michael; Wunsch, Ewa; Milkiewicz, Piotr; Swain, Mark G.; Mason, Andrew; Stinton, Laura M.; Belen Aparicio, Maria; Jose Aldegunde, Maria; Fritzler, Marvin J.; Pares, Albert. **The Prevalence of Anti-Hexokinase-1 and Anti-Kelch-Like 12 Peptide Antibodies in Patients With Primary Biliary Cholangitis Is Similar in Europe and North America: A Large International, Multi-Center Study.** *FRONTIERS IN IMMUNOLOGY.* 10:662. I.F.: 4.716

Clinical Guidelines / I.F.: 18.946

1. European Association for the Study of the Liver. Electronic address: easloffice@easloffice.eu, European Association for the Study of the Liver. **EASL Clinical Practice Guidelines on nutrition in chronic liver disease.** *JOURNAL OF HEPATOLOGY.* 70(1):172-193. I.F.: 18.946

GRANTS FOR RESEARCH IN PROGRESS

Parés A. **Efecto del bezafibrato sobre el prurito de la colestasis. Mecanismos patogénicos.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00797
Duration: 01/01/2016-30/06/2020

3.24 Protective strategies against hepatic ischemia reperfusion injury

LOCATION
CEK building, floor 3

KEYWORDS
1. **Ischemia-reperfusion**
2. **Liver transplantation**
3. **Organ, tissue and cell preservation**
4. **Hepatic resections**
5. **Steatotosis**
6. **NAFLD**
7. **NASH**
8. **Preservation solutions**
9. **BD donors**
11. **LRLT**
12. **DCD donors**

RELATED DISEASES
1. **Liver transplantation from standard and extended donors**
2. **Organ , tissue and cell preservation**
3. **Hepatic resection s associated with tumours**
4. **Diseases related with diabetes and metabolic syndrome**
5. **Nafld/nash and liver surgery**
6. **Preclinical experimental models in different liver diseases**
7. **Pharmacological modulation and different surgical strategies in different liver diseases**

GROUP INVOLVED IN
AGAUR_SGR17: 00551

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**5**	**26,31**	**5,26**	**100%**	**20%**



GROUP LEADER
Carmen Peralta (IDIBAPS)
T. 93 227 54 00 (Ext.: 4177)
cperalta@clinic.cat

POST-DOCTORAL RESEARCHERS
María Eugenia Cornide (IDIBAPS)
Jose Gulfo (IDIBAPS)
Monica Bibiana Jimenez Castro (IDIBAPS)
Floriana Rotondo (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Cindy Ávalos (IDIBAPS)
Esther Bujaldon (IDIBAPS)
Elsa Negrete (IDIBAPS)

COLLABORATORS
Ramón Adalia (HCB)
Fritz Diekmann (HCB)
Anna Novials (IDIBAPS)
Juan Carlos García-Valdecasas (HCB)
Jordi Gracia-Sancho (IDIBAPS)
Miguel Ángel López-Boado (FCRB)
Merce Pallas (UB)
David Paredes (HCB)
Lluis Peri (FCRB)
Joana Planas (UB)
Jordi Rovira (HCB)

VISITING SCIENTISTS
Arani Casillas (Hospital Regional de Alta Especialidad de Ciudad Victoria, Mexico)
Mariana Mendes (School of Pharmaceutical Sciences of University Sao Paulo)

PROBLEM

Organs available for transplant are insufficient to meet demand and many patients die while waiting. The majority of organs for a transplant come from deceased donors but, given the shortage of donors, the criteria have been expanded and steatosis (fatty liver and donors from acardiac arrest) is also now accepted.

Both brain death, cardiac arrest and steatosis negatively affect graft quality, as well as post-transplant results. In addition, many organs are rejected precisely due to steatosis, which increases the problem of donor liver shortages.

Liver diseases, including the use of livers such as liver from diabetic, NAFLD/NASH and other liver diseases shows more vulnerability to heptic ischemia-reperfusion injury and to regenerative failure when such livers are submitted to liver surgery.

APPROACH

The group's research focuses on the investigations aimed at evaluating pharmacological, technological and surgical strategies in different liver diesases (livers with NAFLD/NASH, cirrhosis among other diseases) with or without liver sugery (transplantation and hepatic resections) to protect such livers against damage, the progession of liver disease, and regenerative failure.

The knowledge of the different liver pathologies in preclinical models that mimic as soon as possible the clinical conditions (with or without liver surgery) will provide new target of potential therapeutic action as well as the establishment of pharmacological, surgical and technological strategies useful in the clinical practice.

IMPACT

The group's goal is to transfer to clinical practice the most effective and least invasive therapies for people who need a liver, improve the post-operative outcomes in patients that are submitted to hepatic resections of tumours-which show poor regenerative response and exacerbated ischemia-reperfusion injury-, as well as to improve the life quality of patients with different liver pathologies (NAFLD/NASH, cirrhosis, liver diseases related with diabetes, among others) using preclinical models that mimic as soon as possible the clinical conditions.

The application of its results may solve a problem of social and clinical significance: improving the survival and quality of life of

those patients with the mentioned pathologies, as well reduce the ischemia-reperfusion injury and improve liver regeneration in patients submitted to liver surgery of hepatic resections associated with tumour as well as liver transplantation, therefore, reducing waiting lists.

RESEARCH LINES

- A new medical device for transporting abdominal organs in clinical practice.

- Innovations for organ preservation during long times.

- New preservation solutions in liver transplantation.

- New pharmacological and surgical strategies in hepatic resections associated with tumours.

- Pharmacological, technological and surgical strategies in liver transplantation and surgery.

- Effect of brain death on steatotic and non-steatotic livers undergoing transplantation.

- Effect of cardiac arrest on steatotic and non-steatotic livers undergoing transplantation.

- Pathophysiology on steatotic and non-steatotic livers undergoing partial hepatectomy.

- Knowledgement of the pathology of different liver diseases (NAFLD, NASH, and other liver diseases) and protegctive strategies to reduce damage, steatotsis and the progression of such pathologies.

- Preclinical models of NAFLD/NASH, ALD, cirrhosis, liver diseases related with diabetes, among others) that mimic as soon aas possible the clinical conditions.

- Preclinical models of different liver surgical conditions (hepatic resection, liver transplantation among others) than mimic as soon as possible the preclinical conditions.

- Precilinical models about the preservation of organ, tissue, cell as well as drug delivery.

- Preclinical models of steatotis induced by diet, alcohol, obese genetically amond other and their progression to different states of pathogical condirions similar to that occurring in clinical conditions.

- Preclinical models to evaluate the pathological mechanisms into the axis liver-intestine.

- Ptreclinical models to evaualualte the sjystemic inflammatrion and the damage in distant organs following different surgical procedures including hepatic resections and liver transplantation.

PUBLICATIONS

Originals / I.F.: 26.307

1. Maeso-Díaz R, Boyer-Diaz Z, Lozano JJ, Ortega-Ribera M, Peralta C, Bosch J, Gracia-Sancho J. **New Rat Model of Advanced NASH Mimicking Pathophysiological Features and Transcriptomic Signature of The Human Disease.** *CELLS.* 8(9):E1062. I.F.: 5.656

2. Avalos-de León CG, Jiménez-Castro MB, Cornide-Petronio ME, Gulfo J, Rotondo F, Gracia-Sancho J, Casillas-Ramírez A, Peralta C. **The Effect of Fibroblast Growth Factor 15 Signaling in Non-Steatotic and Steatotic Liver Transplantation from Cardiocirculatory Death.** *CELLS.* 8(12):E1640. I.F.: 5.656

3. Avalos-de Leon, Cindy G.; Jimenez-Castro, Monica B.; Eugenia Cornide-Petronio, Maria; Casillas-Ramirez, Arani; Peralta, Carmen. **The Role of GLP1 in Rat Steatotic and Non-Steatotic Liver Transplantation from Cardiocirculatory Death Donors.** *CELLS.* 8:12. I.F.: 5.656

4. Bujaldon E, Cornide-Petronio ME, Gulfo J, Rotondo F, Ávalos de León C, Negrete-Sánchez E, Gracia-Sancho J, Novials A, Jiménez-Castro MB, Peralta Uroz C. **Relevance of VEGFA in rat livers subjected to partial hepatectomy under ischemia-reperfusion.** *JOURNAL OF MOLECULAR MEDICINE-JMM.* 97(9):1299-1314. I.F.: 4.746

5. Álvarez-Mercado AI, Negrete-Sánchez E, Gulfo J, Ávalos de León CG, Casillas-Ramírez A, Cornide-Petronio ME, Bujaldon E, Rotondo F, Gracia-Sancho J, Jiménez-Castro MB, Peralta C. **EGF-GH Axis in Rat Steatotic and Non-steatotic Liver Transplantation From Brain-dead Donors.** *TRANSPLANTATION.* 103(7):1349-1359. I.F.: 4.593

Review / I.F.: 24.247

1. Cornide-Petronio ME, Jiménez-Castro MB, Gracia-Sancho J, Peralta C. **New Insights into the Liver-Visceral Adipose Axis During Hepatic Resection and Liver Transplantation.** *CELLS.* 8(9):E1100. I.F.: 5.656

2. Jiménez-Castro MB, Cornide-Petronio ME, Gracia-Sancho J, Peralta C. **Inflammasome-Mediated Inflammation in Liver Ischemia-Reperfusion Injury.** *CELLS.* 8(10):E1131. I.F.: 5.656

3. Jiménez-Castro MB, Casillas-Ramírez A, Negrete-Sánchez E, Avalos-de León CG, Gracia-Sancho J, Peralta C. **Adipocytokines in Steatotic Liver Surgery/ Transplantation.** *TRANSPLANTATION.* 103(1):71-77. I.F.: 4.593

4. Jiménez-Castro MB, Cornide-Petronio ME, Gracia-Sancho J, Casillas-Ramírez A, Peralta C. **Mitogen Activated Protein Kinases in Steatotic and Non-Steatotic Livers Submitted to Ischemia-Reperfusion.** *INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES.* 20(7):E1785. I.F.: 4.183

5. Álvarez-Mercado AI, Gulfo J, Romero Gómez M, Jiménez-Castro MB, Gracia-Sancho J, Peralta C. **Use of steatotic grafts in liver transplantation: Current status.** *LIVER TRANSPLANTATION.* 25(5):771-786. I.F.: 4.159

GRANTS FOR RESEARCH IN PROGRESS

Peralta C. **Preservació del l'empelt hepatic (Hepatic graft perseveration).**
Sponsored by: Generalitat de Catalunya.
AGAUR_SGR17_00551
Duration: 01/01/2017-31/12/2020

Peralta C. **La hormona de crecimiento en el trasplante de los injertos hepáticos esteatósicos y no esteatósicos procedentes de donantes con muerte cerebral.**

Sponsored by: Ministerio de Economía y Competitividad (MINECO).
SAF2015-64857-R
Duration: 01/01/2016-31/12/2019

Peralta C. **Nuevas estrategias en el trasplante de injertos hepáticos esteatósicos y no esteatósicos procedentes de donantes con muerte cerebral.**
Sponsored by: Ministerio de Ciencia Innovación y Universidades (MCIU).
RTI2018-095114-B-I00
Duration: 01/01/2019-31/12/2021

DOCTORAL THESES

Cornide ME, Peralta C. **Mecanismos de acción de los factores de crecimiento en hígados esteatósicos sometidos a resección bajo oclusión vascular.**
PhD student: Esther Bujaldón

Peralta C, Jiménez-Castro M. **Papel de los factores de crecimiento en hígados esteatósicos procedentes de donantes cadavéricos. Mecanismos de acción y regulación farmacológica.**
PhD student : Elsa Negrete

3.25 Inherited metabolic diseases

LOCATION
HCB building

KEYWORDS
1. **Mitochondrial diseases**
2. **Mitochondrial cofactors**
3. **Lysosomal diseases**
4. **Inherited metabolic diseases**
5. **Inborn errors of metabolism**
6. **Organic acidurias**
7. **CDG**

RELATED DISEASES
1. **Diseases of the mitochondrial energy metabolism**
2. **Lysosomal diseases**
3. **Congenital disorders of glycosilation (CDG)**

GROUP INVOLVED IN
CIBERER
AGAUR_SGR17: 01428

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**5**	**24,83**	**4,97**	**80%**	**40%**



GROUP LEADER
Antonia Ribes (HCB)
T. 93 227 54 00 (Ext.: 9340)
aribes@clinic.cat

RESEARCHERS
Mª José Coll (HCB)
Judit Garcia Villoria (HCB)
Laura Gort (HCB)
Rosa Lopez Galera Mª (HCB)

POST-DOCTORAL RESEARCHERS
Xènia Ferrer (FCRB)
Frederic Tort (CIBER)

PRE-DOCTORAL RESEARCHERS
Gerard Muñoz (IDIBAPS)
Eulàlia Segur (FCRB)
Olatz Ugarteburu (CIBER)

PROBLEM

According to the latest data, fifty per cent of people who suffer from inherited genetic diseases are not diagnosed.

The main reason lies in the clinical diversity of their symptoms: not all genetic alterations can be easily detected and although it is now possible to perform genomic studies on each person, the pathological significance of many of the genetic variants identified is not known and this makes it difficult to obtain a conclusive diagnosis.

Inherited diseases generally require personalised therapies that cannot be offered without a conclusive diagnosis, and the absence of a clear diagnosis makes it difficult to access treatment and adequate genetic counselling.

APPROACH

The group's strategy to improve the diagnosis and treatment of inherited genetic diseases consists of the combined use of modern, innovative techniques (genomics, transcriptomics, proteomics and metabolomics) with traditional biochemical studies and cell biology.

It has implemented methods that make it possible to determine whether or not the genetic variants identified cause a particular disorder, so that a conclusive diagnosis can be established. These studies are conducted using samples obtained directly from patients and cell generated identified in the laboratory.

IMPACT

The group has identified new genes associated with different diseases. Its objective is to continue to identify new genes to improve the diagnosis of inherited metabolic diseases.

It will also continue its research and development of drugs that improve the quality of life of patients and their families. In some cases, new therapeutic options may become available, and in others, adequate genetic counselling.

RESEARCH LINES

- Identification of genes responsible for Mendelian disorders.

- Functional characterization of the physiopathological bases of the inherited metabolic diseases.

- Therapeutic approaches in inherited metabolic diseases.

PUBLICATIONS

Originals / I.F.: 24.832

1. Jou C, Ortigoza-Escobar JD, O'Callaghan MM, Nascimento A, Darling A, Pias-Peleteiro L, Perez-Dueñas B, Pineda M, Codina A, Arjona C, Armstrong J, Palau F, Ribes A, Gort L, Tort F, Navas P, Ruiz-Pesini E, Emperador

S, Lopez-Gallardo E, Bayona-Bafaluy P, Montero R, Jimenez-Mallebrera C, Garcia-Cazorla A, Montoya J, Yubero D, Artuch R. **Muscle Involvement in a Large Cohort of Pediatric Patients with Genetic Diagnosis of Mitochondrial Disease.** *JOURNAL OF CLINICAL MEDICINE.* 8(1):E68. I.F.: 5.688

2. Vázquez-Fonseca L, Schaefer J, Navas-Enamorado I, Santos-Ocaña C, Hernández-Camacho JD, Guerra I, Cascajo MV, Sánchez-Cuesta A, Horvath Z, Siendones E, Jou C, Casado M, Gutiérrez P, Brea-Calvo G, López-Lluch G, Fernández-Ayala DJM, Cortés-Rodríguez AB, Rodríguez-Aguilera JC, Matté C, Ribes A, Prieto-Soler SY, Dominguez-Del-Toro E, Francesco AD, Aon MA, Bernier M, Salviati L, Artuch R, Cabo R, Jackson S, Navas P. **ADCK2 Haploinsufficiency Reduces Mitochondrial Lipid Oxidation and Causes Myopathy Associated with CoQ Deficiency.** *JOURNAL OF CLINICAL MEDICINE.* 8(9):E1374. I.F.: 5.688

3. Argudo-Ramírez A, Martín-Nalda A, Marín-Soria J, López-Galera R, Pajares-García S, de Aledo-Castillo J, Martínez-Gallo M, García-Prat M, Colobran R, Riviere J, Quintero Y, Collado T, García-Villoria J, Ribes A, Soler-Palacín P. **First universal newborn screening program for severe combined immunodeficiency in europe. Two-years' experience in catalonia (spain).** *FRONTIERS IN IMMUNOLOGY.* 10:2406. I.F.: 4.716

4. Tort F, Ugarteburu O, Texidó L, Gea-Sorlí S, García-Villoria J, Ferrer-Cortès X, Arias Á, Matalonga L, Gort L, Ferrer I, Guitart-Mampel M, Garrabou G, Vaz FM, Pristoupilova A, Rodríguez MIE, Beltran S, Cardellach F, Wanders RJ, Fillat C, García-Silva MT, Ribes A. **Mutations in TIMM50 cause severe mitochondrial dysfunction by targeting key aspects of mitochondrial physiology.** *HUMAN MUTATION.* 40(10):1700-1712. I.F.: 4.453

5. Keller R., Chrastina P., Pavlíková M., Gouveia S., Ribes A., Kölker S., Blom H., Baumgartner M., Bártl J., Dionisi-Vici C., Gleich F., Morris A., Kožich V., Huemer M., Bari? I., Ben-Omran T., Blasco-Alonso J., Bueno Delgado M., Carducci C., Cassanello M., Cerone R., Couce M., Crushell E., Delgado Pecellin C., Dulin E., Espada M., Ferino G., Fingerhut R., Garcia Jimenez I., Gonzalez Gallego I., González-Irazabal Y., Gramer G., Juan Fita M., Karg E., Klein J., Konstantopoulou V., la Marca G., Leão Teles E., Leuzzi V., Lilliu F., Keller R., Chrastina P., Pavlíková M., Gouveia S., Ribes A., Kölker S., Blom H., Baumgartner M., Bártl J., Dionisi-Vici C., Gleich F., Morris A., Kožich V., Huemer M., Barić I. **Newborn screening for homocystinurias: Recent recommendations versus current practice**. *JOURNAL OF INHERITED METABOLIC DISEASE.* 42(1):128-139. I.F.: 4.287

Review / I.F.: 4.287

1. Altassan R, Péanne R, Jaeken J, Barone R, Bidet M, Borgel D, Brasil S, Cassiman D, Cechova A, Coman D, Corral J, Correia J, de la Morena-Barrio ME, de Lonlay P, Dos Reis V, Ferreira CR, Fiumara A, Francisco R, Freeze H, Funke S, Gardeitchik T, Gert M, Girad M, Giros M, Grünewald S, Hernández-Caselles T, Honzik T, Hutter M, Krasnewich D, Lam C, Lee J, Lefeber D, Marques-de-Silva D, Martinez AF, Moravej H, Õunap K, Pascoal C, Pascreau T, Patterson M, Quelhas D, Raymond K, Sarkhail P, Schiff M, Seroczyńska M, Serrano M, Seta N, Sykut-Cegielska J, Thiel C, Tort F, Vals MA, Videira P, Witters P, Zeevaert R, Morava E. **International clinical guidelines for the management of phosphomannomutase 2-congenital disorders of glycosylation: Diagnosis, treatment and follow up.** *JOURNAL OF INHERITED METABOLIC DISEASE.* 42(1):5-28. I.F.: 4.287

GRANTS FOR RESEARCH IN PROGRESS

Ribes A. **Implementació de la medicina personalitzada basada en la genómica en malalties minoritaries neurologiques no diagnosticades.**
Sponsored by: Generalitat de Catalunya.
PERIS_SLT002/16/00174
Duration: 27/03/2017-31/12/2019

Ribes A. **Identificación y caracterización de nuevos defectos del metabolismo energético mitocondrial asociados a aciduria 3-metilglutacónica.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/01048
Duration: 01/01/ 2017-30/06/2020

Ribes A, Garcia-Villoria J, Fillat C. **Adeno-associated viral gene therapy with AAV9-GCDH to correct glutaric acidura type I in Gdch -/- mice.**
Sponsored by: Fundación Ramón Areces.
CIVP19S8539
Duration: 03/04/2019-02/04/2022

3.26 Liver cell plasticity and tissue repair

LOCATION
CEK building, floor 3

KEYWORDS
1. **Chronic liver disease**
2. **Cell plasticity**
3. **In vitro liver modelling**
4. **Stem cells**
5. **Organoids**

RELATED DISEASES
1. **Liver disease**

GROUP INVOLVED IN
AGAUR_SGR17: 01456

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**6**	**59,03**	**9,84**	**83%**	**67%**



GROUP LEADER
Pau Sancho-Bru (IDIBAPS)
T. 93 227 54 00 (Ext.: 3371)
psancho@clinic.cat

POST-DOCTORAL RESEARCHERS
Delia Blaya (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Beatriz Aguilar (IDIBAPS)
Silvia Ariño (IDIBAPS)
Raquel Adela Martínez (IDIBAPS)
Julia Vallverdu (IDIBAPS)

TECHNICIANS
Ana Teresa Rubio (IDIBAPS)

PROBLEM

In advanced liver diseases, the mechanisms for tissue repair and liver regeneration are compromised, resulting in organ dysfunction and, ultimately, in liver failure.

Which factors compromise hepatic repair? How is liver regeneration regulated? What do the cells do to maintain their characteristics and function?

These are some of the questions that the group wants to answer in order to be able to develop new therapeutic strategies enabling improved regeneration and liver function in chronic liver disease.

APPROACH

Based on human samples, experimental models of liver disease, and in vitro systems with primary cells and stem cells, the group seeks to identify the factors responsible for impaired regeneration of the liver and the mechanisms that alter tissue repair.

Within this context, it is particularly interested in studying cellular plasticity and maintaining the identity of liver cells in response to damage and disease, as well as in the mechanisms and factors that promote inflammation and hepatic fibrosis.

IMPACT

The group has described numerous key mechanisms and mediators in the progression of chronic liver disease and has highlighted their potential as therapeutic targets. One of its main findings have been how impaired regeneration of the liver promotes a proliferation of immature cells, which are associated with an increase in inflammation and a poor prognosis.

In addition, it has developed, for the first time, a methodology for generating starved stem cells from IPS stem cells and has demonstrated the potential for in vitro modelling of liver fibrosis.

RESEARCH LINES

- In vitro disease modeling.

- Liver cell plasticity.

- Mechanisms of liver inflammation and fibrosis.

PUBLICATIONS

Originals / I.F.: 59.023

1. Heo MJ, Kim TH, You JS, Blaya D, Sancho-Bru P, Kim SG. **Alcohol dysregulates miR-148a in hepatocytes through FoxO1, facilitating pyroptosis via TXNIP overexpression.** *GUT.* 68(4):708-720. I.F.: 17.943

2. Aguilar-Bravo B, Rodrigo-Torres D, Ariño S, Coll M, Pose E, Blaya D, Graupera I, Perea L, Vallverdú J, Rubio-Tomás T, Dubuquoy L, Armengol C, Lo Nigro A, Stärkel P, Mathurin P, Bataller R, Caballería J, José Lozano J, Ginès P, Sancho-Bru P. **Ductular reaction cells display an inflammatory profile and recruit neutrophils in alcoholic hepatitis.** *HEPATOLOGY.* 69(5):2180-2195. I.F.: 14.971

3. Argemie, Josepmaria Latasa, Maria U. Atkinson, Stephen R. Blokhin, Ilya O. Massey, Veronica Gue, Joel P. Cabezas, Joaquin Lozano, Juan J. Van Booven, Derek Bell, Aaron Cao, Sheng Vernetti, Lawrence A. Arab, Juan P. Ventura-Cots, Meritxell Edmunds, Lia R. Fondevilla, Constantino Starkel, Peter Dubuquoy, Laurent Louvet, Alexandre Odena, Gemma Gomez, Juan L. Aragon, Tomas Altamirano, Jose Caballeria, Juan Jurczak, Michael J. Taylor, D. Lansing Berasain, Carmen Wahlestedt, Claes Mongv, Satdarshan P. Morgan, Marsha Y. Sancho-Bru, Pau Mathurin, Philippe Furuya, Shinji Lackner, Carolin Rusyn, Ivan Shah, Vijay H. Thursz, Mark R. Mann, Jelena Avila, Matias A. Bataller, Ramon. **Defective HNF4alpha-dependent gene expression as a driver of hepatocellular failure in alcoholic hepatitis.** *NATURE COMMUNICATIONS*. 10(1):3126. I.F.: 11.878

4. Bárcena C., Aran G., Perea L., Sanjurjo L., Téllez É., Oncins A., Masnou H., Serra I., García-Gallo M., Kremer L., Sala M., Armengol C., Sancho-Bru P., Sarrias M. **CD5L is a pleiotropic player in liver fibrosis controlling damage, fibrosis and immune cell content.** *EBIOMEDICINE*. 43:513-524. I.F.: 6.680

5. Verhulst, Stefaan Roskams, Tania Sancho-Bru, Pau van Grunsven, Leo A. **Meta-Analysis of Human and Mouse Biliary Epithelial Cell Gene Profiles.** *CELLS*. 8(10):E1117. I.F.: 5.656

6. Michelena J, Alonso C, Martínez-Arranz I, Altamirano J, Mayo R, Sancho-Bru P, Bataller R, Ginès P, Castro A, Caballería J. **Metabolomics Discloses a New Non-invasive Method for the Diagnosis and Prognosis of Patients with Alcoholic Hepatitis.** *ANNALS OF HEPATOLOGY*. 18(1):144-154. I.F.: 1.895

Review / I.F.: 5.49

1. Aguilar-Bravo B, Sancho-Bru P. **Laser capture microdissection: techniques and applications in liver diseases.** *HEPATOLOGY INTERNATIONAL*. 13(2):138-147. I.F.: 5.490

GRANTS FOR RESEARCH IN PROGRESS

Sancho-Bru P. **Mecanismos implicados en la deficiente reparación tisular del hígado en enfermedades crónicas hepáticas. Nuevas dianas terapéuticas.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00673
Duration: 01/01/2018-31/12/2020

Sancho-Bru P. **Desarrollo de una herramienta de cribado de nuevos fármacos para el tratamiento de la enfermedad hepática crónica a partir de un sistema in vitro hepático organotípico derivado de iPSC.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). DTS18/00088
Duration: 01/01/2019-31/12/2020

Sancho-Bru P. **Understanding hepatoblastoma to design new personalized treatments.**
Sponsored by: Asociación Española Contra el Cáncer (AECC). Proyectos19
Duration: 01/12/2019-30/11/2022

Sancho-Bru P. **LiverTF: Liver-enriched transcription factors as prognostic markers and therapeutic targets in alcoholic hepatitis.**
Sponsored by: National Institutes of Health. NIH_AA-18-003
Duration: 22/09/2018-30/06/2020

3.27 Pathogenesis and treatment of autoimmunity

LOCATION
CEK building, floor 5

KEYWORDS
1. **Autoimmunity**
2. **Diabetes**
3. **Nanoparticle**
4. **Tolerance**
5. **T-cell development**
6. **T-cell re-programming**
7. **Epigenetics**

RELATED DISEASES
1. **Diabetes**
2. **Multiple sclerosis**
3. **Inflammatory bowel disease**
4. **Obesity**
5. **Systemic lupus erythematosus**
6. **Rheumatoid arthritis**
7. **Psoriasis**
8. **Uveitis**
9. **Sjogren's disease**

GROUP INVOLVED IN
AGAUR_SGR17: 00338

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	3	34,65	11,55	100%	100%



GROUP LEADER
Pere Santamaria (IDIBAPS)
T. 93 227 54 00 (Ext.: 4558)
pesantam@clinic.cat

RESEARCHERS
Pau Serra (IDIBAPS)

POST-DOCTORAL RESEARCHERS
Maria Nahir Garabatos (IDIBAPS)
Irene Gracia Rubio (IDIBAPS)
Meritxell Tort (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Antonio Jesús Blanco (IDIBAPS)
Josep Garnica (IDIBAPS)
José Javier Montaño (IDIBAPS)
Daniel Parras (IDIBAPS)
Patricia Solé (IDIBAPS)

TECHNICIANS
Juan Antonio Arranz (IDIBAPS)
Luis Miguel Carrasco (IDIBAPS)
Immaculada Creus (IDIBAPS)
César Fandos (IDIBAPS)
Rocio Martin (IDIBAPS)
Sandra Pérez Ramos (IDIBAPS)

ADMINISTRATIVE STAFF
Mireia Ortega (IDIBAPS)

PROBLEM

Autoimmune diseases such as type 1 diabetes (T1D), multiple sclerosis (MS) and many others result from chronic autoimmune responses involving T- and B-cells recognizing numerous antigenic epitopes on incompletely defined lists of autoantigens. Eliminating or suppressing all polyclonal autoreactive T-cell specificities (known and unknown) in each individual autoimmune disorder without compromising systemic immunity is not currently possible.

Our group focusses on a new class of drugs, based on nanomedicine, that can comprehensively blunt several experimental autoimmune diseases without compromising normal immunity to infections and cancer.

We investigate the underlying mechanisms, in particular the molecular changes that result in the conversion of pathogenic T-cells into disease-suppressing progeny, with a major focus on mice humanized with peripheral blood mononuclear cells or hematopoietic stem cells. In addition, we enumerate the presence of, and clone autoantigen-specific T-cell specificities in patients with various autoimmune diseases.

APPROACH

We employ peptide-major histocompatibility complex-based nanomedicines to elicit the formation of disease-specific immunoregulatory cell networks in vivo, both in experimental animal models of autoimmune disease as well as in humanized mice.

In addition, we study the developmental biology of diabetogenic T cell specificities in transgenic mice in the presence/absence of genetic modifications of the antigen-presenting machinery in both thymic and peripheral antigen-presenting cells.

We use a variety of approaches to identify target epitope specificities of both murine and human autoreactive T-cells.

IMPACT

Our approach offers a new class of drugs potentially capable of treating many autoimmune diseases without impairing normal immunity. In addition, these drugs re-program cognate autoreactive T-cells into regulatory cells followed by the formation of multi-cellular regulatory cell networks.

Studies of this process at the transcriptional and epigenetic level provides clues about these new cellular lineages and the underlying mechanisms. A major focus is on translational aspects of these processes, using humanized mice as a tool.

RESEARCH LINES

- Advancing antigen-specific nanomedicines for the treatment of organ-specific and systemic autoimmune diseases.

- Engineering of recombinant peptide-major histocompatibility complexes suitable for eliciting autoreactive T-regulatory type 1 cells in vivo.

- Lineage-specification of pMHC-NP-induced antigen-specific T-regulatory type 1 (TR1) cells.

- Phenotypic, transcriptional and epigenetic make up of pMHC-NP-induced human autoantigen-specific TR1 cells in humanized mouse models.

- Role of autophagy in autoantigen presentation during T-cell ontogeny and autoimmunity.

- Enumeration of prevalent autoreactive T-cell specificities in peripheral blood samples from human patients.

PUBLICATIONS

Originals / I.F.: 34.648

1. Umeshappa CS, Singha S, Blanco J, Shao K, Nanjundappa RH, Yamanouchi J, Parés A, Serra P, Yang Y, Santamaria P. **Suppression of a broad spectrum of liver autoimmune pathologies by single peptide-MHC-based nanomedicines.** *NATURE COMMUNICATIONS*. 10(1):2150. I.F.: 11.878

2. Serra, Pau; Garabatos, Nahir; Singha, Santiswarup; Fandos, Cesar; Garnica, Josep; Sole, Patricia; Parras, Daniel; Yamanouchi, Jun; Blanco, Jesus; Tort, Meritxell; Ortega, Mireia; Yang, Yang; Ellestad, Kristofor K.; Santamaria, Pere. **Increased yields and biological potency of knob-into-hole-based soluble MHC class II molecules.** *NATURE COMMUNICATIONS*. 10(1):4917. I.F.: 11.878

3. Carballido JM, Santamaria P. **Taming autoimmunity: Translating antigen-specific approaches to induce immune tolerance.** *JOURNAL OF EXPERIMENTAL MEDICINE*. 216(2):247-250. I.F.: 10.892

Review / I.F.: 31.864

1. Serra P, Santamaria P. **Antigen-specific therapeutic approaches for autoimmunity.** *NATURE BIOTECHNOLOGY*. 37(3):238-251. I.F.: 31.864

GRANTS FOR RESEARCH IN PROGRESS

Santamaria P. **Grup de Recerca en autoimmunitat.**
Sponsored by: Generalitat de Catalunya. AGAUR_SGR17_00338
Duration: 01/01/2017-31/12/2020

Santamaria P. **Advancing human antigen-specific T-regulatory cell expanding nanomedicines for autoimmune disease: Translational studies in humanized mice.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PIE14/00027
Duration: 01/01/2015-30/06/2019

Santamaria P. **Red Temática de Investigación Cooperativa en Salud - Esclerosis múltiple.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). RD16/0015/0020
Duration: 01/01/2017-31/12/2021

Santamaria P. **El papel de la autofagia celular en la tolerancia central y activación periférica de células TCD4+ diabetogénicas.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO). SAF2015-68187-R
Duration: 01/01/2016-31/12/2019

Santamaria P. **El papel de la autofagia celular en la tolerancia central y activación de células T CD4+ diabetogénicas.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO). RTI2018-093964-B-I00
Duration: 01/01/2019-31/12/2021

Serra P. **Nanomedicines to expand type 1 diabetes specific T-regulatory-1 type cells: mechanistic and translational studies.**
Sponsored by: Juvenile Diabetes Research Foundation. JDRF_CDA13
Duration: 01/06/2014-31/05/2019

3.28 Translational research in diabetes, lipids and obesity

LOCATION
CEK building, floor 5

KEYWORDS
1. **Type 1 diabetes**
2. **Type 2 diabetes**
3. **Obesity**
4. **Dyslipidaemia**
5. **Nutrition**
6. **Bariatric Surgery**

RELATED DISEASES
1. **Type 1 diabetes**
2. **Type 2 diabetes**
3. **Obesity**
4. **Dyslipidaemia**

GROUP INVOLVED IN
CIBERDEM
AGAUR_SGR17: 01166

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**38**	**239,03**	**6,29**	**71%**	**34%**



GROUP LEADER
Josep Vidal (HCB)
T. 93 227 57 39
jovidal@clinic.cat

EMERITUS
Ramon Gomis (IDIBAPS)

RESEARCHERS
Ignasi Conget (HCB)
Ana María De Hollanda (HCB)
Enrique Esmatjes (HCB)
Lilliam Flores (HCB)
Rosa Maria Gasa (IDIBAPS)
Margarita Gimenez Alvarez (IDIBAPS)
Amanda Jiménez Pineda (IDIBAPS)
Emilio Ortega (HCB)

POST-DOCTORAL RESEARCHERS
Montserrat Cofán (CIBER)
Rebeca Fernandez Ruiz (CIBER)
Marta Fontcuberta (IDIBAPS)
Garyfallia Kapravelou (CIBER)
Violeta Moize (HCB)
Óscar Osorio (CIBER)

PRE-DOCTORAL RESEARCHERS
Diana Alicia Diaz Rizzolo (FCRB)

TECHNICIANS
Ainhoa García Alamán (CIBER)

PROBLEM

Metabolic diseases constitute one of the main health problems in our society. Diabetes, dyslipidaemia and obesity are highly prevalent diseases that are also risk factors for cardiovascular disease, cognitive deterioration and certain types of cancer.

Characterizing these diseases correctly, understanding why they can lead to other severe diseases, and designing better treatments for them, are priorities.

APPROACH

The group carries out research on diabetes (type 1, type 2 and other forms), obesity and dyslipidaemia from the perspective of epidemiology, clinical research and laboratory research. In studies in humans, it uses a broad range of clinical and metabolic characterization techniques, vascular ultrasound, neuroimaging, molecular techniques and computational techniques.

It integrates this information to provide a better description of the diseases in their field of research, with the understanding that thorough knowledge of the diseases is the basis for effective, personalized medicine. The group also uses this information to improve currently available treatments. Finally, it seeks new therapeutic alternatives based on cell-biology studies and studies in animal models. The group's goal is to translate this knowledge obtained in the laboratory into clinical practice in the near future.

The group consists of a multidisciplinary research team of biologists, physicians, nutritionists and nurses, and creates ad hoc teams based on the questions to be answered at any given moment. It also works in collaboration with other IDIBAPS groups and with groups from other universities around the country.

IMPACT

Improving knowledge of diseases with a high prevalence is a priority for the group if we want the healthcare system to be sustainable.

RESEARCH LINES

- Nutrition, obesity, diabetes, and cardiovascular disease: from epidemiology to mechanistic studies.

- Detection of atherosclerosis: a road to personalized medicine in dyslipidemia and diabetes.

- Monogenic forms of diabetes.

- Impact of bariatric surgery on health.

- Advanced therapies for type 1 diabetes. The artificial pancreas concept.

- Hypoglycemia and its consequences in patients with diabetes.

- Regenerative medicine strategies to treat beta cell deficiency in diabetes.

- Advancing antigen-specific nanomedicines for the treatment of type 1 diabetes.

PUBLICATIONS

Originals / I.F.: 239.029

1. Sayón-Orea C, Razquin C, Bulló M, Corella D, Fitó M, Romaguera D, Vioque J, Alonso-Gómez ÁM, Wärnberg J, Martínez JA, Serra-Majem L Estruch R, Tinahones FJ, Lapetra J, Pintó X, Tur JA, López-Miranda J, Bueno- Cavanillas A, Delgado-Rodríguez M, Matía-Martín P, Daimiel L, Sánchez VM, Vidal J, Vázquez C, Ros E, Ruiz-Canela M, Sorlí JV, Castañer O, Fiol M, Navarrete-Muñoz EM, Arós F, Gómez-Gracia E, Zulet MA1, Sánchez- Villegas A, Casas R, Bernal-López R, Santos-Lozano JM, Corbella E, Bouzas C, García-Arellano A, Basora J, Asensio EM, Schröder H, Moñino M, García de la Hera M, Tojal-Sierra L, Toledo E, Díaz-López A, Godai A, Salas-Salvadó J, Martínez-González MA. **Effect of a Nutritional and Behavioral Intervention on Energi-Reduced Mediterranean Diet Adherence Among Patients with Metabolic Sindrome: Interim Analisis of the PREDIMED-Plus Randomized Clinical Trial.** *JAMA.* 322(15):1486-1499. IF: 51.273

2. Figueiredo, Hugo; Figueroa, Ana Lucia C.; Garcia, Ainhoa; Fernandez-Ruiz, Rebeca; Broca, Christophe; Wojtusciszyn, Anne; Malpique, Rita; Gasa, Rosa; Gomis, Ramon. **Targeting pancreatic islet PTP1B improves islet graft revascularization and transplant outcomes.** *SCIENCE TRANSLATIONAL MEDICINE.* 11:497. I.F.: 17.161

3. Salas-Salvadó J, Díaz-López A, Ruiz-Canela M, Basora J, Fitó M, Corella D, Serra-Majem L, Wärnberg J, Romaguera D, Estruch R, Vidal J, Martínez JA, Arós F, Vázquez C, Ros E, Vioque J, López-Miranda J, Bueno-Cavanillas A, Tur JA, Tinahones FJ, Martín V, Lapetra J, Pintó X, Daimiel L, Delgado-Rodríguez M, Matía P, Gómez-Gracia E, Díez-Espino J, Babio N, Castañer O, Sorlí JV, Fiol M, Zulet MÁ, Bulló M, Goday A, Martínez-González MÁ, PREDIMED-Plus investigators. **Effect of a Lifestyle Intervention Program With Energy-Restricted Mediterranean Diet and Exercise on Weight Loss and Cardiovascular Risk Factors: One-Year Results of the PREDIMED-Plus Trial.** *DIABETES CARE.* 42(5):777-788. I.F.: 15.270

4. Abete I, Konieczna J, Zulet MA, Galmés-Panades AM, Ibero-Baraibar I, Babio N, Estruch R, Vidal J, Toledo E, Razquin C, Bartolomé R, Díaz-Lopez A, Fiol M, Casas R, Vera J, Buil-Cosiales P, Pintó X, Corbella E, Portillo MP, de Paz JA, Martín V, Daimiel L, Goday A, Rosique-Esteban N, Salas-Salvadó J, Romaguera D, Martínez JA, PREDIMED-PLUS Investigators. **Association of lifestyle factors and inflammation with sarcopenic obesity: data from the PREDIMED-Plus trial.** *JOURNAL OF CACHEXIA, SARCOPENIA AND MUSCLE.* 10(5):974-984. I.F.: 10.754

5. Ventura-Aguiar P, Ferrer J, Paredes D, Rodriguez-Villar C, Ruiz A, Fuster J, Fondevila C, Garcia-Valdecasas JC, Esmatjes E, Adália R, Oppenheimer F, Campistol JM, Diekmann F, Ricart MJ. **Outcomes From Brain Death Donors With Previous Cardiac Arrest Accepted for Pancreas Transplantation: A Single-center Retrospective Analysis.** *ANNALS OF SURGERY.* I.F.: 9.476

6. Martínez-González MA, Buil-Cosiales P, Corella D, Bulló M, Fitó M, Vioque J, Romaguera D, Martínez JA, Wärnberg J, López-Miranda J, Estruch R, Bueno-Cavanillas A, Arós F, Tur JA, Tinahones F, Serra-Majem L, Martín V, Lapetra J, Vázquez C, Pintó X, Vidal J, Daimiel L, Delgado-Rodríguez M, Matía P, Ros E, Fernández-Aranda F, Botella C, Portillo MP, Lamuela-Raventós RM, Marcos A, Sáez G, Gómez-Gracia E, Ruiz-Canela M, Toledo E, Alvarez-Alvarez I, Díez-Espino J, Sorlí JV, Basora J, Castañer O, Schröder H, Navarrete-Muñoz EM, Zulet MA, García-Rios A, Salas-Salvadó J, PREDIMED-Plus Study Investigators. **Cohort Profile: Design and methods of the PREDIMED-Plus randomized trial.** *INTERNATIONAL JOURNAL OF EPIDEMIOLOGY.* 48(2):387-388. I.F.: 7.339

7. Konieczna J., Abete I., Galmés A., Babio N., Colom A., Zulet M., Estruch R., Vidal J., Toledo E., Díaz-López A., Fiol M., Casas R., Vera J., Buil-Cosiales P., Martín V., Goday A., Salas-Salvadó J., Martínez J., Romaguera D. **Body adiposity indicators and cardiometabolic risk: Cross-sectional analysis in participants from the PREDIMED-Plus trial**. *CLINICAL NUTRITION.* 38(4):1883-1891. I.F.: 6.402

8. Rosique-Esteban N, Babio N, Díaz-López A, Romaguera D, Alfredo Martínez J, Sanchez VM, Schröder H, Estruch R, Vidal J, Buil-Cosiales P, Konieczna J, Abete I, Salas-Salvadó J. **Leisure-time physical activity at moderate and high intensity is associated with parameters of body composition, muscle strength and sarcopenia in aged adults with obesity and metabolic syndrome from the PREDIMED-Plus study.** *CLINICAL NUTRITION.* 38(3):1324-1331. I.F.: 6.402

9. Galmes-Panades AM, Varela-Mato V, Konieczna J, Wärnberg J, Martínez-González MÁ, Salas-Salvadó J, Corella D, Schröder H, Vioque J, Alonso-Gómez ÁM, Martínez JA, Serra-Majem L, Estruch R, Tinahones FJ, Lapetra J, Pintó X, Tur JA, Garcia-Rios A, Riquelme-Gallego B, Gaforio JJ, Matía-Martín P, Daimiel L, Micó Pérez RM, Vidal J, Vázquez C, Ros E, Garcia-Arellano A, Díaz-López A, Asensio EM, Castañer O, Fiol F, Mira-Castejón LA, Moreno Rodríguez A, Benavente-Marín JC, Abete I, Tomaino L, Casas R, Barón López FJ, Fernández-García JC, Santos-Lozano JM, Galera A, Mascaró CM, Razquin C, Papandreou C, Portoles O, Pérez-Vega KA, Fiol M, Compañ-Gabucio L, Vaquero-Luna J, Ruiz-Canela M, Becerra-Tomás N, Fitó M, Romaguera D . **Isotemporal substitution of inactive time with physical activity and time in bed: cross-sectional associations with cardiometabolic health in the PREDIMED-Plus study.** *INTERNATIONAL JOURNAL OF BEHAVIORAL NUTRITION AND PHYSICAL ACTIVITY.* 16(1):137. I.F.: 6.037

10. Papandreou C, Díaz-López A, Babio N, Martínez-González MA, Bulló M, Corella D, Fitó M, Romaguera D, Vioque J, Alonso-Gómez ÁM, Wärnberg J, Martínez AJ, Serra-Majem L, Estruch R, Fernández-García JC, Lapetra J, Pintó X, Tur JA, Garcia-Rios A, Bueno-Cavanillas A, Delgado-Rodríguez M, Matía-Martín P, Daimiel L, Martín-Sánchez V, Vidal J, Vázquez C, Ros E, Buil-Cosiales P, Becerra-Tomas N, Martinez-Lacruz R, Schröder H, Konieczna J, Garcia-de-la-Hera M, Moreno-Rodriguez A, Barón-López J, Pérez-Farinós N, Abete I, Bautista-Castaño I, Casas R, Muñoz-Garach A, Santos-Lozano JM, Trias F, Gallardo-Alfaro L, Ruiz-Canela M, Barragan R, Goday A, Galmés-Panadés AM, González-Botella A, Vaquero-Luna J, Toledo

E, Castañer O, Salas-Salvadó J. **Long Daytime Napping Is Associated with Increased Adiposity and Type 2 Diabetes in an Elderly Population with Metabolic Syndrome.** *JOURNAL OF CLINICAL MEDICINE*. 8:7. I.F.: 5.688

11. Castelblanco, Esmeralda; Betriu, Angels; Hernandez, Marta; Granado-Casas, Minerva; Ortega, Emilio; Soldevila, Berta; Ramirez-Morros, Anna; Franch-Nadal, Josep; Puig-Domingo, Manel; Fernandez, Elvira; Avogaro, Angelo; Alonso, Nuria; Mauricio, Didac. **Ultrasound Tissue Characterization of Carotid Plaques Differs Between Patients with Type 1 Diabetes and Subjects without Diabetes**. *JOURNAL OF CLINICAL MEDICINE*. 8:4. I.F.: 5.688

12. Franch-Nadal, Josep; Mata-Cases, Manel; Ortega, Emilio; Real, Jordi; Gratacos, Monica; Vlacho, Bogdan; Antoni Valles, Joan; Mauricio, Didac. **Glucagon-Like Peptide-1 Receptor Agonists in Patients with Type 2 Diabetes: Prescription According to Reimbursement Constraints and Guideline Recommendations in Catalonia.** *JOURNAL OF CLINICAL MEDICINE*. 8:9. I.F.: 5.688

13. Álvarez-Álvarez I, Martínez-González MÁ, Sánchez-Tainta A, Corella D, Díaz-López A, Fitó M, Vioque J, Romaguera D, Martínez JA, Wärnberg J, López-Miranda J, Estruch R, Bueno-Cavanillas A, Arós F, Tur JA, Tinahones FJ, Serra-Majem L, Martín V, Lapetra J, Más Fontao S, Pintó X, Vidal J, Daimiel L, Gaforio JJ, Matía P, Ros E, Ruiz-Canela M, Sorlí JV, Becerra-Tomás N, Castañer O, Schröder H, Navarrete-Muñoz EM, Zulet MÁ, García-Ríos A, Salas-Salvadó J, Díez-Espino J, Toledo E. **Adherence to an Energy-restricted Mediterranean Diet Score and Prevalence of Cardiovascular Risk Factors in the PREDIMED-Plus: A Cross-sectional Study.** *REVISTA ESPAÑOLA DE CARDIOLOGIA*. 72(11):925-934. I.F.: 5.126

14. Valdés S., Doulatram-Gamgaram V., Lago A., Torres F.G., Badía-Guillén R., Olveira G., Goday A., Calle-Pascual A., Castaño L., Castell C., Delgado E., Menendez E., Franch-Nadal J., Gaztambide S., Girbés J., Gomis R., Ortega E., Galán-García J.L., Aguilera-Venegas G., Soriguer F., Rojo-Martínez G. **Ambient temperature and prevalence of diabetes and insulin resistance in the Spanish population: Di@bet.es study.** *EUROPEAN JOURNAL OF ENDOCRINOLOGY*. 180(5):273-280. I.F.: 5.107

15. Tresserra-Rimbau A., Castro-Barquero S., Vitelli-Storelli F., Becerra-Tomas N., Vázquez-Ruiz Z., Díaz-López A., Corella D., Castañer O., Romaguera D., Vioque J., Alonso-Gómez Á.M., Wärnberg J., Martínez J.A., Serra-Majem L., Estruch R., Tinahones F.J., Lapetra J., Pintó X., Tur J.A., López-Miranda J., García-Molina L., Delgado-Rodríguez M., Matía-Martín P., Daimiel L., Rubín-García M., Vidal J., Galdon A., Ros E., Basterra-Gortari F.J., Babio N., Sorlí J.V., Hernáez Á., Konieczna J., Notario-Barandiaran L., Tojal-Sierra L., Pérez-López J., Abete I., Álvarez-Pérez J., Fernández-García J.C., Santos-Lozano J.M., Tresserra-Rimbau A., Castro-Barquero S., Vitelli-Storelli F., Becerra-Tomas N., Vázquez-Ruiz Z., Díaz-López A., Corella D., Castañer O., Romaguera D., Vioque J., Alonso-Gómez Á.M., Wärnberg J. **Associations between dietary polyphenols and type 2 diabetes in a cross-sectional analysis of the PREDIMED-Plus trial: Role of body mass index and sex.** *ANTIOXIDANTS*. 8:11. I.F.: 4.520

16. Boswell L., Jiménez A., Ortega E., Pané A., Hollanda A., Moizé V., Andreu A., Ibarzabal A., Flores L., Vidal J. **Genetic background influences weight-loss trajectories on the mid-term after bariatric surgery.** *INTERNATIONAL JOURNAL OF OBESITY*. 43(9):1869-1874. I.F.: 4.514

17. Amor AJ, Cofán M, Mateo-Gallego R, Cenarro A, Civeira F, Ortega E, Ros E, Sala-Vila A. **Dietary polyunsaturated fatty acids mediate the inverse association of stearoyl-CoA desaturase activity with the risk of fatty liver in dyslipidaemic individuals.** *EUROPEAN JOURNAL OF NUTRITION*. 58(4):1561-1568. I.F.: 4.449

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19. Cano-Ibáñez N, Bueno-Cavanillas A, Martínez-González MÁ, Salas-Salvadó J, Corella D, Freixer GL, Romaguera D, Vioque J, Alonso-Gómez ÁM, Wärnberg J, Martínez JA, Serra-Majem L, Estruch R, Tinahones FJ, Lapetra J, Pintó X, Tur JA, García-Ríos A, García-Molina L, Delgado-Rodríguez M, Matía-Martín P, Daimiel L, Martín-Sánchez V, Vidal J, Vázquez C, Ros E, Bartolomé-Resano J, Palau-Galindo A, Portoles O, Torres L, Miquel-Fiol , Sánchez MTC, Sorto-Sánchez C, Moreno-Morales N, Abete I, Álvarez-Pérez J, Sacanella E, Bernal-López MR, Santos-Lozano JM, Fanlo-Maresma M, Bouzas C, Razquin C, Becerra-Tomás N, Ortega-Azorin C, LLimona R, Morey M, Román-Maciá J, Goicolea-Güemez L, Vázquez-Ruiz Z, Barrubés L, Fitó M, Gea A . **Effect of changes in adherence to Mediterranean diet on nutrient density after 1-year of follow-up: results from the PREDIMED-Plus Study**. *EUROPEAN JOURNAL OF NUTRITION*. I.F.: 4.449

20. Cano-Ibáñez N, Gea A, Martínez-González MA, Salas-Salvadó J, Corella D, Zomeño MD, Romaguera D, Vioque J, Aros F, Wärnberg J, Martínez JA, Serra-Majem L, Estruch R, Tinahones FJ, Lapetra J, Pintó X, Tur JA, García-Ríos A, Riquelme-Gallego B, Delgado-Rodríguez M, Matía P, Daimiel L, Martín V, Vidal J, Vázquez C, Ros E, Buil-Cosiales P, Díaz-López A, Fernández-Carrión R, Fitó M, Konieczna J, Notario-Barandiaran L, Alonso-Gómez ÁM, Contreras-Fernández E, Abete I, Sánchez-Villegas A, Casas R, Muñoz-Garach A, Santos-Lozano JM, Gallardo-Alfaro L, Basora J, Portoles O, Muñoz MÁ, Moñino M, Miralles Gisbert S, Moreno Rodríguez A, Ruiz-Canela M, Palau Galindo A, Pérez-Vega KA, Bueno-Cavanillas A. **Dietary Diversity and Nutritional Adequacy among an Older Spanish Population with Metabolic Syndrome in the PREDIMED-Plus Study: A Cross-Sectional Analysis.** *NUTRIENTS*. 11:5. I.F.: 4.171

21. Papandreou C., Babio N., Díaz-López A., Martínez-González M., Becerra-Tomas N., Corella D., Schröder H., Romaguera D., Vioque J., Alonso-Gómez Á., Wärnberg J., Martínez A., Serra-Majem L., Estruch R., Muñoz-Garach A.,

Lapetra J., Pintó X., Tur J., Garcia-Rios A., Bueno-Cavanillas A., Delgado-Rodríguez M., Matía-Martín P., Daimiel L., Martín-Sánchez V., Vidal J., Vázquez C., Ros E., Ruiz-Canela M., Bulló M., Sorli J., Quifer M., Colom A., Oncina-Canovas A., Tojal-Sierra L., Barón-López J., Pérez-Farinós N., Abete I., Sanchez-Villegas A., Casas R., Fernández-Garcia J., Papandreou C., Babio N., Díaz-López A., Martínez-González M., Becerra-Tomas N., Corella D., Schröder H., Romaguera D., Vioque J., Alonso-Gómez Á., Wärnberg J., Martínez A**. Sleep duration is inversely associated with serum uric acid concentrations and uric acid to creatinine ratio in an elderly mediterranean population at high cardiovascular risk.** *NUTRIENTS*. 11:4. I.F.: 4.171

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32. Oviedo S., Contreras I., Quirós C., Giménez M., Conget I., Vehi J. **Risk-based postprandial hypoglycemia forecasting using supervised learning.** *INTERNATIONAL JOURNAL OF MEDICAL INFORMATICS*. 126:1-8. I.F.: 2.731

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associated with better global cognition and frontal function in overweight/obese older adults with metabolic syndrome. *EUROPEAN REVIEW OF AGING AND PHYSICAL ACTIVITY.* 16(1):23. I.F.: 2.517

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GRANTS FOR RESEARCH IN PROGRESS

De Hollanda AM. **Efecte d'una dieta mediterrània complementada amb oli d#oliva extra verge o fruits secs sobre la funció del teixit adipós en persones amb obesitat greu.**
Sponsored by: Fundació Acadèmia de les Ciències Mèdiques. ACD_PROJECTES18_02
Duration: 06/04/2018-

Flores L. **Mecanismo de recompensa cerebral en la recuperación ponderal y el mantenimiento del peso perdido tras la gastrectomía tubular. Un estudio mutimodal con resonancia magnética funcional.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI19/01138
Duration: 01/01/2019-31/12/2022

Gasa R. **Proliferación de la célula β pancreática: impacto de nuevos reguladores.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00774
Duration: 01/01/2017-31/12/2019

Gasa R. **Direct reprogramming of human fibroblasts towards insulin-producing cells.**
Sponsored by: European Foundation for the Study of Diabetes (EFSD). JDRF/LiI_17
Duration: 01/01/2018-30/09/2020

Gomis R. **Efectes beneficiosos de la quinoa (Chenopodium quinoa Willd) en la prevenció de la Diabetes Mellitus tipus 2.**
Sponsored by: Fundació Acadèmia de les Ciències Mèdiques. ACD_GLloveras_17
Duration: 01/03/2017-

Jiménez-Pineda A. **Malaltia d'Alzheimer preclínica, diabetis mellitus tipus 2 i obesitat. Efectes de la cirurgia bariàtrica: un estudi multimodal.**
Sponsored by: Fundació la Marató TV3. TV3_Diabet_16
Duration: 10/03/2017-09/03/2020

Jiménez-Pineda A. **Inflamación hipotalámica en obesidad., Papel de la dieta y efectos de la cirugía bariátrica.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00279
Duration: 01/01/2018-31/12/2020

Jiménez-Pineda A. **Walnuts as a means to reverse the metabolic alterations caused by the western type diet: The Akt-FOXO pathway in liver and adipose tissue.**
Sponsored by: Fundación SEEN. SEENJOVINV_18_01
Duration: 01/02/2019-31/01/2021

Ortega E. **Cambios en la microcirculación retiniana y carotidea tras restauración de normoglicemia en pacientes con diabetes tipo 2: angiografia retiniana mediante tomografía de coherencia óptica y ultrasonido carotideo con contraste.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/01479
Duration: 01/01/2018-31/12/2020

Vidal J. **Diabetis: xarxes metabòliques i moleculars.**
Sponsored by: Generalitat de Catalunya. AGAUR_SGR17_01166
Duration: 01/01/2017-31/12/2020

Vidal J. **PREDIMED+DM: Efecto de una pérdida de peso con dieta mediterránea hipocalórica y promoción de la actividad física en la prevención de diabetes tipo 2 en personas con síndrome metabólico.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00215
Duration: 01/01/2018-31/12/2020

DOCTORAL THESES

Gomis R. **Type 2 diabetes preventive effects through specific dietary patterns and nutrition intervention in elderly population with prediabetes.**
PhD student: Diana Alicia Díaz Rizzolo

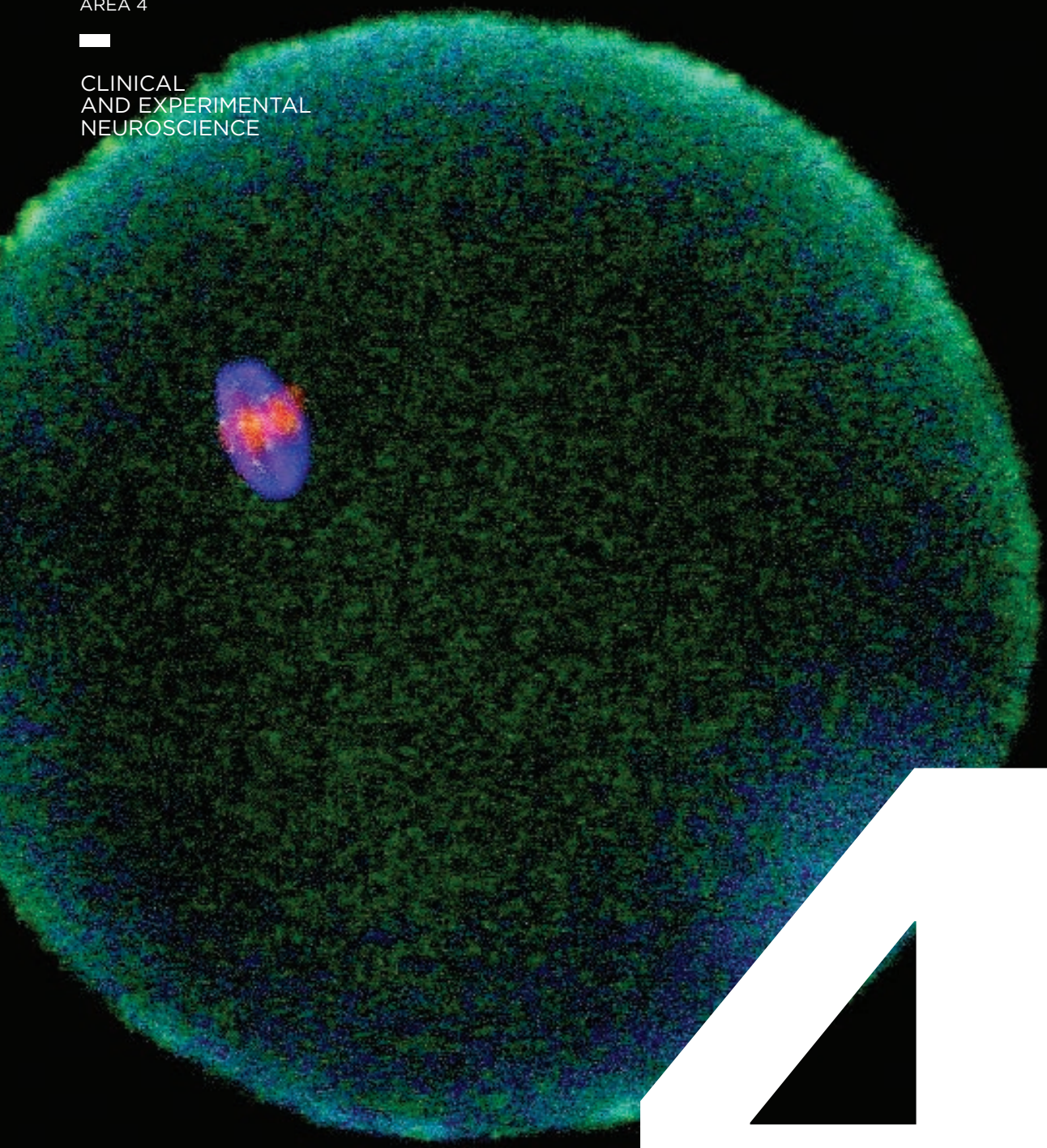
Conget I. Vinagre I. **Efecte de les hipoglucèmies repetides i desapercebudes en el control pregestacional i la gestació en les pacients amb diabetis mellitus tipus 1.**
PhD student: Veronica Perea Castilla

Gomis R. **IA2 i GAD65: Estudi de la resposta humoral específica en la Diabetis Mellitus tipus I. Desenvolupament d'eines per a l'estudi d'una possible relació causal d'ambdós autoantígens en el desencadenament de la malaltia.**
PhD student: Sandra Piquer Gibert

ANNUAL
SCIENTIFIC REPORT
2019

AREA 4

CLINICAL AND EXPERIMENTAL NEUROSCIENCE



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AREA 4

CLINICAL AND EXPERIMENTAL NEUROSCIENCE

4.1 **Pathophysiology and treatment of neurodegenerative disorders**
Jordi Alberch

4.2 **Systems neuropharmacology**
Francesc Artigas

4.3 **Schizophrenia**
Miquel Bernardo

4.4 **Child and adolescent psychiatry and psychology**
Josefina Castro

4.5 **Brain ischemia clinical and experimental studies**
Ángel Chamorro

4.6 **Theoretical neurobiology of cortical circuits**
Albert Compte

4.7 **Pathogenesis of autoimmune neuronal disorders**
Josep Dalmau

4.8 **Cortical circuit dynamics**
Jaime de la Rocha

4.9 **Neurophysiology**
Xavier Gasull

4.10 **Muscular research and mitochondrial function**
Josep Maria Grau

4.11 **Clinical addictions**
Antoni Gual

4.12 **Clinical Neurophysiology**
Alejandro Iranzo

4.13 **Neuropsychology**
Carme Junqué

4.14 **Advanced imaging in neuroimmunological diseases (ImaginEM)**
Sara Llufriu

4.15 **Parkinson disease and other neurodegenerative movement disorders clinical and experimental research**
M. Josep Martí

4.16 **Molecular neuropharmacology**
Guadalupe Mengod

4.17 **Systems neuroscience**
Maria Victoria Sanchez Vives

4.18 **Alzheimer's disease and other cognitive disorders**
Raquel Sánchez-Valle

4.19 **Mechanisms of neurotoxicity and neurodegeneration**
Coral Sanfeliu

4.20 **Cellular neurobiology**
Josep Saura

4.21 **Multimodal neuroimaging in high risk and early psychosis**
Gisela Sugranyes

4.22 **Neurobiology**
Ramon Trullàs

4.23 **Bipolar and depressive disorders**
Eduard Vieta

4.24 **Pathogenesis and new treatments in multiple sclerosis**
Pablo Villoslada

4.1 Pathophysiology and treatment of neurodegenerative disorders

LOCATION
CELLEX building, floor 3B
UB School of Medicine

KEYWORDS
1. **Huntington's disease**
2. **Motor and cognitive function**
3. **Psychiatric disturbances**
4. **Neuroprotection**
5. **Trophic factors**
6. **Stem cells**

RELATED DISEASES
1. **Huntington's disease**
2. **Schizophrenia**
3. **Chorea acanthocytosis**
4. **Stroke**

GROUP INVOLVED IN
CIBERNED
HD-iPSCs Consortium
RETICS-Terapia Celular
AGAUR_SGR17: 01408, 01095

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**9**	**53,47**	**5,94**	**78%**	**22%**



GROUP LEADER
Jordi Alberch (UB)
T. 93 403 52 85
alberch@ub.edu

RESEARCHERS
Josep M Canals (UB)
Silvia Ginés (UB)
Mercè Masana (UB)
Esther Perez Navarro (UB)

POST-DOCTORAL RESEARCHERS
Veronica Brito (UB)
Daniel Del Toro (UB)
Albert Giralt (UB)
Andres Miguez (IDIBAPS-UB)
Ana Saavedra (CIBER)
Philip Sanders Gordon Thomas (UB)
Daniel Tornero (UB)

PRE-DOCTORAL RESEARCHERS
Carla Castany (UB)
Andrea Comella (UB)
Sara Conde (UB)
Jordi Creus (UB)
Marc Espina (IDIBAPS-UB)
Sara Fernandez Garcia (UB)
Gerardo Garcia Diaz-Barriga (UB)
Marta Garcia Forn (UB)
Anna Guisado (UB)
Clelia Introna (UB)
Laura Lopez Molina (UB)
Francisco José Molina (UB)
Anika Pupak (UB)
Ened Rodriguez Urgelles (UB)
Cristina Salado (UB)
Cristina Vila (UB)

TECHNICIANS
Georgina Bombau (UB)
Felipe Chiappe (UB)
Mireia Galofre (UB)
Cristina Herranz (UB)
Andrea Honrubia (UB)
Ana Maria López Alonso (CIBER)
Veronica Monforte (UB)
M. Teresa Muñoz Alarcon (UB)
Myriam Olive (UB)
Unai Perpiña (UB)

ADMINISTRATIVE STAFF
Clara Farrés (UB)
Paola Lucero (UB)
David Vanneste (UB)

PROBLEM

The incidence of nervous system disorders has considerably increased in recent years owing to the higher life expectancy. These diseases not only cause suffering to patients and their families but also have a major social and economic impact. Unfortunately, there is currently no treatment for halting neurodegenerative processes.

APPROACH

The group studies the pathophysiologic mechanisms involved in neuronal dysfunction and neurodegeneration in different brain areas, which cause impairment in motor activity and/or cognitive functions. Using new and innovative technology, these studies make it possible to design new gene, cell and drug therapies.

The group is using a multidisciplinary and translational approach to develop new treatments to halt or slow neurodegenerative processes in diseases such as Huntington´s disease, chorea acanthocytosis or stroke, and also to recover neuronal network activity in schizophrenia.

The group essentially uses two strategies to achieve this: neuroprotective therapies and neuro-regenerative therapies. The former are based on the study of the mechanisms that regulate neuronal plasticity, which maintain the connectivity of the neuron networks in different areas of the brain and neuronal function and survival to understand the cell-specific vulnerability in different neurodegenerative processes.

Neuro-regenerative therapies focus on the differentiation of human pluripotent stem cells and somatic stem cells in neurons with the same profile as those affected in Huntington disease. It is thus possible to perform transplants that replace the dead neurons and recover motor function.

IMPACT

The group has determined several intracellular pathways involved in neuronal function and plasticity within the basal ganglia and the hippocampus, which are abnormal in Huntington disease (BDNF/TrkB/p75, Cdk5, STEP, etc.).This has allowed the group to identify new therapeutic targets and to develop new treatments that have been tested in preclinical studies in cellular and animals models. Some have already been used in international clinical trials.

Cell-therapy studies in Huntington disease have also advanced with the differentiation of human neurons with the structural and physiological characteristics of the neurons of the putamen/caudate nucleus, which can be transplanted to recover motor function.

RESEARCH LINES

- Kinases and phosphatases in neuronal function and dysfunction.
PI: Dr. Esther Pérez-Navarro.

- Neurodegeneration and cognitive dysfunction in Huntington's disease.
PI: Dr. Silvia Ginés.

- Neuroprotection and neuronal plasticity in basal ganglia disorders. PI: Dr. Jordi Alberch.

- Stem cells and regenerative medicine.
PI: Dr. Josep M Canals.

PUBLICATIONS

Originals / I.F.: 53.469

1. Creus-Muncunill J., Badillos-Rodríguez R., Garcia-Forn M., Masana M., Barriga G., Guisado-Corcoll A., Alberch J., Malagelada C., Delgado-García J., Gruart A., Pérez-Navarro E. **Increased translation as a novel pathogenic mechanism in Huntington's disease.** *BRAIN.* 142(10):3158-3175. I.F.: 11.814

2. Brito V., Giralt A., Masana M., Royes A., Espina M., Sieiro E., Alberch J., Castañé A., Girault J., Ginés S. **Cyclin-Dependent Kinase 5 Dysfunction Contributes to Depressive-like Behaviors in Huntington's Disease by Altering the DARPP-32 Phosphorylation Status in the Nucleus Accumbens.** *BIOLOGICAL PSYCHIATRY.* 86(3):196-207. I.F.: 11.501

3. De Pins B, Cifuentes-Díaz C, Farah AT, López-Molina L, Montalban E, Sancho-Balsells A, López A, Ginés S, Delgado-García JM, Alberch J, Gruart A, Girault JA, Giralt A. **Conditional BDNF delivery from astrocytes rescues memory deficits, spine density and synaptic properties in the 5xFAD mouse model of Alzheimer disease.** *JOURNAL OF NEUROSCIENCE.* 39(13):2441-2458. I.F.: 6.074

4. Montalban E, Al-Massadi O, Sancho-Balsells A, Brito V, de Pins B, Alberch J, Ginés S, Girault JA, Giralt A. **Pyk2 in the amygdala modulates chronic stress sequelae via PSD-95-related micro-structural changes.** *TRANSLATIONAL PSYCHIATRY.* 9(1):3. I.F.: 5.182

5. Suelves N, Miguez A, López-Benito S, Barriga GG, Giralt A, Alvarez-Periel E, Arévalo JC, Alberch J, Ginés S, Brito V. **Early Downregulation of p75NTR by Genetic and Pharmacological Approaches Delays the Onset of Motor Deficits and Striatal Dysfunction in Huntington's Disease Mice.** *MOLECULAR NEUROBIOLOGY.* 56(2):935-953. I.F.: 4.586

6. Saavedra A., Ballesteros J., Tyebji S., Martínez-Torres S., Blázquez G., López-Hidalgo R., Azkona G., Alberch J., Martín E., Pérez-Navarro E. **Proteolytic Degradation of Hippocampal STEP61in LTP and Learning.** *MOLECULAR NEUROBIOLOGY.* 56(2):1475-1487. I.F.: 4.586

7. Siegert A., García Díaz-Barriga G., Esteve-Codina A., Navas-Madroñal M., Gorbenko del Blanco D., Alberch J., Heath S., Galán M., Egea G. **A FBN1 3'UTR mutation variant is associated with endoplasmic reticulum stress in aortic aneurysm in Marfan syndrome.** *BIOCHIMICA ET BIOPHYSICA ACTA - MOLECULAR BASIS OF DISEASE.* 1865(1):107-114. I.F.: 4.328

8. Comella Bolla A, Valente T, Miguez A, Brito V, Gines S, Solà C, Straccia M, Canals JM. **CD200 is up-regulated in R6/1 transgenic mouse model of Huntington's disease.** *PLOS ONE.* 14(12):e0224901. I.F.: 2.776

9. Blázquez G, Castañé A, Saavedra A, Masana M, Alberch J, Pérez-Navarro E. **Social Memory and Social Patterns Alterations in the Absence of STriatal-Enriched Protein Tyrosine Phosphatase.** *FRONTIERS IN BEHAVIORAL NEUROSCIENCE.* 12:317. I.F.: 2.622

GRANTS FOR RESEARCH IN PROGRESS

Alberch J. **Enfermedades neurodegenerativas: enfermedad de Huntington.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). CIBERNED
Duration: 01/01/2006-31/12/2019

Alberch J, Rodríguez-Alue M. **Neuronal network dynamics modulation as therapeutic strategy to recover basal ganglia dysfunction in movement disorders.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO)
SAF2017-88076-R
Duration: 01/01/2018-31/12/2020

Alberch J, Soriano J. **Custom architecturally defined 3D stem cell derived functional human neural networks for transformative progress in neuroscience and medicine (MESO_BRAIN).**
Sponsored by: European commission. H2020
Duration: 01/01/2016 - 31/12/2019

Alberch J, Canals JM. **European Training Network for Cell-Based Regenerative Medicine (Training4CRM).**
Sponsored by: European commission. H2020
Duration: 01/01/2016-31/12/2020

Canals JM. **Red Temática de Investigación Cooperativa en Salud - Terapia Celular.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). RD16/0011/0012
Duration: 01/01/2017-31/12/2021

Canals JM, Sánchez-Guijo F. **Cell therapy for knee osteoarthritis. Comparison of treatments with autologous and allogenic mesenchymal stromal cells in a multicenter controlled randomized clinical trial (ARTROCELL).**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PIC18/00001
Duration: 01/01/2019-31/12/2021

Canals JM. **ASCTN-Training: Training on Advanced Stem Cell Technologies in Neurology.**
Sponsored by: European commission. H2020
Duration: 01/10/2018-30/09/2022

Gines S. **Interacción CB-Grp78: ¿Un nuevo mecanismo regulador de la actividad neuroprotectora de los cannabinoides?**
Sponsored by: Instituto de Salud Carlos III (ISCIII). CIBERNED
Duration: 01/01/2018-31/12/2020

Gines S. **Transmitophagy between astrocytes and neurons: A new step of neuroglia crosstalk in Huntington´s disease.**
Sponsored by: Ministerio de Ciencia, Innovación y Universidades (MCIU). RTI2018-094374-B-I00
Duration: 01/01/2019-31/12/2021

Pérez-Navarro E. **Alteraciones de la lámina nuclear y de la traducción proteica como nuevos mecanismos patogénicos en la enfermedad de Huntington.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO). SAF2016-0857-R
Duration: 30/12/2016-29/12/2019

DOCTORAL THESES

Alberch J, Masana M. **Deciphering neuronal network alterations of the basal ganglia circuit in Huntington's disease.**
PhD student: Sara Fernandez Garcia

Perez Navarro E. **Lamin B1 in the pathophysiology of Huntington's disease: from the brain to the periphery.**
PhD student: Marta Garcia Forn

4.2 Systems neuropharmacology

LOCATION
IIBB-CSIC labs

KEYWORDS
1. **Neuropsychopharmacology**
2. **Neurodegeneration**

RELATED DISEASES
1. **Depression**
2. **Schizophrenia**
3. **Parkinson's disease**

GROUP INVOLVED IN
CIBERSAM
AGAUR_SGR17: 00017

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**11**	**61,12**	**5,56**	**91%**	**18%**



GROUP LEADER
Francesc Artigas (IIBB-CSIC)
T. 93 363 83 15
francesc.artigas@iibb.csic.es

RESEARCHERS
Analía Bortolozzi (IIBB-CSIC)
Anna Castañé (IIBB-CSIC)

POST-DOCTORAL RESEARCHERS
Noemí Santana (CIBER)
Maurizio Riga (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
María Neus Fullana (IIBB-CSIC)
Elena López Terrones (IIBB-CSIC)
Lluís Miquel (IIBB-CSIC)
Mireia Tarrés (IIBB-CSIC)
Rubén Pavía (IDIBAPS)

TECHNICIANS
Leticia Campa (IIBB-CSIC)
Verónica Paz (CIBER)

ADMINISTRATIVE STAFF
María Jaramillo (CIBER)

VISITING SCIENTISTS
Sharon Manashirov
(Weizmann Institute of Scienceen, Israel)

PROBLEM

Depression and schizophrenia are very likely the two mental illnesses with the greatest socioeconomic and personal impact. Current treatments, based on the same pharmacological principles that first generation drugs are slow-acting and ineffective, which reduces the quality of life of patients and increases the risk of suicide among those who fail to respond.

Likewise, psychiatric and cognitive disturbances in Parkinson's disease lack appropriate treatment.

Hence, one of the great challenges of translational neuroscience in the 21st century is to understand the alterations of the neural circuits responsible for such diseases and design new therapies that are more efficient.

APPROACH

The group studies brain circuits and the neural elements involved in the pathophysiology and treatment of severe mental illnesses, and also analyses the psychiatric and cognitive aspects of Parkinson's disease.

To achieve this, the group uses a wide array of experimental strategies in animal models, including molecular, histological, electrophysiological, neurochemical and behavioural approaches , which makes it possible to obtain a detailed vision of how brain circuits function at different levels of complexity, facilitating the identification of new therapeutic targets.

IMPACT

Over the years, the group has emerged as an international reference in the field of neuropsychopharmacology, with a special mention being given to their studies on the role of serotonin receptors in the antidepressant action mechanism.

These studies have led to the development of new drugs by pharmaceutical companies. The group has also developed a new animal model to identify drugs with an antipsychotic effect, and its recent accomplishments include research in designing new translational therapeutic strategies based on RNA regulators to treat depression and Parkinson's disease.

RESEARCH LINES

- Mechanism of action of antidepressant and antipsychotic drugs: identification of new therapeutic targets and brain circuits involved.

- Neurobiological basis of fast-acting antidepressant strategies.

- Role of synucleins in the modulation of monoaminergic neurotransmission:

involvement in psychiatric and cognitive aspects of Parkinson's disease.

- Use of RNA interference (RNAi) as a translational strategy in the study of major depressive disorder.

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Originals / I.F.: 61.116

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2. Brito V., Giralt A., Masana M., Royes A., Espina M., Sieiro E., Alberch J., Castañé A., Girault J., Ginés S. **Cyclin-Dependent Kinase 5 Dysfunction Contributes to Depressive-like Behaviors in Huntington's Disease by Altering the DARPP-32 Phosphorylation Status in the Nucleus Accumbens.** *BIOLOGICAL PSYCHIATRY.* 86(3):196-207. I.F.: 11.501

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10. Barata L, Cabañas A, Lafuente H, Vargas C, Ceprián M, Campa L, Jiménez-Sánchez L, Pazos MR, Alvarez FJ, Martínez-Orgado J. **aEEG and neurologic exam findings correlate with hypoxic-ischemic brain damage severity in a piglet survival model.** *PEDIATRIC RESEARCH.* 85(4):539-545. I.F.: 2.880

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GRANTS FOR RESEARCH IN PROGRESS

Artigas F. **Grup de Recerca Consolidat, Neuroquímica i Neurofarmacologia.**
Sponsored by: Generalitat de Catalunya.
AGAUR_SGR17_00017
Duration: 01/01/2017-31/12/2020

Artigas F. **Alteraciones de la corteza infralímbica en depresión: mecanismo de acción de nuevas estrategias antidepresivas.**
Sponsoredby: Ministerio de Economía y Competitividad (MINECO).
SAF2015-68346-P
Duration: 01/01/2016-31/12/2019

Bortolozzi A. **Sinucleinopatías y oligonucleótidos inhibitorios: rol de alfa y gama sinucleínas en la regulación de la función cognitiva.**
Sponsored by: Ministerio de Economia y Competitividad (MINECO).
SAF2016_75797_R
Duration: 30/12/2016-29/12/2019

DOCTORAL THESES

Bortolozzi A, Artigas F. **Proteína alfa-sinucleína y modulación de los sistemas monoaminérgicos. Desde la función fisiológica a diana terapéutica utilizando ácidos nucleicos de interferencia.**
PhD student: Diana Alarcón Arís

Artigas F, Bortolozzi A. **Post-transcriptional modulation of glial glutamate transporters in mouse prefrontal cortex. Involvement of glutamatergic system in depression.**
PhD student: Mª Neus Fullana Llinàs

Castañé A, Artigas F. **Neurobiological mechanisms involved in the antidepressant and psychotomimetic effects of NMDA receptor antagonists: role of the GluN2C subunit.**
PhD student: Mireia Tarrés Gatius

4.3 Schizophrenia

LOCATION
HCB building

KEYWORDS
1. **Schizophrenia**
2. **First episode psychosis**
3. **Psychosis**

RELATED DISEASES
1. **Psychosis**

GROUP INVOLVED IN
AGAUR_SGR17: 01355, 01562
CIBERSAM

AWARDS
Award for professional career in psychiatry
Institution: Sociedad Española de Psiquiatría
Awardee/s: Miquel Bernardo

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**26**	**163,18**	**6,28**	**72%**	**41%**



GROUP LEADER
Miquel Bernardo (HCB)
T. 93 227 54 00 (Ext.: 3142)
bernardo@clinic.cat

RESEARCHERS
Miquel Bioque (HCB-UB)
Rosa Catalán (HCB-UB)
Clemente García Rizo (HCB-UB)
Patricia Gassó (UB)
Amalia Lafuente (UB)
Sergi Mas (UB)
Guillem Masana (HCB)
Eduard Parellada (HCB-UB)
Rafael Penadés (HCB-UB)
Mercè Torra (HCB-UB)

POST-DOCTORAL RESEARCHERS
Silvia Amoretti (FCRB)
Daniel Boloc (IDIBAPS)
Gisela Mezquida (UB-FCRB)
Natalia Rodríguez Ferret (UB)

NURSING STAFF
Ana Esmeralda Meseguer (CIBER)

ADMINISTRATIVE STAFF
Maria Alicia Durán (FCRB)

PROBLEM

The group considers schizophrenia as a complex, heterogeneous disorder resulting from the interaction between genetic variables and environmental variants with important social determinants.

As a disease, schizophrenia raises some health needs that are not covered from the patient care angle, and which the group is attempting to tackle from a clinical research position. The group does this by researching and generating scientific evidence on new, more valid and effective procedures and treatments, as the prognosis of this disease depends, largely, on early and effective intervention.

APPROACH

The group is developing longitudinal follow-up studies of initial psychotic episodes and defining the factors involved and the determinants of their evolution. This is a task that it carries out while analysing the clinical, neurocognitive, neurobiological, neuroimaging and environmental correlates that condition the therapeutic response and the risk of relapse.

It also puts into practice techniques and procedures to analyse genetic and neurobiological variants, especially related with inflammatory balance and oxidative stress, in order to look for biomarkers and predictive models that enable identification of new therapeutic targets.

IMPACT

The identification of biochemical, genetic, neuroimaging or neuropsychological biomarkers contributes to more effective and efficient treatment and rehabilitation. The group's research in the field of schizophrenia has allowed it to validate strategies that have been incorporated into clinical guides, improving prognoses and reducing burden.

In patient care in practice, reducing the period for the implementation of the proven results obtained in the research, as well as early intervention, have shown clear benefits that have enabled a reduction in the individual, family and social burden of the disease.

RESEARCH LINES

- First episodes and second schizophrenia episodes.

- Molecular neurobiology of schizophrenia.

- Neuropsychology.

- Phisical health.

- Animal model.

PUBLICATIONS

Originals / I.F.: 163.183

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18. Moreno C, Parellada M, MacDowell KS, García-Bueno B, Cabrera B, González-Pinto A, Saiz P, Lobo A, Rodriguez-Jimenez R, Berrocoso E, Bernardo M, Leza JC, From theFLAMM-PEPs study, Centro de Investigación Biomédica en Red de Salud Mental (CIBERSAM). **Differences in the regulation of inflammatory pathways in adolescent- and adult-onset first-episode psychosis.** *EUROPEAN CHILD AND ADOLESCENT PSYCHIATRY.* 28(10):1395-1405. I.F.: 3.740

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20. Garriga M, Mallorquí A, Serrano L, Ríos J, Salamero M, Parellada E, Gómez-Ramiro M, Oliveira C, Amoretti S, Vieta E, Bernardo M, García-Rizo C. **Food craving and consumption evolution in patients starting treatment with clozapine.** *PSYCHOPHARMACOLOGY.* 236(11):3317-3327. I.F.: 3.424

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Letters / I.F.: 6.849

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Editorial / I.F.: 8.781

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2. Bernardo M, Cabrera B, Arango C, Bioque M, Castro-Fornieles J, Cuesta MJ, Lafuente A, Parellada M, Saiz-Ruiz J, Vieta E. **One decade of the first episodes project (PEPs): Advancing towards a precision psychiatry.** *REVISTA DE PSIQUIATRIA Y SALUD MENTAL.* 12(3):135-140. I.F.: 2.927

3. Bernardo M, Martín-Carrasco M. **Conflict of interest in Psychiatry.** *REVISTA DE PSIQUIATRIA Y SALUD MENTAL.* 12(4):201-206. I.F.: 2.927

GRANTS FOR RESEARCH IN PROGRESS

Bernardo M. **Identificación y caracterización del valor predictivo de la reserva cognitiva en el curso evolutivo y respuesta en terapéutica en personas con un primer episodio psicótico.**
Sponsored by: Generalitat de Catalunya. PERIS_SLT006/17/00345
Duration: 17/02/2018-31/12/2020

Bernardo M. **Study of new noninvasive strategies for the analysis of antipsychotic drugs: achieving better clinical practices.**
Sponsoredby: Fundacio Clinic per a la Recerca Biomedica (FCRB). PonsBalmes16
Duration: 02/05/2016-31/12/2019

Bernardo M. **Estudio de aplicabilidad clínica de un modelo predictivo en recaídas en primeros episodios de esquizofrenia.**
Sponsoredby: Instituto de Salud Carlos III (ISCIII). PI14/00612
Duration: 01/01/2015-30/06/2019

Catalán R. **Diferencias de género en la respuesta a antipsicóticos: analizando el rol de la menopausia, los cambios epigenéticos en los receptores de estrógenos y los niveles de hormones sexuales.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/01029
Duration: 01/01/2017-31/12/2019

García-Rizo C. **Evolución metabólica e immune del tratamiento con clozapina: implicaciones terapéuticas.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI14/00753
Duration: 01/01/2015-30/06/2019

Lafuente A. **Mecanismos moleculares implicados en la Farmacogenética del síndrome metabólico inducido por antipsicóticos.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/01222
Duration: 01/01/2017-31/12/2020

Parellada E. **Cellular, molecular, genetic and cognitive-behavioural characterization of the antiapoptotic effect of clozapine and glutamate inhibitors in a postnatal ketamine animal model of schizophrenia.**
Sponsored by: Fundacio Clinic per a la Recerca Biomedica (FCRB). PonsBalmes18
Duration: 25/04/2018-25/04/2022

Parellada E. **Estudio convergente en modelo celular, animal y humano del efecto y mecanismos de acción de la clozapina e inhibidores de glutamato en los síntomas negativos-cognitivos de la esquizofrenia.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/01005
Duration: 01/01/2019-31/12/2021

Penades R. **Rehabilitación cognitiva en la esquizofrenia: variación genética en los genes BDNF (Val66Met) y COMT (Val158Met) como posible modulador de la respuesta al tratamiento.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00872
Duration: 01/01/2018-31/12/2020

Penades R. **Epigenetic regulation of bdnf expression according to response to cognitive remediation in schizophrenia.**
Sponsored by: Brain & Behavior Research Foundation. NARSAD16_IIG _002
Duration: 15/09/2016-14/03/2020

DOCTORAL THESES

Bernardo M, Cabrera B. **La reserva cognitiva en el trastorno mental grave.**
PhD student: Silvia Amoretti Guadall

Bernardo M, Mas S. **Single nucleotide polymorphism selection and pharmacogenetic prediction in antipsychotic-induced extrapyramidal effects.**
PhD student: Daniel Boloc

Garcia Rizo C. **Fetal programming, severe mental illness and metabolic related disturbances.**
PhD student: Marina Garriga Carrizosa

4.4 Child and adolescent psychiatry and psychology

LOCATION
HCB building

KEYWORDS
1. **Children**
2. **Adolescents**
3. **Psychopathology**
4. **Neuroimaging, genetics**
5. **Neuropsychology**

RELATED DISEASES
1. **Psychotic and affective disorders**
2. **Anoreixa and other eating disorders**
3. **Obsessive-compulsive disorder**
4. **Tourette syndrome**
5. **Autism spectrum disorder**

GROUP INVOLVED IN
CIBERSAM
AGAUR_SGR17: 00881

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**27**	**132,24**	**4,90**	**70%**	**44%**



GROUP LEADER
Josefina Castro (HCB)
T. 93 227 20 70
jcastro@clinic.cat

RESEARCHERS
Susana Andrés (HCB)
Inmaculada Baeza (HCB)
Luisa Lázaro (HCB)
Astrid Morer (HCB)
Soledad Romero (HCB)

POST-DOCTORAL RESEARCHERS
Ana Blázquez (HCB)
Rosa Calvo (HCB)
Elena de la Serna (CIBER)
Itziar Flamarique (HCB)
Ana Encarnación Ortiz (HCB)
Ana Pérez Vigil (HCB)
Olga Puig (HCB)
Mireia Rosa (IDIBAPS)
Pilar Santamarina (HCB)

PRE-DOCTORAL RESEARCHERS
Patricia Camprodon (FCRB)
Blanca Garcia Delgar (HCB)
Daniel Ilzarbe (HCB)
Iria Méndez (HCB)
Maria Teresa Plana (HCB)

PROBLEM

The presence of psychiatric and psychological disorders with varying degrees of severity is observed in approximately 15% of children and adolescents. This means that 15 out of every 100 minors experience psychiatric and psychological difficulties at a time of vital importance, when the psychological traits and functional bases of the future adult are in the process of being formed.
Studying the characteristics of disorders at these ages and their possible treatments is of primordial importance in early diagnosis and intervention in order to improve their prognosis.

APPROACH

The group investigates the most common psychiatric and psychological diseases among children and adolescents: disorders related to eating, depression, anxiety, emotional upsets, attention deficit and hyperactivity, autistic disorders, and psychotic disorders, among others.

The studies include children and adolescents with a very high risk of developing mental disorders. This enables the group to study disorders before they develop and above all, to detect their symptoms in advance and take preventive action.
The group's objectives also include the study of genetic bases and of clinical, cognitive, and neuroimaging characteristics.

IMPACT

In recent years the research group has made important progress in researching risk markers related to the development of psychotic disorders, in the characteristics and prognosis of minors with psychotic symptoms.

RESEARCH LINES

- Anorexia and other eating disorders.

- Autism spectrum disorders (ASD).

- Obsessive-compulsive disorder (OCD) and tourette syndrome.

- Psychotic and affective disorders in children and adolescents.

PUBLICATIONS

Originals / I.F.: 132.236

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Baur-Streubel R, Ziegler GC, Zierhut KC, Schrantee A, Høvik MF, Lundervold AJ, Kelly C, McCarthy H, Skokauskas N, O'Gorman Tuura RL, Calvo A, Lera-Miguel S, Nicolau R, Chantiluke KC, Christakou A, Vance A, Cercignani M, Gabel MC, Asherson P, Baumeister S, Brandeis D, Hohmann S, Bramati IE, Tovar-Moll F, Fallgatter AJ, Kardatzki B, Schwarz L, Anikin A, Baranov A, Gogberashvili T, Kapilushniy D, Solovieva A, El Marroun H, White T, Karkashadze G, Namazova-Baranova L, Ethofer T, Mattos P, Banaschewski T, Coghill D, Plessen KJ, Kuntsi J, Mehta MA, Paloyelis Y, Harrison NA, Bellgrove MA, Silk TJ, Cubillo AI, Rubia K, Lazaro L, Brem S, Walitza S, Frodl T, Zentis M, Castellanos FX, Yoncheva YN, Haavik J, Reneman L, Conzelmann A, Lesch KP, Pauli P, Reif A, Tamm L, Konrad K, Oberwelland Weiss E, Busatto GF, Louza MR, Durston S, Hoekstra PJ, Oosterlaan J, Stevens MC, Ramos-Quiroga JA, Vilarroya O, Fair DA, Nigg JT, Thompson PM, Buitelaar JK, Faraone SV, Shaw P, Tiemeier H, Bralten J, Franke B. **Brain Imaging of the Cortex in ADHD: A Coordinated Analysis of Large-Scale Clinical and Population-Based Samples.** *AMERICAN JOURNAL OF PSYCHIATRY.* 176(7):531-542. I.F.: 13.655

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8. González-Ortega I, González-Pinto A, Alberich S, Echeburuá E, Bernardo M, Cabrera B, Amoretti S, Lobo A, Arango C, Corripio I, Vieta E, De La Serna E, Rodriguez-Jimenez R, Segarra R, López-Ilundain JM, Sánchez-Torres AM, Cuesta MJ, Zorrilla I, López P, Bioque M, Mezquida G, Barcones F, De-La-Cámara C, Parellada M, Espliego A, Alonso-Solís A, Grasa EM, Varo C, Montejo L, Castro-Fornieles J, Baeza I, Dompablo M, Torio I, Zabala A, Eguiluz JI, Moreno-Izco L, Sanjuan J, Guirado R, Cáceres I, Garnier P. I**nfluence of social cognition as a mediator between cognitive reserve and psychosocial functioning in patients with first episode psychosis.** *PSYCHOLOGICAL MEDICINE.* 1-9. I.F.: 5.641

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Review / I.F.: 10.407

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Editorial / I.F.: 5.854

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2. Bernardo M, Cabrera B, Arango C, Bioque M, Castro-Fornieles J, Cuesta MJ, Lafuente A, Parellada M, Saiz-Ruiz J, Vieta E. **One decade of the first episodes project (PEPs): Advancing towards a precision psychiatry.** *REVISTA DE PSIQUIATRIA Y SALUD MENTAL.* 12(3):135-140. I.F.: 2.927

GRANTS FOR RESEARCH IN PROGRESS

Baeza I. **Estudio multicéntrico longitudinal sobre marcadores neurobiológicos de estrés en niños y adolescentes con síndrome de riesgo de psicosis y la transición a psicosis.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00444
Duration: 01/01/2016-30/06/2020

Baeza I. **Estudio longitudinal sobre marcadores nutricionales y de estrés en niños y adolescentes con síndrome de riesgo de psicosis y su capacidad predictiva de la transición a psicosis.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00242
Duration: 01/01/2019-31/12/2021

Calvo RM. **Autism Innovative Medicine Studies 2 Trials.**
Sponsored by: European Commission.
IMI2_10th_2stg
Duration: 01/06/2018-31/05/2023

Castro J. **Grup de recerca en Psiquiatria i Psicologia Infantil Clínic (GRUPPIC).**
Sponsored by: Generalitat de Catalunya.
AGAUR_SGR17_00881
Duration: 01/01/2017-31/12/2020

Castro J. **Detecció del risc per esquizofrènia mitjançant PGRS en nens i adolescents fills de pacients amb esquizofrènia o trastorn bipolar.**
Sponsoredby: Genderalitat de Catalunya.
PERIS_SLT006/17/00346
Duration: 17/02/2018-31/12/2020

Castro J. **Estudio de seguimiento a 8 años de la primera evaluación de niños y adolescents hijos de pacientes con esquizofrenia o trastorno bipolar.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00467
Duration: 01/01/2016-30/06/2020

Castro-Fornieles J. **Características comunes y diferenciales en hijos de pacientes con esquizofrenia diagnosticados de TDAH, hijos de padres sanos diagnosticados de TDAH y controles.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00696
Duration: 01/01/2019-31/12/2021

Castro J. **MATRICS: Multidisciplinary Approaches to Translational Research In Conduct Syndromes.**
Sponsored by: European Commission.
FP7_HEALTH_13
Duration: 01/03/2014-03/11/2019

Lázaro ML. **Caracterització mitjançant neuroimatge de predictors i mecanismes de resposta a la teràpia cognitiu-conductual en el trastorn obsessivocompulsiu.**
Sponsored by: Generalitat de Catalunya.
PERIS_SLT006/17/00249
Duration: 01/01/2017-31/12/2020

Lázaro ML. **Influencia de la genética y la epigenética en la eficacia del tratamiento del trastorno obsesivo-Compulsivo con terapia cognitivo-conductual o tratamiento farmacológico.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/01086
Duration: 01/01/2017- 31/12/2020

Méndez-Blanco I. **Autolesió no suïcida en adolescents i adults joves a Catalunya: prevalença, característiques i implicacions clíniques.**
Sponsored by: Generalitat de Catalunya.
PERIS_SLT006/17/00159
Duration: 17/02/2018-31/12/2020

Morer A. **1/7-Collaborative Genomics Studies of Tourette Disorder.**
Sponsored by: National Institutes of Health.
NIH_PAR-17-256
Duration: 15/06/2018-31/03/2023

Puig O. **Programa de entrenamiento cogitivo-conductual y en habilidades sociales en el trastorno psicótico de inicio precoz: eficacia en la mejora de los síntomas psicóticos, el funcionamiento psicosocial y en marcadores neurobiológicos de estrés.**
Sponsored by: Fundación Alicia Koplowitz. AKOPLOWITZ16_002
Duration: 28/10/2016-

Romero S. **Estudio multicéntrico del maltrato infantil en niños y adolescentes con trastornos psiquiátricos: Modificaciones epigenéticas y correlatos con marcadores periféricos de inmunidad innata.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00685
Duration: 01/01/2016-30/06/2020

DOCTORAL THESES

Lazaro ML, Mataix D. **Functional impairment in obsessive-compulsive disorder: educational attainment and labour market outcomes.**
PhD student: Ana Pérez Vigil

Lazaro ML, Mas S. **Estudi de la relació clínica i genètica entre pacients amb enorèxia nerviosa i pacients amb transtorn obsessiu-compulsiu d'inici en la infància i l'adolescència.**
PhD student: M.Teresa Plana Turro

4.5 Brain ischemia: clinical and experimental studies

LOCATION
CELLEX building, floor 3B

KEYWORDS
1. **Brain**
2. **Stroke**
3. **Cerebrovascular diseases**
4. **Neuroinflammation**
5. **Oxidative stress**

RELATED DISEASES
1. **Cerebrovascular diseases**
2. **Subarachnoid hemorrhage**
3. **Intraparenchymal hemorrhage**
4. **Ischemic stroke**
5. **Vascular cognitive impairment**
6. **Small vessel disease**

GROUP INVOLVED IN
RED INVICTUSPLUS
AGAUR_SGR17: 00645, 01704

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**20**	**113,33**	**5,67**	**80%**	**35%**



GROUP LEADER
Ángel Chamorro (HCB)
T. 93 227 54 00 (Ext.: 2118)
achamorro@clinic.cat

RESEARCHERS
Sergio Amaro (HCB-IDIBAPS)
Josep Juan González Sanchez (HCB)
Carles Justicia (IIBB-CSIC)
Valerie Petegnief (IIBB-CSIC)
Anna Planas (IIBB-CSIC)
Ramon Torné (HCB)
Xabier Urra (HCB-IDIBAPS)

POST-DOCTORAL RESEARCHERS
Laura Llull (HCB)
Francesc Antoni Miro Mur (FCRB)
Jordi Pedragosa (IIBB-CSIC)
Arturo Renú (HCB)
Salvatore Rudilosso (FCRB)
Ricard Valero (HCB)

PRE-DOCTORAL RESEARCHERS
Maria Arbaizar (IIBB-CSIC)
Laura Díaz Marugan (IDIBAPS)
Sara Figuerola (IIBB-CSIC)
Carlos Laredo (IDIBAPS)
Mattia Gallizioli (IIBB-CSIC)
Amaia Ochoa de Amezaga (IIBB-CSIC)
Yashu Zhao (IDIBAPS-UB)

TECHNICIANS
Leonardo Márquez (IIBB-CSIC)
Francisca Ruiz Jaen (IDIBAPS)

NURSING STAFF
Elisabet Gonzalez Ribelles (HCB)
Yolanda Gonzalez Romero (HCB-FCRB)

ADMINISTRATIVE STAFF
Martha Elena Vargas (HCB-FCRB)

COLLABORATORS
Víctor Obach (HCB)

PROBLEM

Strokes are caused by a sudden interruption of brain blood flow due to the obstruction or rupture of a cerebral artery. They represent the leading cause of permanent disability in adults, the second leading cause of mortality among people aged over 60, the leading cause of death among Spanish women and between 3% -7% of national health expenditure.

Despite the great progress in our ability to reopen obstructed arteries, we need to discover new strategies that protect poorly irrigated cells and allow us to minimise this serious health problem.

APPROACH

The group brings together clinical and basic researchers who plan a joint approach to learn about the problems of patients with cerebral blood disorders. It studies both in the laboratory and at the patient's bedside, the basic mechanisms involved and the strategies for obtaining a better diagnosis and treatment. Its interest focuses, in particular, on a more in-depth knowledge of the bi-directional relationship between the nervous system and the immune system, as well as on the search for new neuroprotective treatments.

IMPACT

The group's studies reveal the existence of a sophisticated interaction between an injured nervous system and the immune system that contributes to stroke outcome. Our results also show the great relevance of oxidative and nitrosative damage mechanisms.

The biology underlying the interplay between the nervous system and the immune system after acute brain damage will pave the way for designing immunomodulatory strategies to slow-down stroke progression and secondary complications. In addition, confirming the promising role of the antioxidant treatments identified by our group, may have very significant social health consequences.

RESEARCH LINES

- Blood-brain barrier disruption in cerebrovascular diseases.

- Brain-gut cross-talk in stroke: targeting gut barrier dysfunction and immune responses to improve stroke outcome.

- Inflammatory and immune responses to stroke.

- The chemical optimization of cerebral embolectomy.

- Therapeutic use of uric acid as peroxynitrite scavenger in acute ischemic stroke.

- Vascular changes with aging and in animal models of vascular dementia.

PUBLICATIONS

Originals / I.F.: 113.3255

1. Otxoa-de-Amezaga A., Miró-Mur F., Pedragosa J., Gallizioli M., Justicia C., Gaja-Capdevila N., Ruíz-Jaen F., Salas-Perdomo A., Bosch A., Calvo M., Márquez-Kisinousky L., Denes A., Gunzer M., Planas A. **Microglial cell loss after ischemic stroke favors brain neutrophil accumulation.** *ACTA NEUROPATHOLOGICA.* 137(2):321-341. I.F.: 18.174

2. Brait V., Miró-Mur F., Pérez-de-Puig I., Notario L., Hurtado B., Pedragosa J., Gallizioli M., Jiménez-Altayó F., Arbaizar-Rovirosa M., Otxoa-de-Amezaga A., Monteagudo J., Ferrer-Ferrer M., de la Rosa X., Bonfill-Teixidor E., Salas-Perdomo A., Hernández-Vidal A., Garcia-de-Frutos P., Lauzurica P., Planas A. **CD69 Plays a Beneficial Role in Ischemic Stroke by Dampening Endothelial Activation.** *CIRCULATION RESEARCH.* 124(2):279-291. I.F.: 15.862

3. Quarta A, Le Blon D, D'aes T, Pieters Z, Hamzei Taj S, Miró-Mur F, Luyckx E, Van Breedam E, Daans J, Goossens H, Dewilde S, Hens N, Pasque V, Planas A, Hoehn M, Berneman Z, Ponsaerts P. **Murine iPSC-derived microglia and macrophage cell culture models recapitulate distinct phenotypical and functional properties of classical and alternative neuro-immune polarisation.** *BRAIN BEHAVIOR AND IMMUNITY.* 82:406-421. I.F.: 6.170

4. Rudilosso S, Urra X, Amaro S, Llull L, Renú A, Laredo C, Obach V, Chamorro Á. **Timing and Relevance of Clinical Improvement After Mechanical Thrombectomy in Patients With Acute Ischemic Stroke.** *STROKE.* 50(6):1467-1472. I.F.: 6.046

5. Chamorro Á, Brown S, Amaro S, Hill MD, Muir KW, Dippel DWJ, van Zwam W, Butcher K, Ford GA, den Hertog HM, Mitchell PJ, Demchuk AM, Majoie CBLM, Bracard S, Sibon I, Jadhav AP, Lara-Rodriguez B, van der Lugt A, Osei E, Renú A, Richard S, Rodriguez-Luna D, Donnan GA, Dixit A, Almekhlafi M, Deltour S, Epstein J, Guillon B, Bakchine S, Gomis M, du Mesnil de Rochemont R, Lopes D, Reddy V, Rudel G, Roos YBWEM, Bonafe A, Diener HC, Berkhemer OA, Cloud GC, Davis SM, van Oostenbrugge R, Guillemin F, Goyal M, Campbell BCV, Menon BK, HERMES Collaborators. **Glucose Modifies the Effect of Endovascular Thrombectomy in Patients With Acute Stroke.** *STROKE: A JOURNAL OF CEREBRAL CIRCULATION.* 50(3):690-696. I.F.: 6.046

6. Otxoa-de-Amezaga A, Gallizioli M, Pedragosa J, Justicia C, Miró-Mur F, Salas-Perdomo A, Díaz-Marugan L, Gunzer M, Planas AM. **Location of Neutrophils in Different Compartments of the Damaged Mouse Brain After Severe Ischemia/Reperfusion**. *STROKE.* 50(6):1548-1557. I.F.: 6.046

7. Rudilosso S, Laredo C, Mancosu M, Moya-Planas N, Zhao Y, Chirife O, Chamorro Á, Urra X. **Cerebral perfusion and compensatory blood supply in patients with recent small subcortical infarcts.** *JOURNAL OF CEREBRAL BLOOD FLOW AND METABOLISM.* 39(7):1326-1335. I.F.: 6.040

8. Vila E, Solé M, Masip N, Puertas-Umbert L, Amaro S, Dantas AP, Unzeta M, D'Ocon P, Planas AM, Chamorro Á, Jiménez-Altayó F . **Uric acid treatment after stroke modulates the Krüppel-like factor 2-VEGF-A axis to protect brain endothelial cell functions: impact of hypertension.** *BIOCHEMICAL PHARMACOLOGY.* 164:115-128. I.F.: 4.825

9. Abilleira S., Pérez de la Ossa N., Jiménez X., Cardona P., Cocho D., Purroy F., Serena J., Román L.S., Urra X., Vilaró M., Cortés J., González J.A., Chamorro Á., Gallofré M., Jovin T., Molina C., Cobo E., Dávalos A., Ribó M. **Transfer to the Local Stroke Center versus Direct Transfer to Endovascular Center of Acute Stroke Patients with Suspected Large Vessel Occlusion in the Catalan Territory (RACECAT): Study protocol of a cluster randomized within a cohort trial.** *INTERNATIONAL JOURNAL OF STROKE.* 14(7):734-744. I.F.: 4.466

10. Requena M., Olivé-Gadea M., Boned S., Ramos A., Cardona P., Urra X., Serena J., Silva Y., Purroy F., Ustrell X., Abilleira S., Tomasello A., Perez de la Ossa N., Molina C.A., Ribo M., Rubiera M. **Clinical and neuroimaging criteria to improve the workflow in transfers for endovascular treatment evaluation.** *INTERNATIONAL JOURNAL OF STROKE.* 1747493019874725. I.F.: 4.466

11. Renu, Arturo; Blasco, Jordi; Millan, Monica; Marti-Fabregas, Joan; Cardona, Pere; Oleaga, Laura; Macho, Juan; Molina, Carlos; Roquer, Jaume; Amaro, Sergio; Davalos, Antonio; Zarco, Federico; Laredo, Carlos; Tomasello, Alejandro; Guimaraens, Leopoldo; Barranco, Roger; Castano, Carlos; Vivas, Elio; Ramos, Anna; Lopez-Rueda, Antonio; Urra, Xabier; Muchada, Marian; Cuadrado-Godia, Elisa; Camps-Renom, Pol; Roman, Luis S.; Rios, Jose; Leira, Enrique C.; Jovin, Tudor; Torres, Ferran; Chamorro, Angel; CHOICE Investigators. **The Chemical Optimization of Cerebral Embolectomy trial: Study protocol.** *INTERNATIONAL JOURNAL OF STROKE.* 1747493019895656. I.F.: 4.466

12. Royl G, Fokou TJ, Chunder R, Isa R, Münte TF, Wandinger KP, Schwaninger M, Herrmann O, Valdueza JM, Brocke J, Willkomm M, Willemsen D, Auffarth GU, Mindorf S, Brix B, Chamorro A, Planas A, Urra X. **Antibodies against neural antigens in patients with acute stroke: joint results of three independent cohort studies.** *JOURNAL OF NEUROLOGY.* 266(11):2772-2779. I.F.: 4.204

13. Salas-Perdomo A., Miró-Mur F., Gallizioli M., Brait V.H., Justicia C., Meissner A., Urra X., Chamorro A., Planas A.M. **Role of the S1P pathway and inhibition by fingolimod in preventing hemorrhagic transformation after stroke.** *SCIENTIFIC REPORTS.* 9(1):8309. I.F.: 4.011

14. Carrera D, Gorchs M, Querol M, Abilleira S, Ribó M, Millán M, Ramos A, Cardona P, Urra X, Rodríguez-Campello A, Prats-Sánchez L,

Purroy F, Serena J, Cánovas D, Zaragoza-Brunet J, Krupinski JA, Ustrell X, Saura J, García S, Mora MÀ, Jiménez X, Dávalos A, Pérez de la Ossa N, Catalan Stroke Code and Reperfusion Consortium (Cat-SCR). **Revalidation of the RACE scale after its regional implementation in Catalonia: a triage tool for large vessel occlusion.** *JOURNAL OF NEUROINTERVENTIONAL SURGERY.* 11(8):751-756. I.F.: 3.925

15. Renú A, Laredo C, Montejo C, Zhao Y, Rudilosso S, Macias N, Llull L, Zarco F, Amaro S, Werner M, Obach V, Macho J, Chamorro A, Urra X. **Greater infarct growth limiting effect of mechanical thrombectomy in stroke patients with poor collaterals.** *JOURNAL OF NEUROINTERVENTIONAL SURGERY.* 11(10):989-993. I.F.: 3.925

16. Dragojević T, Rosas E, Hollmann J, Culver J, Justicia C, Durduran T. **High-density speckle contrast optical tomography of cerebral blood flow response to functional stimuli in the rodent brain.** *NEUROPHOTONICS.* 6(4):045001. I.F.: 3.581

17. Bioque M, Mac-Dowell KS, Meseguer A, Macau E, Valero R, Vieta E, Leza JC, Bernardo M. **Effects of electroconvulsive therapy in the systemic inflammatory balance of patients with severe mental disorder.** *PSYCHIATRY AND CLINICAL NEUROSCIENCES.* 73(10):628-635. I.F.: 3.489

18. Rudilosso S, Laredo C, Vivancos C, Urra X, Llull L, Renú A, Obach V, Zhao Y, Moreno JL, Lopez-Rueda A, Amaro S, Chamorro Á. **Leukoaraiosis May Confound the Interpretation of CT Perfusion in Patients Treated with Mechanical Thrombectomy for Acute Ischemic Stroke.** *AMERICAN JOURNAL OF NEURORADIOLOGY.* 40(8):1323-1329. I.F.: 3.256

19. Amaro S, Renú A, Laredo C, Castellanos M, Arenillas JF, Llull L, Rudilloso S, Urra X, Obach V, Chamorro Á, on behalf of the URICO-ICTUS investigators. **Relevance of Collaterals for the Success of Neuroprotective Therapies in Acute Ischemic Stroke: Insights from the Randomized URICO-ICTUS Trial.** *CEREBROVASCULAR DISEASES.* 47(3-4):171-177. I.F.: 2.681

20. Vaughan Sarrazin M., Limaye K., Samaniego E.A., Al Kasab S., Sheharyar A., Dandapat S., Guerrero W.R., Hasan D.M., Ortega-Gutierrez S., Derdeyn C.P., Torner J.C., Chamorro A., Leira E.C. **Disparities in Inter-hospital Helicopter Transportation for Hispanics by Geographic Region: A Threat to Fairness in the Era of Thrombectomy.** *JOURNAL OF STROKE AND CEREBROVASCULAR DISEASES.* 28(3):550-556. I.F.: 1.646

Letters / I.F.: 21.68

1. Semerano A, Sarto J, Urra X. **Letter by Semerano et al Regarding Article, higher Incidence of Ischemic Stroke in Patients Taking Novel Oral Anticoagulants.** *STROKE.* 50(6):E153-E153. I.F.: 6.046

2. Urra X., Amaro S. **Letter by Urra and Amaro Regarding Article, HbA1c (Glycated Hemoglobin) Levels and Clinical Outcome Post-Mechanical Thrombectomy in Patients With Large Vessel Occlusion.** *STROKE.* 50(10):e311-E311. I.F.: 6.046

3. Renú A, Laredo C, Amaro S. **Letter by Renú et al Regarding Article, "Frequency of Blood-Brain Barrier Disruption Postendovascular Therapy and Multiple Thrombectomy Passes in acute ischemic stroke Patients.** *STROKE.* 50(10):e311. I.F.: 6.046

4. Maldonado, Felipe Fabregas, Neus Ortega, Roger Carrero, Enrique Valero, Ricard. Placement in the prone position predisposes patients to a near volume-response state. **A plethysmographic comparison of two prone positions using the Pleth Variability index.** *JOURNAL OF CLINICAL ANESTHESIA.* 58:79-80. I.F.: 3.542

Editorial / I.F.: 8.689

1. Chamorro A, Mir P. **Raising serum urate levels in Parkinson disease: A strategy only for women?** *NEUROLOGY.* 93(14):611-612. I.F.: 8.689

Consortium Publications / I.F.: 36.34

1. Campbell BCV, Majoie CBLM, Albers GW, Menon BK, Yassi N, Sharma G, van Zwam WH, van Oostenbrugge RJ, Demchuk AM, Guillemin F, White P, Dávalos A, van der Lugt A, Butcher KS, Cherifi A, Marquering HA, Cloud G, Macho Fernández JM, Madigan J, Oppenheim C, Donnan GA, Roos YBWEM, Shankar J, Lingsma H, Bonafé A, Raoult H, Hernández-Pérez M, Bharatha A, Jahan R, Jansen O, Richard S, Levy EI, Berkhemer OA, Soudant M, Aja L, Davis SM, Krings T, Tisserand M, San Román L, Tomasello A, Beumer D, Brown S, Liebeskind DS, Bracard S, Muir KW, Dippel DWJ, Goyal M, Saver JL, Jovin TG, Hill MD, Mitchell PJ, HERMES collaborators. **Penumbral imaging and functional outcome in patients with anterior circulation ischaemic stroke treated with endovascular thrombectomy versus medical therapy: a meta-analysis of individual patient-level data.** *LANCET NEUROLOGY, THE.* 18(1):46-55. I.F.: 28.755

2. Liebeskind, David S.; Bracard, Serge; Guillemin, Francis; Jahan, Reza; Jovin, Tudor G.; Majoie, Charles B. L. M.; Mitchell, Peter J.; van der Lugt, Aad; Menon, Bijoy K.; San Roman, Luis; Campbell, Bruce C. V.; Muir, Keith W.; Hill, Michael D.; Dippel, Diederik W. J.; Saver, Jeffrey L.; Demchuk, Andrew M.; Davalos, Antoni; White, Philip; Brown, Scott; Goyal, Mayank; HERMES Collaborators. **eTICI reperfusion: defining success in endovascular stroke therapy.** *JOURNAL OF NEUROINTERVENTIONAL SURGERY.* 11(5):433-438. I.F.: 3.925

3. Pérez-Alvarez R., Brito-Zerón P., Kostov B., Feijoo-Massó C., Fraile G., Gómez-de-la-Torre R., De-Escalante B., López-Dupla M., Alguacil A., Chara-Cervantes J., Pérez-Conesa M., Rascón J., Garcia-Morillo J.S., Perez-Guerrero P., Fonseca-Aizpuru E., Akasbi M., Bonet M., Callejas J.L., Pallarés L., Ramos-Casals M., De-la-Red G., Calvo E., Soler C., Peral-Gutiérrez E., Gómez-Cerezo J.F., Cruz-Caparrós G., Rodríguez-Fernández S., Pinilla B., Gato A., Chamorro A.J., Morcillo C., Robles A., Ojeda I., Vives M.J., de Miguel-Campo B., Penadés M., De-Vicente M., Bosch X., Pérez-de-Lis M., González-García A., Pérez-Alvarez R., Brito-Zerón P., Kostov B., Feijoo-Massó C., Fraile G., Gómez-de-la-Torre R. **Systemic phenotype of sarcoidosis associated with radiological stages. Analysis of 1230 patients.** *EUROPEAN JOURNAL OF INTERNAL MEDICINE.* 69:77-85. I.F.: 3.660

GRANTS FOR RESEARCH IN PROGRESS

Amaro S, Justicias C. **Blood brain barrier disruption after subarachnoid hemorrhage: clinical relevance, role of hyperglycemia and effect of potentiating**

endogenous antioxidant mechanisms. A translation study.
Sponsored by: Fundació la Marató de TV3.
TV3_Ictus_17
Duration: 10/07/2018-09/07/2021

Amaro S. **Daño de la pared arterial en el ictus isquémico agudo: detección con RM avanzada, mecanismos subyacentes y valor pronóstico.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00711
Duration: 01/01/2017-31/12/2020

Chamorro A. **The Chemical Optimization of Cerebral Embolectomy (CHOICE) Trial.**
Sponsored by: Fundació la Marató de TV3.
TV3_Ictus_17
Duration: 11/04/2018-10/04/2021

Chamorro A. **Respuesta inmune y estrés oxidativa en la hemorragia cerebral.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00430
Duration: 01/01/2016-18/03/2020

Chamorro A. **Redes Temáticas de Investigación Cooperativa en Salud (RETICS) del Instituto de Salud Carlos III. Red de Enfermedades Vasculares Cerebrales: Red INVICTUSplus.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). RD16/0019/0014
Duration: 01/01/2017-31/12/2021

Chamorro A. **Ácido úrico encapsulado en liposomas como neuroprotector en ictus isquémico.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). DTS18/00010
Duration: 01/01/2019-31/12/2020

Chamorro A. **Mecanismos implicados en el fenómeno de no reflujo en el ictus isquémico agudo: Una aproximación traslacional para mejorar la eficacia de la trombectomía mecánica.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00444
Duration: 01/01/2019-31/12/2021

Chamorro A. **CREST2. Carotid Revascularization and Medical Management for Asymptomatic Carotid Stenosis Trial.**
Sponsored by: National Institutes of Health.
NIH_PAR-11-173
Duration: 01/03/2018-28/02/2021

Justicias C. **Cambios vasculares durante el envejecimiento y en modelos animales de demencia de origen vascular.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
DPI2015-64358-C2-2-R
Duration: 01/01/2016-31/12/2020

Llull L. **Impact of time to achieve blood pressure control on hematoma expansion in patients with acute intracerebral hemorrhage.**
Sponsored by: Fundació la Marató de TV3.
TV3_Ictus_17
Duration: 27/03/2018-26/03/2021

Planas AM, Urra X. **Brain-gut cross-talk in stroke: targeting gut barrier dysfunction and immune responses to improve stroke outcome.**
Sponsored by: Fundació la Marató de TV3.
TV3_Ictus_17
Duration: 10/07/2018-09/07/2021

Planas AM. **Grup d'Investigació Cerebrovascular (GICV).**
Sponsored by: Generalitat de Catalunya.
AGAUR_SGR17_00645
Duration: 01/01/2017-31/12/2020

Planas AM. **Leukocytes and microglia in stroke: role in neuroinflammation and thromboinflammation.**
Sponsored by Ministerio de Economía y Competitividad (MINECO).
SAF2017-87459-R
Duration: 01/01/2018- 31/12/2020

Planas AM. **Endothelial Macrophage Alliance in Neuroinflammation (ENTRAIN).**
Sponsored by: European commission.
H2020_813294
Duration: 01/05/2019-30/04/2023

DOCTORAL THESES

Chamorro A, Urra X. **Estudio de las características hemodinámicas de los infartos lacunares con técnicas de neuroimagen de perfusión cerebral.**
PhD student: Salvatore Rudilosso

Miró F, Planas AM. **Els macròfags perivasculars i la infiltració leucocitària en la isquèmia cerebral.**
PhD student: Jordi Pedragosa Ollé

Planas AM, Miró F. **Estudio de la lesión por reperfusión en la isquemia cerebral experimental y su tratamiento.**
PhD student: Angelica Maria Salas Perdomo

4.6 Theoretical neurobiology of cortical circuits

LOCATION
CEK building, floor -1

KEYWORDS
1. **Working memory**
2. **Prefrontal cortex**
3. **Neural network**
4. **NMDA receptor**
5. **Sleep**

RELATED DISEASES
1. **Autoimmune encephalitis**
2. **Schizophrenia**
3. **Depression**

GROUP INVOLVED IN
AGAUR_SGR17: 01565

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**2**	**15,10**	**7,55**	**100%**	**100%**



GROUP LEADER
Albert Compte (IDIBAPS)
T. 93 227 54 00 (Ext.: 4151)
acompte@clinic.cat

POST-DOCTORAL RESEARCHERS
Daniel Linares (CIBER)
Diego Lozano (CIBER)
Manuel Molano (IDIBAPS)
Joao Moura (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
David Sánchez Bestué (IDIBAPS)
Heike Stein (IDIBAPS)

TECHNICIANS
Alba Morató (IDIBAPS)
Laia Prades (IDIBAPS)

COLLABORATORS
María Alejandra Tangarife (IDIBAPS)

PROBLEM

Many neurological and psychiatric disorders that affect the activity of the brain eventually end up causing alterations in the cognitive functions of the prefrontal cortex. These alterations are subtle and difficult to treat but can have extremely incapacitating effects on normal life.

Of all the cognitive functions affected, short-term memory (or working memory) is one of the most interesting to study, and requires understanding of the neural circuits in order to try and improve patient well-being.

APPROACH

The group studies cognitive function in patients with autoimmune encephalitis and in patients with schizophrenia based on computer-based behavioural testing, EEG recordings and fMRI.

These tests on humans are combined with the analysis of electrophysiological data recorded in the cerebral cortex of animals while they perform working memory tasks. The ultimate objective is to formulate silicon computational models that link neural activity with the human cognitive function and serve as a mechanistic model with the predictive power to understand brain diseases.

IMPACT

The group has made important contributions to defining a spatial mechanistic working-memory model based on computational simulations. They have validated this model with electrophysiological and behavioural data in non-human primates and demonstrated the way in which the model makes behavioural predictions for validation in behavioural experiments in humans.

In experiments with patients, highly specific alterations were detected in spatial working-memory behavioural parameters that could be useful in diagnosing or monitoring these diseases.

RESEARCH LINES

- Network mechanisms of working memory in the prefrontal cortex.

- The NMDAR hypothesis of schizophrenia.

- The role of NMDARs in slow-wave sleep.

- The role of NMDARs in working memory.

PUBLICATIONS

Originals / I.F.: 15.102

1. Zhang X, Yan W, Wang W, Fan H, Hou R, Chen Y, Chen Z, Ge C, Duan S, Compte A, Li CT. **Active information maintenance in working memory by a sensory cortex.** *ELIFE.* 8:e43191. I.F.: 7.551

2. Linares, Daniel Aguilar-Lleyda, David Lopez-Moliner, Joan. **Decoupling sensory from decisional choice biases in perceptual decision making.** *ELIFE.* 8:e43994. I.F.: 7.551

GRANTS FOR RESEARCH IN PROGRESS

Compte A. **Dynamics in neuronal networks.**
Sponsored by: Generalitat de Catalunya.
AGAUR_SGR17_01565
Duration: 01/01/2017-31/12/2020

Compte A. **Alteraciones cognitivas en pacientes adolescentes con encefalitis anti-NMDAR: posible disfunción en la percepción de la continuidad temporal y sus mecanismos.**
Sponsored by: Fundacion Alicia Koplowitz.
16_001
Duration: 28/10/2016-

Compte A. **Immune-mediated diseases of the synapse: symptoms, brain networks, and the link to human memory.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PIE16/00014
Duration: 01/01/2017-12/31/2019

Compte A. **Mecanismos de la red prefrontal en la dinámica de la memoria de trabajo: de la neuromodulación por dopamina a la disfunción de red en encefalitis anti-NMDAR.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
BFU2015-65318-R
Duration: 01/01/2016-31/12/2019

Compte A. **Mecanismos sinápticos y de red de interferencias en memoria de trabajo.**
Sponsored by: Ministerio de Ciencia Innovación y Universidades (MCIU).
RTI2018-094190-B-I00
Duration: 01/01/2019-31/12/2021

Compte A. **Neural mechanisms underlying unconscious working memory.**
Sponsored by: Fundação BIAL. BIAL_18
Duration: 01/05/2019-30/04/2021

DOCTORAL THESES

Compte A. **Neural Network Mechanisms of working memory interference.**
PhD student: João M. Barbosa

4.7 Pathogenesis of autoimmune neuronal disorders

LOCATION
CELLEX building, floor 3A

KEYWORDS
1. **Autoantibodies**
2. **Encephalitis**
3. **Autoimmunity**
4. **Paraneoplastic**
5. **Multiple Sclerosis**

RELATED DISEASES
1. **Autoimmune encephalitis**
2. **Paraneoplastic neurologic disorders**
3. **Multiple sclerosis and related demyelinating diseases**

GROUP INVOLVED IN
CIBERER
AGAUR_SGR17: 00266
REEM

AWARDS

The Lilly Prize for Biomedical Research
Institution: The Lilly Foundation, Madrid, Spain
Awardee/s: Josep Dalmau

"Award for Clinical Science Research"
Institution: American Epilepsy Society
Awardee/s: Josep Dalmau

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**24**	**212,74**	**8,86**	**65%**	**39%**



GROUP LEADER
Josep Dalmau (ICREA-IDIBAPS)
T. 93 227 17 38
jdalmau@clinic.cat

EMERITUS
Francesc Graus (IDIBAPS)

RESEARCHERS
Pedro Luis Gambús (HCB)
Thais Armangué (IDIBAPS)
Eugenia Maria Martinez Hernandez (HCB-IDIBAPS)
Lidia Sabater (FCRB)
Albert Saiz (HCB)

POST-DOCTORAL RESEARCHERS
Magi Andorra (IDIBAPS)
Helena Ariño (IDIBAPS)
Pablo Jercog (IDIBAPS)
Francesco Mannara (IDIBAPS)
Maria del Mar Petit (IDIBAPS)
Jesus Planaguma (FCRB)
Marija Radosevic (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Anna Garcia Serra (IDIBAPS)
Mar Guasp (HCB)
Jon Landa (FCRB)
Estibaliz Maudes (IDIBAPS)
Marta Muñoz Batista (IDIBAPS)
Amaia Muñoz Lopetegui (HCB)
Nuria Sola Valls (IDIBAPS)
Amirpasha Zamani (IDIBAPS)

TECHNICIANS
Esther Aguilar (IDIBAPS)
Salut Albà (IDIBAPS)
Mercedes Alba (FCRB)
Eva Maria Caballero (FCRB)
Maria Araceli Mellado (IDIBAPS)
Paula Peixoto (IDIBAPS)

ADMINISTRATIVE STAFF
Maria Rodes (IDIBAPS)

COLLABORATORS
Domingo Escudero (HCB)
Myrna Rosenfeld (IDIBAPS)

VISITING SCIENTISTS
Bastien Joubert (Universitat de Lyon)
Gemma Olivé (Hospital General de Granollers)

PROBLEM

The group is interested in identifying the causes of acquired brain diseases of unknown origin, especially autoimmune brain diseases, describing their symptoms, developing diagnostic tests, and identifying better treatments.

APPROACH

The group aims to discover the mechanisms of these diseases and uses neuron cultures and animal models to that end. It studies how autoimmunity alters the structure and function of the neurons and brain circuits to cause changes in behaviour or memory, or other neurological symptoms.

It identifies patients through national and international consultations, obtains information and biological samples (generally blood or cerebrospinal fluid) from these patients and applies different study techniques: antibody screening with immune staining using brain tissue, immunocytochemistry with cell preparations and brain receptor expression techniques in cell assays.

The group also carries out other studies that include immunoprecipitation and sequencing of neuronal proteins, determination of the effects of antibodies at the synaptic and brain-circuit level, and effects on animal behaviour.

IMPACT

The impact has been considerable. The group has discovered 11 diseases, developed diagnostic guidelines for autoimmune brain disease, modified diagnostic and treatment paradigms in neurology and psychiatry, and created diagnostic tests.

It has discovered the basic mechanisms of these diseases and produced animal models. It has written chapters on the diseases in the most important books on internal medicine

(Harrison), paediatrics (Nelson), neurology (Daroff) and oncology (Abeloff). Two members of the group appear on the Clarivate list as highly cited authors in neuroscience and behaviour.

RESEARCH LINES

Syndromes and mechanisms of paraneoplastic and autoimmune encephalitis

Our research is focused in the discovery of autoimmune neurologic diseases, mainly those mediated by antibodies against neuronal cell surface proteins or synaptic receptors. These disorders can be triggered by tumors, infections, or genetic factors. The range of studies includes bedside characterization of syndromes and diseases; identification of novel antibodies and target autoantigens; and determination of the mechanisms of disease at the behavioral, synaptic, and neuronal circuitry levels. For this, we use a wide variety of molecular and electrophysiological techniques in cultured neurons and animal models.
Using these strategies and technical approaches, my group has discovered, over the last 12 years, 11 autoimmune encephalitis including among other, anti-NMDA receptor encephalitis. These findings have led to guidelines on the differential diagnosis and treatment of autoimmune encephalitis, and new concepts on how autoimmunity can affect synaptic function, memory and behavior.

PUBLICATIONS

Originals / I.F.: 212.736

1. Yamamura T., Kleiter I., Fujihara K., Palace J., Greenberg B., Zakrzewska-Pniewska B., Patti F., Tsai C., Saiz A., Yamazaki H., Kawata Y., Wright P., De Seze J. **Trial of satralizumab in neuromyelitis optica spectrum disorder.** *NEW ENGLAND JOURNAL OF MEDICINE.* 381(22):2114-2124. I.F.: 70.670

2. Janin M., Ortiz-Barahona V., de Moura M.C., Martínez-Cardús A., Llinàs-Arias P., Soler M., Nachmani D., Pelletier J., Schumann U., Calleja-Cervantes M.E., Moran S., Guil S., Bueno-Costa A., Piñeyro D., Perez-Salvia M., Rosselló-Tortella M., Piqué L., Bech-Serra J.J., De La Torre C., Vidal A., Martínez-Iniesta M., Martín-Tejera J.F., Villanueva A., Arias A., Cuartas I., Aransay A.M., La Madrid A.M., Carcaboso A.M., Santa-Maria V., Mora J., Fernandez A.F., Fraga M.F., Aldecoa I., Pedrosa L., Graus F., Vidal N., Martínez-Soler F., Tortosa A., Carrato C., Balañá C., Janin M., Ortiz-Barahona V., de Moura M.C., Martínez-Cardús A., Llinàs-Arias P., Soler M., Nachmani D., Pelletier J., Schumann U., Calleja-Cervantes M.E., Moran S., Guil S., Bueno-Costa A., Piñeyro D., Perez-Salvia M., Rosselló-Tortella M. **Epigenetic loss of RNA-methyltransferase NSUN5 in glioma targets ribosomes to drive a stress adaptive translational program.** *ACTA* NEUROPATHOLOGICA. 138(6):1053-1074. I.F.: 18.174

3. Pascual-García M., Bonfill-Teixidor E., Planas-Rigol E., Rubio-Perez C., Iurlaro R., Arias A., Cuartas I., Sala-Hojman A., Escudero L., Martínez-Ricarte F., Huber-Ruano I., Nuciforo P., Pedrosa L., Marques C., Braña I., Garralda E., Vieito M., Squatrito M., Pineda E., Graus F., Espejo C., Sahuquillo J., Tabernero J., Seoane J. **LIF regulates CXCL9 in tumor-associated macrophages and prevents CD8+ T cell tumor-infiltration impairing anti-PD1 therapy.** *NATURE COMMUNICATIONS.* 10(1):2416. I.F.: 11.878

4. Cayuela N, Jaramillo-Jiménez E, Càmara E, Majós C, Vidal N, Lucas A, Gil-Gil M, Graus F, Bruna J, Simó M. **Cognitive and brain structural changes in long-term oligodendroglial tumor survivors.** *NEURO-ONCOLOGY.* 21(11):1470-1479. I.F.: 10.091

5. Zubizarreta I, Flórez-Grau G, Vila G, Cabezón R, España C, Andorra M, Saiz A, Llufriu S, Sepulveda M, Sola-Valls N, Martinez-Lapiscina EH, Pulido-Valdeolivas I, Casanova B, Martinez Gines M, Tellez N, Oreja-Guevara C, Español M, Trias E, Cid J, Juan M, Lozano M, Blanco Y, Steinman L, Benitez-Ribas D, Villoslada P. **Immune tolerance in multiple sclerosis and neuromyelitis optica with peptide-loaded tolerogenic dendritic cells in a phase 1b trial.** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA.* 116(17):8463-8470. I.F.: 9.580

6. Balu R, McCracken L, Lancaster E, Graus F, Dalmau J, Titulaer MJ. **A score that predicts 1-year functional status in patients with anti-NMDA receptor encephalitis.** *NEUROLOGY.* 92(3):e244-e252. I.F.: 8.689

7. Sepulveda M, Delgado-García G, Blanco Y, Sola-Valls N, Martinez-Lapiscina EH, Armangué T, Montejo C, Pulido-Valdeolivas I, Martinez-Hernandez E, Ariño H, Escudero D, Ruiz-García R, Llufriu S, Dalmau J, Graus F, Saiz A. **Late-onset neuromyelitis optica spectrum disorder: The importance of autoantibody serostatus.** *NEUROLOGY-NEUROIMMUNOLOGY & NEUROINFLAMMATION.* 6:6. I.F.: 7.353

8. Gaig C, Ercilla G, Daura X, Ezquerra M, Fernández-Santiago R, Palou E, Sabater L, Höftberger R, Heidbreder A, Högl B, Iranzo A, Santamaria J, Dalmau J, Graus F. **HLA and microtubule-associated protein tau H1 haplotype associations in anti-IgLON5 disease.** *NEUROLOGY-NEUROIMMUNOLOGY & NEUROINFLAMMATION.* 6(6):e605. I.F.: 7.353

9. Linnoila J, Pulli B, Armangué T, Planagumà J, Narsimhan R, Schob S, Zeller MWG, Dalmau J, Chen J. **Mouse model of anti-NMDA receptor post-herpes simplex encephalitis.** *NEUROLOGY-NEUROIMMUNOLOGY & NEUROINFLAMMATION.* 6(2):e529. I.F.: 7.353

10. Patterson K, Iglesias E, Nasrallah M, González-Álvarez V, Suñol M, Anton J, Saiz A, Lancaster E, Armangue T. **Anti-MOG encephalitis mimicking small vessel CNS vasculitis.** *NEUROLOGY-NEUROIMMUNOLOGY & NEUROINFLAMMATION.* 6(2):e538. I.F.: 7.353

11. Carrera-García L, Natera-de Benito D, Lleixà C, Ortez C, Colomer J, Nascimento A, Saiz A, Dalmau J, Querol L, Armangué T. **Chronic inflammatory demyelinating polyneuropathy associated with contactin-1 antibodies in a child.** *NEUROLOGY-NEUROIMMUNOLOGY & NEUROINFLAMMATION.* 6(5). I.F.: 7.353

12. Cobo-Calvo A, Sepúlveda M, Rollot F, Armangué T, Ruiz A, Maillart E, Papeix C, Audoin B, Zephir H, Biotti D, Ciron J, Durand-Dubief F, Collongues N, Ayrignac X, Labauge P, Thouvenot E, Bourre B, Montcuquet A, Cohen M, Deschamps R, Solà-Valls N, Llufriu S, De Seze J, Blanco Y, Vukusic S, Saiz A, Marignier R. **Evaluation of treatment response in adults with relapsing MOG-Ab-associated disease.** *JOURNAL OF NEUROINFLAMMATION.* 16(1):134. I.F.: 5.700

13. Leurs CE, Twaalfhoven H, Lissenberg-Witte BI, van Pesch V, Dujmovic I, Drulovic J, Castellazzi M, Bellini T, Pugliatti M, Kuhle J, Villar LM, Alvarez-Cermeño JC, Alvarez-Lafuente R, Hegen H, Deisenhammer F, Walchhofer LM, Thouvenot E, Comabella M, Montalban X, Vécsei L, Rajda C, Galimberti D, Scarpini E, Altintas A, Rejdak K, Frederiksen JL, Pihl-Jensen G, Jensen P, Khalil M, Voortman MM, Fazekas F, Saiz A, La Puma D, Vercammen M, Vanopdenbosch L, Uitdehaag B, Killestein J, Bridel C, Teunissen C. **Kappa free light chains is a valid tool in the diagnostics of MS: A large multicenter study.** *MULTIPLE SCLEROSIS JOURNAL.* 10(769):1352458519845844. I.F.: 5.649

14. Ruiz-Garcia, Raquel; Martinez-Hernandez, Eugenia; Garcia-Ormaechea, Milagros; Espanol-Rego, Marta; Sabater, Lidia; Querol, Luis; Illa, Isabel; Dalmau, Josep; Graus, Francesc. **Caveats and Pitfalls of SOX1 Autoantibody Testing With a Commercial Line Blot Assay in Paraneoplastic Neurological Investigations.** *FRONTIERS IN IMMUNOLOGY.* 10(769):769. I.F.: 4.716

15. Gaig C, Iranzo A, Cajochen C, Vilaseca I, Embid C, Dalmau J, Graus F, Santamaria J. **Characterization of the sleep disorder of anti-IgLON5 disease.** *SLEEP.* 42(9):zsz133. I.F.: 4.571

16. Cobo-Calvo A, Sepúlveda M, d'Indy H, Armangué T, Ruiz A, Maillart E, Papeix C, Audoin B, Zephir H, Biotti D, Ciron J, Durand-Dubief F, Collongues N, Ayrignac X, Labauge P, Thouvenot E, Montcuquet A, Deschamps R, Solà-Valls N, Llufriu S, Blanco Y, de Seze J, Vukusic S, Saiz A, Marignier R, OFSEP Group, REEM Group. **Usefulness of MOG-antibody titres at first episode to predict the future clinical course in adults.** *JOURNAL OF NEUROLOGY.* 266(4):806-815. I.F.: 4.204

17. Solana E., Martinez-Heras E., Casas-Roma J., Calvet L., Lopez-Soley E., Sepulveda M., Sola-Valls N., Montejo C., Blanco Y., Pulido-Valdeolivas I., Andorra M., Saiz A., Prados F., Llufriu S. **Modified connectivity of vulnerable brain nodes in multiple sclerosis, their impact on cognition and their discriminative value.** *SCIENTIFIC REPORTS.* 9(1):20172. I.F.: 4.011

18. Maddison P., Titulaer M., Verschuuren J., Gozzard P., Lang B., Irani S., Sabater L., Graus F., Murray A., Chapman C. **The utility of anti-SOX2 antibodies for cancer prediction in patients with paraneoplastic neurological disorders.** *JOURNAL OF NEUROIMMUNOLOGY.* 326:14-18. I.F.: 2.832

19. Bien C., Nehls F., Kollmar R., Weis M., Steinke W., Woermann F., Dalmau J. **Identification of adenylate kinase 5 antibodies during routine diagnostics in a tissue-based assay: Three new cases and a review of the literature.** *JOURNAL OF NEUROIMMUNOLOGY.* 334(576975):576975. I.F.: 2.832

20. Solà-Valls N., Vicente-Pascual M., Blanco Y., Solana E., Llufriu S., Martínez-Heras E., Martínez-Lapiscina E., Sepúlveda M., Pulido-Valdeolivas I., Zubizarreta I., Saiz A. **Spanish validation of the telephone assessed Expanded Disability Status Scale and Patient Determined Disease Steps in people with multiple sclerosis.** *MULTIPLE SCLEROSIS AND RELATED DISORDERS.* 27:333-339. I.F.: 2.725

21. Pedreño M, Sepúlveda M, Armangué T, Sabater L, Martínez-Hernandez E, Arrambide G, Blanco Y, Llufriu S, Martínez-Lapiscina EH, Mulero P, Sola-Valls N, Ruiz-García R, Tintoré M, Dalmau J, Graus F, Saiz A. **Frequency and relevance of IgM, and IgA antibodies against MOG in MOG-IgG-associated disease.** *MULTIPLE SCLEROSIS AND RELATED DISORDERS.* 28:230-234. I.F.: 2.725

22. González C, Jensen E, Gambús P, Vallverdú M. **Entropy Measures as Descriptors to Identify Apneas in Rheoencephalographic Signals.** *ENTROPY.* 21:6. I.F.: 2.419

23. Casas-Alba D., Valero-Rello A., Muchart J., Armangué T., Jordan I., Cabrerizo M., Molero-Luís M., Artuch R., Fortuny C., Muñoz-Almagro C., Launes C. **Cerebrospinal Fluid Neopterin in Children With Enterovirus-Related Brainstem Encephalitis.** *PEDIATRIC NEUROLOGY.* 96:70-73. I.F.: 2.326

24. Borrat X., Ubre M., Risco R., Gambús P., Pedroso A., Iglesias A., Fernandez-Esparrach G., Ginés À., Balust J., Martínez-Palli G. **Computerized tests to evaluate recovery of cognitive function after deep sedation with propofol and remifentanil for colonoscopy.** *JOURNAL OF CLINICAL MONITORING AND COMPUTING.* 33(1):107-113. I.F.: 2.179

Revie w / I.F.: 85.592

1. Graus F, Dalmau J. **Paraneoplastic neurological syndromes in the era of immune-checkpoint inhibitors.** *NATURE REVIEWS CLINICAL ONCOLOGY.* 16(9):535-548. I.F.: 34.106

2. Dalmau J, Armangué T, Planagumà J, Radosevic M, Mannara F, Leypoldt F, Geis C, Lancaster E, Titulaer MJ, Rosenfeld MR, Graus F. **An update on anti-NMDA receptor encephalitis for neurologists and psychiatrists: mechanisms and models.** *LANCET NEUROLOGY.* 18(11):1045-1057. I.F.: 28.755

3. Geis C, Planagumà J, Carreño M, Graus F, Dalmau J. **Autoimmune seizures and epilepsy.** *JOURNAL OF CLINICAL INVESTIGATION.* 129(3):926-940. I.F.: 12.282

4. Freitas M., Ruiz-Lopez M., Dalmau J., Erro R., Privitera M., Andrade D., Fasano A. **Seizures and movement disorders: Phenomenology, diagnostic challenges and therapeutic approaches.** *JOURNAL OF NEUROLOGY NEUROSURGERY AND PSYCHIATRY.* 90(8):920-928. I.F.: 8.272

5. Joubert B., Dalmau J. **The role of infections in autoimmune encephalitides.** *REVUE NEUROLOGIQUE.* 175(7-8):420-426. I.F.: 2.177

Editorial / I.F.: 81.031

1. Dalmau J. **What's happening in Neurology® Neuroimmunology & Neuroinflammation.** *NEUROLOGY.* 93(8):338. I.F.: 8.689

2. Gross R., Worrall B., Amato A., Cascino G., Ciccarelli O., Corboy J., Dalmau J., Gottesman R., Grossman M., Millichap J., Mink J., Pulst S., Uitti R. **Message from the Editors to our Reviewers.** *NEUROLOGY.* 93(1):3-12. I.F.: 8.689

3. Britton J., Dalmau J. **Recognizing autoimmune encephalitis as a cause of seizures: Treating cause and not effect.** *NEUROLOGY.* 92(19):877-878. I.F.: 8.689

4. Dalmau J. **Learning from adverse treatment effects.** *NEUROLOGY-NEUROIMMUNOLOGY & NEUROINFLAMMATION.* 6(6):e630. I.F.: 7.353

5. Dalmau J. **Neurofilament light chain levels in MS: At the doorstep of clinical application.** *NEUROLOGY-NEUROIMMUNOLOGY & NEUROINFLAMMATION.* 6(5):e601. I.F.: 7.353

6. Dalmau J. **Time is tissue in optic neuritis.** *NEUROLOGY-NEUROIMMUNOLOGY & NEUROINFLAMMATION.* 6(4):e578. I.F.: 7.353

7. Dalmau J. **A surprise with MuSK antibodies.** *NEUROLOGY-NEUROIMMUNOLOGY & NEUROINFLAMMATION.* 6(3):e564. I.F.: 7.353

8. Dalmau J. **Rectifying neurologic diagnosis through autoantibodies.** *NEUROLOGY-NEUROIMMUNOLOGY & NEUROINFLAMMATION.* 6(2):e540. I.F.: 7.353

9. Dalmau J, Kolson DL, Paul F, Zamvil SS. **N2 year in review and message from the editor to our reviewers.** *NEUROLOGY-NEUROIMMUNOLOGY & NEUROINFLAMMATION.* 6(1):e525. I.F.: 7.353

10. Gambus P, Jaramillo S. **Machine learning in anaesthesia: reactive, proactive... predictive!** *BRITISH JOURNAL OF ANAESTHESIA.* 123(4):401-403. I.F.: 6.199

11. Graus, Francesc. **Widening the spectrum of inflammatory disorders of the central nervous system: an update on autoimmune neurology.** *CURRENT OPINION IN NEUROLOGY.* 32(3):449-451. I.F.: 4.647

Case Reports / I.F.: 10.185

1. Armangue T, Baucells BJ, Vlagea A, Petit-Pedrol M, Esteve-Solé A, Deyà-Martínez A, Ruiz-García R, Juan M, Pérez de Diego R, Dalmau J, Alsina L. **Toll-like receptor 3 deficiency in autoimmune encephalitis post-herpes simplex encephalitis.** *NEUROLOGY-NEUROIMMUNOLOGY & NEUROINFLAMMATION.* 6(6):e611. I.F.: 7.353

2. Rojc B., Podnar B., Graus F. **A case of recurrent MOG antibody positive bilateral optic neuritis and anti-NMDAR encephalitis: Different biological evolution of the two associated antibodies.** *JOURNAL OF NEUROIMMUNOLOGY.* 328:86-88. I.F.: 2.832

Consortium Publications / I.F.: 7.353

1. Cook, Lawrence J.; Rose, John W.; Alvey, Jessica S.; Jolley, Anna Marie; Kuhn, Renee; Marron, Brie; Pederson, Melissa; Enriquez, Rene; Yearley, Jeff; McKechnie, Stephen; Han, May H.; Tomczak, Anna J.; Levy, Michael; Mealy, Maureen A.; Coleman, Jessica; Bennett, Jeffrey L.; Johnson, Ruth; Barnes-Garcia, Myka; Traboulsee, Anthony L.; Carruthers, Robert L.; Lee, Lisa Eunyoung; Schubert, Julia J.; McMullen, Katrina; Kister, Ilya; Rimler, Zoe; Reid, Allyson; Sicotte, Nancy L.; Planchon, Sarah M.; Cohen, Jeffrey A.; Ivancic, Diane; Sedlak, Jennifer L.; Sand, Ilana Katz; Repovic, Pavle; Amezcua, Lilyana; Pruitt, Ana; Amundson, Erika; Chitnis, Tanuja; Mullin, Devin S.; Klawiter, Eric C.; Russo, Andrew W.; Riley, Claire S.; Onomichi, Kaho B.; Levine, Libby; Nelson, Katherine E.; Nealon, Nancy M.; Engel, Casey; Kruse-Hoyer, Mason; Marcille, Melanie; Tornes, Leticia; Rumpf, Anne; Greer, Angela; Behne, Megan Kenneally; Rodriguez, Renee R.; Behne, Daniel W.; Blackway, Derek W.; Coords, Brian; Blaschke, Terrence F.; Sheard, Judy; Smith, Terry J.; Behne, Jacinta M.; Yeaman, Michael R. **Collaborative International Research in Clinical and Longitudinal Experience Study in NMOSD.** *NEUROLOGY-NEUROIMMUNOLOGY & NEUROINFLAMMATION.* 6(5):e583. I.F.: 7.353

GRANTS FOR RESEARCH IN PROGRESS

Armangué T. **Autoinmunidad en encefalitis herpética en la infancia: coreoatetosis post-herpética, anticuerpos NMDAR e interferon.**
Sponsored by: Fundación de investigación médica mutua madrileña. AP162572016
Duration: 18/07/2016-31/08/2020

Armangué T. **Factores predictores y patogénicos de las encefalopatías autoinmunes post-encefalitis herpética.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00486
Duration: 01/01/2019-31/12/2021

Dalmau J. **Clinical and Experimental Neuroimmunology Group.**
Sponsored by: Generalitat de Catalunya. AGAUR_SGR17_00266
Duration: 01/01/2017-31/12/2020

Dalmau J. **A Translational Model of Antibody-mediated Synaptic Disease: Symptoms, Neuronal Circuits, and the Mechanisms of Memory Loss and Recovery.**
Sponsored by: Fundació la Caixa. HealthRes17
Duration: 31/12/2018-30/12/2021

Dalmau J. **Inmune-mediated diseases of the synapse: symptoms, brain networks, and the link to human memory.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PIE16/00014
Duration: 01/01/2017-30/06/2021

Dalmau J. **Encefalitis anti-NMDAR: Subclases de anticuerpos, y estudio de los efectos de la presencia crónica de anticuerpos en el cerebro de ratón adulto, desarrollo cerebral fetal y sinaptogénesis.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00234
Duration: 01/01/2018-31/12/2020

Dalmau J. **Análisis multiescala de los autoanticuerpos contra el receptor NMDA en psicosis.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). AC18/00009
Duration: 01/01/2019-31/12/2021

Gambús PL. **Development of a monitoring system for optimal individualized control of patients undergoing sedation-analgesia, based on predictive models.**
Sponsored by: Fundació la Caixa. CAIXAIMPULSE_16
Duration: 10/01/2017-30/07/2019

Gambus PL. **Sistema de monitorización basado en modelos predictivos como estrategia para el control óptimo e individualizado de la sedación en pacientes.**
Sponsored by: Universidad de San Buenaventura seccional Cali. COLCIENCIAS_18
Duration: 31/01/2019-31/01/2021

Sabater L. **Mecanismos patogénicos de los anticuerpos IgG4 contra antígenos de superficie neuronal en encefalitis autoinmunes.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00377
Duration: 01/01/2016-31/12/2019

Sabater L. **Estudio de la enfermedad por anticuerpos IgLON5 e implicación en los** mecanismos de neurodegeneración.
Sponsored by: Instituto de Salud Carlos III

(ISCIII). PI18/00067
Duration: 01/01/2019-31/12/2021

Saiz A. **Biomarcadores de resonancia magnética avanzada en esclerosis múltiple: asociación con el perfil clínico evolutivo y sustrato genético.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00587
Duration: 01/01/2016-30/06/2020

Saiz A. **Red Temática de Investigación Cooperativa en Salud - Esclerosis múltiple.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). RD16/0015/0002
Duration: 01/01/2017-31/12/2021

4.8 Cortical circuit dynamics

LOCATION
CEK building, floor -1



GROUP LEADER
Jaime de la Rocha (IDIBAPS)
T. 93 227 54 00 (Ext.: 4307)
jrochav@clinic.cat

POST-DOCTORAL RESEARCHERS
Daniel Duque (IDIBAPS)
Yerko Fuentealba (IDIBAPS)
Lluís Hernández Navarro (IDIBAPS)
Manuel Molano (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Ainhoa Hermoso (IDIBAPS)
Tíffany Oña (IDIBAPS)
Genis Prat (IDIBAPS)
Simón Serka (IDIBAPS)

TECHNICIANS
Albert Font (IDIBAPS)
Anna Graell (IDIBAPS)
Lorena Jiménez (IDIBAPS)
Rafael Marín (IDIBAPS)
Jordi Pastor (IDIBAPS)
Balma Serrano (IDIBAPS)

ADMINISTRATIVE STAFF
Lejla Bektic (IDIBAPS)
Arnau Llobet (IDIBAPS)

PROBLEM

Cognitive deficits are common in mental disorders. Nonetheless, there is no cognitive test sensitive enough to establish a precise classification and quantification of such deficits, which would make it possible to obtain an effective diagnosis. The vast majority of the neural bases of these deficits are still unknown, mainly because the underlying neural mechanisms of most of the cognitive functions of the healthy brain are not properly understood.
For this reason, it is essential to design new behavioural assays for use in both animal models and patients, to investigate the underlying neural mechanisms and develop efficient therapies.

APPROACH

The group studies the way in which cognitive functions such as perception, working memory, and decision-making emerge from different neural circuits. To do this, controlled behavioural experiments are conducted with rodents in which the team records their electrophysiological measurements and controls their brain activity.

In addition, the group uses a wide range of analytical techniques, including neural network computational models, and applies this approach to obtain an understanding of the underlying mechanisms of those cognitive deficits normally present in neurological disorders, such as anti-NMDAR encephalitis and schizophrenia.

IMPACT

In recent years, the group has conducted diverse behavioural studies on rodents to investigate the way in which they make perceptive decisions based on ambiguous sensorial information and previous experience, including a description of the role of the different areas of the brain in performing the computations inherent to this task.

Furthermore, it is investigating the neural bases of working memory in mice during automated behavioural tasks combined with monitoring neural activity, with the objective of applying such tasks to different mental disorders in animal models.

RESEARCH LINES

- The dynamics of sensory evidence integration during perceptual decision making.

- The neural circuitry of Working Memory (WM): memory interference and disease-mediated deficits.

- The neural circuitry of expectation during decision making tasks.

GRANTS FOR RESEARCH IN PROGRESS

De La Rocha J. **Los mecanismos neuronales responsables de la generación de sesgos en decisiones pereptuales y basadas en la memoria.**
Sponsored by: Ministerio de Ciencia Innovación y Universidades (MCIU).
RTI2018-099750-B-I00
Duration: 01/01/2019-31/12/2021

De la Rocha J. **PRIORS: Neural circuit dynamics underlying expectation and their impact on the variability of perceptual choices.**
Sponsored by: European commission.
H2020_ERC_15
Duration: 01/09/2016-31/08/2021

DOCTORAL THESES

De La Rocha J. **The impact of expectation on perceptual decision-making: From behavior to neural dynamics.**
PhD student: Ainhoa Hermoso Mendizabal

4.9 Neurophysiology

LOCATION
UB Medical School

KEYWORDS
1. **Pain**
2. **Itch**
3. **Sensory neurons**
4. **Ion channels**
5. **Glutamate receptors**
6. **GRINpathies**
7. **Ocular pain**

RELATED DISEASES
1. **Chronic pain**
2. **ITCH**
3. **Neurodegenerative diseases**
4. **Mental retardation**
5. **Ocular diseases**

GROUP INVOLVED IN
RETIC Oftared
AGAUR_SGR17: 00737

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**5**	**41,40**	**8,28**	**100%**	**40%**



GROUP LEADER
Xavier Gasull (UB)
T. 93 402 45 19
xgasull@ub.edu

RESEARCHERS
Arcadi Gual (UB)
David Soto (UB)

POST-DOCTORAL RESEARCHERS
Núria Comes (UB)
Esther Gratacós (UB)

PRE-DOCTORAL RESEARCHERS
Alba Andrés (UB)
Roberto García Díaz (UB)
Federico Miguez (UB)
Nuria Sánchez Fernández (UB)
Anna Pujol (IDIBAPS)

TECHNICIANS
Sara Abelló (UB)
Anna Priscil.la Perez Gonzalez (UB)

PROBLEM

Chronic or genetic diseases alter the role of neurons: they increase excitability, which causes pain and chronic itching, or modifies the synapses, which causes mental retardation or other neurological disorders.

It is necessary to understand firstly what changes occur at a molecular and functional level and, secondly, which ionic receptors or channels are involved, in order to know the disease. This is the first step towards developing the most appropriate and effective drugs and treatments.

APPROACH

The group is interested in understanding the molecular and functional bases of neuronal excitability and communication between neurons in normal and pathological conditions.

In sensory neurons, it studies which ion channels and receptors participate in the detection of painful and itchy stimuli, and how they are regulated during chronic pain and itching.

In glutamatergic neurotransmission, it studies the glutamate receptors and the proteins that regulate them, as well as the functional consequences of mutations in the neurological receptors.

IMPACT

The group has identified certain potassium channels in sensory neurons that regulate electrical activity and that are altered during neuropathic or migraine pain.

The goal is to find drugs that activate these channels as new analgesic treatments for pain and chronic itching. In addition, the study of mutations on glutamate receptors allows the group to understand the neurological disorders they produce, and to propose appropriate pharmacological treatments.

RESEARCH LINES

- Glutamatergic signalling: functional interaction between AMPARs and auxiliary subunits and other proteins that interact with it.

- NMDAR receptor pharmacology and function in mutations related to neurological diseases.

- Ocular physiology: dry eye physiopathology and sensory neurons on the ocular surface. Pathophysiology of the drainage of aqueous humour and the physiopathology of glaucoma.

- Physiology and pathophysiology of pain and chronic itching. Study of the ionic channels involved in neuronal excitability in the sensory nervous system.

- Traffic and regulation of the channels of K+ and Cl- in cell physiology. Interaction with proteins and membrane lipids.

PUBLICATIONS

Originals / I.F.: 41.395

1. Royal P, Andres-Bilbe A, Ávalos Prado P, Verkest C, Wdziekonski B, Schaub S, Baron A, Lesage F, Gasull X, Levitz J, Sandoz G. **Migraine-Associated TRESK Mutations Increase Neuronal Excitability through Alternative Translation Initiation and Inhibition of TREK.** *NEURON.* 101(2):232-245.e6. I.F.: 14.403

2. Coombs ID, Soto D, McGee TP, Gold MG, Farrant M, Cull-Candy SG. **Homomeric GluA2(R) AMPA receptors can conduct when desensitized.** *NATURE COMMUNICATIONS.* 10(1):4312. I.F.: 11.878

3. Soto D, Olivella M, Grau C, Armstrong J, Alcon C, Gasull X, Santos-Gómez A, Locubiche S, Gómez de Salazar M, García-Díaz R, Gratacòs-Batlle E, Ramos-Vicente D, Chu-Van E, Colsch B, Fernández-Dueñas V, Ciruela F, Bayés À, Sindreu C, López-Sala A, García-Cazorla À, Altafaj X. **L-Serine dietary supplementation is associated with clinical improvement of loss-of-function GRIN2B-related pediatric encephalopathy.** *SCIENCE SIGNALING.* 12(586):eaaw0936. I.F.: 6.481

4. Giblin J., Etayo I., Castellanos A., Andres-Bilbe A., Gasull X. **Anionic Phospholipids Bind to and Modulate the Activity of Human TRESK Background K+Channel.** *MOLECULAR NEUROBIOLOGY.* 56(4):2524-2541. I.F.: 4.586

5. Gasull, Xavier; Castany, Marta; Castellanos, Aida; Rezola, Mikel; Andres-Bilbe, Alba; Canut, Maria Isabel; Estevez, Raul; Borras, Teresa; Comes, Nuria. **The LRRC8-mediated volume-regulated anion channel is altered in glaucoma.** *SCIENTIFIC REPORTS.* 9(1):5392. I.F.: 4.011

GRANTS FOR RESEARCH IN PROGRESS

Gasull X. **RETIC Oftared: Prevención, detección precoz, tratamiento y rehabilitación de las patologías oculares.**
Sponsored by: Instituto de Salud Carlos III.
RD16/0008/0014
Duration: 01/01/2017-31/12/2021

Gasull X. **Bases neurofisiológicas del picor y dolor crónico: canales iónicos en neuronas sensoriales implicados en enfermedades inflamatorias y oculares.**
Sponsored by: Instituto De Salud Carlos III (ISCIII). PI17/00296
Duration: 01/01/2018-31/12/2020

Soto D. **Estudio funcional del proteoma de los receptores AMPA.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
BFU2017-83317-P
Duration: 01/01/2018-31/12/2020

4.10 Muscular research and mitochondrial function

LOCATION

CELLEX building,
Department 4 - floor 4B
University of Barcelona,
School of Medicine and Health Sciences

KEYWORDS

1. **Muscle**
2. **Mitochondria**
3. **Cardiomyopathy**
4. **Chronic fatigue syndrome**
5. **Septic shock**

RELATED DISEASES

1. **Myositis**
2. **Mitochondrial disorders**
3. **Cardiomyopathies**
4. **Central sensitization syndrome**
5. **Sepsis**

GROUP INVOLVED IN

CIBERER
CIBEROBN
AGAUR_SGR17: 00893
XUEC

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**24**	**98,25**	**4,09**	**46%**	**25%**



GROUP LEADER

Josep M. Grau Junyent (UB)
T. 93 227 55 39
jmgrau@clinic.cat

RESEARCHERS

Francesc Cardellach (HCB)
Pedro Castro (HCB)
Joaquim Fernández Sola (HCB)
Glòria Garrabou (CIBER)
Josep M Nicolas (HCB)

POST-DOCTORAL RESEARCHERS

Francesc Josep Garcia Garcia (UB)
Laura Garcia Otero (HCB)
Ingrid Gonzalez Casacuberta (FCRB)
Mariona Guitart (IDIBAPS)
Anna Sandra Hernández Aguado (HCB)
Diana Luz Juarez (CONACYT)
Jose César Milisenda (HCB)
Constanza Moren (CIBER)

PRE-DOCTORAL RESEARCHERS

Sergio Barroso (UB)
Judith Canto (UB)
Cecilia Cuzco (HCB)
Sara Fernandez Mendez (HCB)
Pedro Juan Moreno (HCB)
Joan Padrosa (HCB)
Anna Peguero (HCB)

TECHNICIANS

Ester Tobías (UB)
Tamara Barcos (IDIBAPS)

PROBLEM

Muscles and mitochondria (cell organelles that supply energy to cells), are involved in the appearance and development of relatively common illnesses but also numerous rare disorders.

Especially prevalent are adult muscle diseases, mitochondrial dysfunctions (responsible for many syndromes), cardiomyopathy in chronic alcoholic patients, chronic fatigue syndrome or fibromyalgia (of growing prevalence) and septic shock, which is an important cause of death in intensive care units.

APPROACH

The group works, above all, with muscle diseases and mitochondrial dysfunctions. In relation to muscle pathology, we attend patients from other hospitals and primary care centres, we also develop diagnostic protocols (beta-oxidation, dried blood spot, antibodies, imaging, muscular biopsies, biochemistry and genetic testing, among others.) and we collaborate with other centres (such as the Vall d'Hebron hospital, Sant Joan de Deu and the Johns Hopkins University) in the development of collaborative databases, therapeutic strategies, and the identification of biomarkers.

In relation to mitochondrial pathology, we studybioenergetics in depth (respiration, genetic studies, etc.) and identify patients and groups with mitochondrial dysfunction. Parallel interests are focused in the research of the etiologic base, biomarkers and therapeutic targets for the onset and progression of cardiomyopathy, chronic fatigue syndrome and sepsis.

IMPACT

The lines of research we promote have allowed the group to develop an accurate protocol to diagnose, treat and monitor adult patients with muscle diseases.

It has also been able to describe the biochemistry and genetics of primary and secondary mitochondrial dysfunction problems in patients and in terms of research; to unequivocally demonstrate the mechanisms responsible for the toxicity of chronic alcohol consumption on the heart, the bases for chronic fatigue syndrome and fibromyalgia diagnosis and management prognostic factors in sepsis, as well as to design a treatment algorithm.

RESEARCH LINES

- Adult myopathies.

- Mitochondrial dysfunctions, either primary (rare diseases) or secondary (usually more prevalent).

- Alcohol consumption and cardiomyopathy.

- Chronic fatigue syndrome risk factors.

- Septic shock and multiorgan dysfunction.

PUBLICATIONS

Originals / I.F.: 98.254

1. Pinal-Fernandez I, Amici DR, Parks CA, Derfoul A, Casal-Dominguez M, Pak K, Yeker R, Plotz P, Milisenda JC, Grau-Junyent JM, Selva-O'Callaghan A, Paik JJ, Albayda J, Corse AM, Lloyd TE, Christopher-Stine L, Mammen AL. **Myositis autoantigen expression correlates with muscle regeneration but not autoantibody specificity.** *ARTHRITIS AND RHEUMATOLOGY.* 71(8):1371-1376. I.F.: 9.002

2. Pinal-Fernandez I; Casal-Dominguez M; Derfoul A; Pak K; Plotz P; Miller F; Milisenda J; Grau-Junyent J; Selva-O'Callaghan A; Paik J; Albayda J; Christopher-Stine L; Lloyd T; Corse A; Mammen A. **Identification of distinctive interferon gene signatures in different types of myositis.** *NEUROLOGY.* 93(12):e1193-e1204. I.F.: 8.689

3. Fernández-Barat L, Motos A, Panigada M, Álvarez-Lerma F, Viña L, Lopez-Aladid R, Ceccato A, Bassi GL, Nicolau DP, Lopez Y, Muñoz L, Guerrero L, Soy D, Israel T, Castro P, Torres A. **Comparative efficacy of linezolid and vancomycin for endotracheal tube MRSA biofilms from ICU patients.** *CRITICAL CARE.* 23(1):251. I.F.: 6.959

4. Ferrer-Curriu G, Redondo-Angulo I, Guitart-Mampel M, Ruperez C, Mas-Stachurska A, Sitges M, Garrabou G, Villarroya F, Fernández-Solà J, Planavila A. **Fibroblast growth factor-21 protects against fibrosis in hypertensive heart disease.** *JOURNAL OF PATHOLOGY.* 248(1):30-40. I.F.: 5.942

5. Paules C, Youssef L, Rovira C, Crovetto F, Nadal A, Peguero A, Figueras F, Eixarch E, Crispi F, Miranda J, Gratacós E. **Distinctive patterns of placental lesions in preeclampsia versus fetal growth restriction and their association with fetoplacental Doppler.** *ULTRASOUND IN OBSTETRICS AND GYNECOLOGY.* 54(5):609-616. I.F.: 5.595

6. González-Casacuberta I, Juárez-Flores DL, Ezquerra M, Fucho R, Catalán-García M, Guitart-Mampel M, Tobías E, García-Ruiz C, Fernández-Checa JC, Tolosa E, Martí MJ, Grau JM, Fernández-Santiago R, Cardellach F, Morén C, Garrabou G. **Mitochondrial and autophagic alterations in skin fibroblasts from Parkinson disease patients with Parkin mutations.** *AGING-US.* 11(11):3750-3767. I.F.: 5.515

7. Morén C, Juárez-Flores DL, Chau KY, Gegg M, Garrabou G, González-Casacuberta I, Guitart-Mampel M, Tolosa E, Martí MJ, Cardellach F, Schapira AHV. **GBA mutation promotes early mitochondrial dysfunction in 3D neurosphere models.** *AGING-US.* 11(22):10338-10355. I.F.: 5.515

8. Valenzuela-Alcaraz B, Serafini A, Sepulveda-Martínez A, Casals G, Rodríguez-López M, Garcia-Otero L, Cruz-Lemini M, Bijnens B, Sitges M, Balasch J, Gratacós E, Crispi F. **Postnatal persistence of fetal cardiovascular remodeling associated with assisted reproductive technologies: a cohort study.** *BJOG: AN INTERNATIONAL JOURNAL OF OBSTETRICS AND GYNAECOLOGY.* 126(2):291-298. I.F.: 5.193

9. Guitart-Mampel M, Juarez-Flores DL, Youssef L, Moren C, Garcia-Otero L, Roca-Agujetas V, Catalan-Garcia M, Gonzalez-Casacuberta I, Tobias E, Milisenda JC, Grau JM, Crispi F, Gratacos E, Cardellach F, Garrabou G. **Mitochondrial implications in human pregnancies with intrauterine growth restriction and associated cardiac remodelling.** *JOURNAL OF CELLULAR AND MOLECULAR MEDICINE.* 23(6):3962-3973. I.F.: 4.658

10. Tort F, Ugarteburu O, Texidó L, Gea-Sorlí S, García-Villoria J, Ferrer-Cortès X, Arias Á, Matalonga L, Gort L, Ferrer I, Guitart-Mampel M, Garrabou G, Vaz FM, Pristoupilova A, Rodríguez MIE, Beltran S, Cardellach F, Wanders RJ, Fillat C, García-Silva MT, Ribes A. **Mutations in TIMM50 cause severe mitochondrial dysfunction by targeting key aspects of mitochondrial physiology.** *HUMAN MUTATION.* 40(10):1700-1712. I.F.: 4.453

11. Palmio J., Leonard-Louis S., Sacconi S., Savarese M., Penttilä S., Semmler A.L., Kress W., Mozaffar T., Lai T., Stojkovic T., Berardo A., Reisin R., Attarian S., Urtizberea A., Cobo A.M., Maggi L., Kurbatov S., Nikitin S., Milisenda J.C., Fatehi F., Raimondi M., Silveira F., Hackman P., Claeys K.G., Udd B. **Expanding the importance of HMERF titinopathy: new mutations and clinical aspects.** *JOURNAL OF NEUROLOGY.* 266(3):680-690. I.F.: 4.204

12. Fernández-Simón E., Carrasco-Rozas A., Gallardo E., González-Quereda L., Alonso-Pérez J., Belmonte I., Pedrosa-Hernández I., Montiel E., Segovia S., Suárez-Calvet X., Llauger J., Mayos M., Illa I., Barba-Romero M.A., Barcena J., Paradas C., Carzorla M.R., Creus C., Coll-Cantí J., Díaz M., Domínguez C., Fernández-Torrón R., García-Antelo M.J., Grau J.M., López de Munáin A., Martínez-García F.A., Morgado Y., Moreno A., Morís G., Muñoz-Blanco M.A., Nascimento A., Parajuá-Pozo J.L., Querol L., Rojas R., Robledo-Strauss A., Rojas-Marcos Í., Salazar J.A., Usón M., Díaz-Manera J. **Study of the effect of anti-rhGAA antibodies at low and intermediate titers in late onset Pompe patients treated with ERT.** *MOLECULAR GENETICS AND METABOLISM.* 128(1-2):129-136. I.F.: 3.610

13. Fehér C; Leal L; Plana M; Climent N; Guardo AC; Martínez E; Castro P; Díaz-Brito V; Mothe B; De Quirós JCLB; Gatell JM; Aloy P; García F. **Virological outcome measures during analytical treatment interruptions in chronic HIV-1-infected patients.** *OPEN FORUM INFECTIOUS DISEASES.* 6(12):ofz485. I.F.: 3.371

14. Milisenda JC, Collado MV, Pinal-Fernandez I, Hormaza Jaramillo A, Faruch Bilfeld M, Cano MD, García AI, Tomás X, Grau JM. **Correlation between quantitative and semiquantitative magnetic resonance imaging and histopathology findings in dermatomyositis.** *CLINICAL AND EXPERIMENTAL RHEUMATOLOGY.* 37(4):633-640. I.F.: 3.238Ç

15. Hawkins-Villarreal A; Moreno-Espinosa A; Eixarch E; Marcos M; Martinez-Portilla R; Salazar L; Garcia-Otero L; Lopez M; Borrell A; Figueras F; Goncé A. **Blood parameters in fetuses infected with cytomegalovirus according to the severity of brain damage and trimester of pregnancy at cordocentesis.** *JOURNAL OF CLINICAL VIROLOGY.* 119:37-43. I.F.: 3.020

16. Barroso S, Morén C, González-Segura À, Riba N, Arnaiz JA, Manriquez M, Santana G, Blanco JL, Larousse M, Loncà M, Lazzari E, Llopis J, Mallolas J, Miró O, Carné X, Gatell JM, Garrabou G, Martínez E. **Metabolic, mitochondrial, renal and hepatic safety of enfuvirtide and raltegravir antiretroviral administration: Randomized crossover clinical trial in healthy volunteers.** *PLOS ONE.* 14(5):e0216712. I.F.: 2.776

17. García-Otero L, López M, Guitart-Mampel M, Morén C, Goncé A, Esteve C, Salazar L, Gómez O, Martínez JM, Torres B, César S, Garrabou G, Crispi F, Gratacós E. **Cardiac and mitochondrial function in HIV-uninfected fetuses exposed to antiretroviral treatment.** *PLOS ONE.* 14(3):e0213279. I.F.: 2.776

18. Vilaró M; Cortés J; Selva-O'Callaghan A; Urrutia A; Ribera J-M; Cardellach F; Basagaña X; Elmore M; Vilardell M; Altman D; González J-A; Cobo E. **Adherence to reporting guidelines increases the number of citations: The argument for including a methodologist in the editorial process and peer-review.** *BMC MEDICAL RESEARCH METHODOLOGY.* 19(1):112. I.F.: 2.509

19. Faruch M., Garcia A., Del Amo M., Pomes J., Isern J., González S., Grau J., Milisenda J., Tomas X. **Diffusion-weighted magnetic resonance imaging is useful for assessing inflammatory myopathies.** *MUSCLE AND NERVE.* 59(5):555-560. I.F.: 2.393

20. Alejandro Baez, Amado; Cochon, Laila; Maria Nicolas, Jose. **A Bayesian decision support sequential model for severity of illness predictors and intensive care admissions in pneumonia.** *BMC MEDICAL INFORMATICS AND DECISION MAKING.* 19(1). I.F.: 2.067

21. Peguero A, Parra RA, Carrillo SP, Rojas-Suarez J, Figueras F. **Association of plasma lactate concentration at admission of severe preeclampsia to maternal complications.** *PREGNANCY HYPERTENSION.* 17:89-93. I.F.: 1.992

22. Carvalho E., Castro P., León E., Del Río A., Crespo F., Trigo L., Fernández S., Trilla A., Varela P., Nicolás J. **Multi-professional simulation and risk perception of health care workers caring for Ebola-infected patients.** *NURSING IN CRITICAL CARE.* 24(5):256-262. I.F.: 1.639

23. Rial-Crestelo M, Martinez-Portilla RJ, Cancemi A, Caradeux J, Fernandez L, Peguero A, Gratacos E, Figueras F. **Added value of cerebro-placental ratio and uterine artery Doppler at routine third trimester screening as a predictor of SGA and FGR in nonselected pregnancies.** *JOURNAL OF MATERNAL-FETAL & NEONATAL MEDICINE.* 32(15):2554-2560. I.F.: 1.569

24. Sepúlveda-Martínez A., García-Otero L., Soveral I., Guirado L., Valenzuela-Alcaraz B., Torres X., Rodriguez-Lopez M., Gratacos E., Gómez O., Crispi F. **Comparison of 2D versus M-mode echocardiography for assessing fetal myocardial wall thickness.** *JOURNAL OF MATERNAL-FETAL & NEONATAL MEDICINE.* 32(14):2319-2327. I.F.: 1.569

Review / I.F.: 17.924

1. Caradeux J, Martinez-Portilla RJ, Peguero A, Sotiriadis A, Figueras F. **Diagnostic performance of third-trimester ultrasound for the prediction of late-onset fetal growth restriction: a systematic review and meta-analysis.** *AMERICAN JOURNAL OF OBSTETRICS AND GYNECOLOGY.* 220(5):449-459.e19. I.F.: 6.120

2. Paules C, Youssef L, Rovira C, Crovetto F, Nadal A, Peguero A, Figueras F, Eixarch E, Crispi F, Miranda J, Gratacós E. **Distinctive patterns of placental lesions in preeclampsia versus fetal growth restriction and their association with fetoplacental Doppler.** *ULTRASOUND IN OBSTETRICS AND GYNECOLOGY.* 54(5):609-616. I.F.: 5.595

3. González-Casacuberta I., Juárez-Flores D., Morén C., Garrabou G. **Bioenergetics and Autophagic Imbalance in Patients-Derived Cell Models of Parkinson Disease Supports Systemic Dysfunction in Neurodegeneration.** *FRONTIERS IN NEUROSCIENCE.* 13(894):894. I.F.: 3.648

4. Tomas X., Milisenda J., Garcia-Diez A., Prieto-Gonzalez S., Faruch M., Pomes J., Grau-Junyent J. **Whole-body MRI and pathological findings in adult patients with myopathies.** *SKELETAL RADIOLOGY.* 48(5):653-676. I.F.: 1.518

5. Lara, J P; Compan, A; Vargas-Nunez, J A; Cardellach, F; Fernandez-Gonzalez, S; Lopez-Muniz, A; Alvarez-Sala, J L; en representación de la Conferencia Nacional de Decanos de Facultades de Medicina de España. **Predicted change in the number of permanent medical teachers from 2017 to 2026. The training of future physicians in critical condition**. *REVISTA CLINICA ESPAÑOLA.* 219(2):84-89. I.F.: 1.043

Letters / I.F.: 1.277

1. Losno R., Vidal-Sicart S., Grau J. **Multiple pyomyositis secondary to septic thrombophlebitis.** *MEDICINA CLINICA.* 152(12):515-516. I.F.: 1.277

Editorial / I.F.: 5.515

1. Juarez-Flores D., Gonzalez-Casacuberta I., Garrabou G. **Mitohormesis and autophagic balance in Parkinson disease.** *AGING-US.* 11(2):301-302. I.F.: 5.515

Case Reports / I.F.: 12.598

1. Marco-Hernández J, Camprubí D, Aylagas C, Gupta H, Castro P. **Failure of intravenous artesunate treatment for Plasmodium falciparum malaria in a splenectomized traveller: A diagnostic challenge.** *TRAVEL MEDICINE AND INFECTIOUS DISEASE.* 30(142):143. I.F.: 4.868

2. Aguero-Gonzalez, Daiana L; Pane-Vila, Adriana; Gil, Victor; Castro, Pedro. **Severe hyponatremia after a purification ritual using an Amazonian frog poison (Kombo).** *EMERGENCIAS.* 31(5):368-369. I.F.: 3.350

3. Rodriguez-Reyes, M., Marco-Hernandez, J., Castro-Rebollo, P., Soy-Muner, D. **Interstitial pneumonitis and myelosuppression associated to mitomycin C urinary tract instillations: A case report.** *JOURNAL OF ONCOLOGY PHARMACY PRACTICE.* 25(3):739–742. I.F.: 1.826

4. Milisenda J.C., García A.M., Jou C., Pinal-Fernandez I., O'Callaghan A.S., Grau J.M. **Sporadic inclusion body myositis: Diagnostic value of p62 immunostaining.** *MEDICINA CLINICA.* 53(11):437-440. I.F.: 1.277

5. Naval J., Grau J., Milisenda J. **A disabling case of chronic external ophthalmoplegia cleverly overcomed.** *MEDICINA CLINICA.* I.F.: 1.277

Consortium Publications / I.F.: 13.382

1. Pericàs JM, Nathavitharana R, Garcia-de-la-Mària C, Falces C, Ambrosioni J, Almela M, García-González J, Quintana E, Marco F, Moreno A, Bayer AS, Miró JM, Karchmer AW, Hospital Clínic Endocarditis Study Group. **Endocarditis Caused by Highly Penicillin-Resistant Viridans Group Streptococci: Still Room for Vancomycin-Based Regimens.** *ANTIMICROBIAL AGENTS AND CHEMOTHERAPY*. 63(8). I.F.: 4.715

2. Carrasco-Rozas A, Fernández-Simón E, Lleixà MC, Belmonte I, Pedrosa-Hernandez I, Montiel-Morillo E, Nuñez-Peralta C, Llauger Rossello J, Segovia S, De Luna N, Suarez-Calvet. **Identification of serum microRNAs as potential biomarkers in Pompe disease.** *ANNALS OF CLINICAL AND TRANSLATIONAL NEUROLOGY.* 6(7):1214-1224

3. Fernández-Simón E., Carrasco-Rozas A., Gallardo E., Figueroa-Bonaparte S., Belmonte I., Pedrosa I., Montiel E., Suárez-Calvet X., Alonso-Pérez J., Segovia S., Nuñez-Peralta C., Llauger J., Mayos M., Illa I., Spanish Pompe Study Group; Díaz-Manera J. **PDGF-BB serum levels are decreased in adult onset Pompe patients.** *SCIENTIFIC REPORTS.* 9(1):2139. I.F.: 4.011

GRANTS FOR RESEARCH IN PROGRESS

Cardellach F. **Influencia de la dieta en la modulación mitocondrial y de cardiomiocinas del remodelado cardiovascular fetal asociado al crecimiento intrauterino restringido.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00817
Duration: 01/01/2016-31/12/2019

Cardellach F. **Biomarcadores de utilidad pronóstica y terapéutica en el crecimiento intrauterino restringido y el remodelado** cardiovascular fetal asociado.
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00451
Duration: 01/01/2019-31/12/2021

Cuzco C. **Impacto de una intervención enfermera centrada en el empoderamiento del paciente crítico al alta de la unidad de cuidados intensivos.**
Sponsored by: Fundació Infermeria i Societat. COIB_Projectes17
Duration: 01/01/2018-31/12/2020

Fernàndez-Solà J. **Paper de les noves cardiomiocines FGF21 i Metrnl en el dany cardíac induït per l'alcoholisme i la hipertensió arterial.**
Sponsored by: Fundació la Marató de TV3. TV3_Cor_15
Duration: 29/06/2016-31/12/2019

Garrabou G, Grau JM. **Miositis por cuerpos de inclusión esporádica: desarrollo de nuevos modelos celulares para la identificación de biomarcadores y estrategias terapéuticas.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00498
Duration: 01/01/2019-31/12/2021

DOCTORAL THESES

Fernández Solà J. **Expressió miocardíaca d'IGF-1 i miostatina en donants hipertensos i amb consum excessiu d'alcohol. Relació amb el desenvolupament de miocardiopatia.**
PhD student: Francesc Borrisser Pairó

Garrabou G, Moren C. **Transcriptomic, mitochondrial and autophagic phenotype of fibroblasts from Parkinson's disease patients carrying PRKN mutations.**
PhD student: Ingrid González Casacuberta

Garrabou G, Moren C. **Mitochondial and autophagic alterations in human-derived cell models of Parkinson's Disease related to LRRK2(G2019S) and GBA (N370S) mutations.**
PhD student: Diana Luz Juarez Flores

Grau Junyent JM. **Avances en miopatías inflamatorias.**
PhD student: José César Milisenda

4.11 Clinical addictions

LOCATION
HCB building

KEYWORDS
1. **Alcohol**
2. **Cannabis**
3. **Tobacco**
4. **Benzodiazepines**
5. **Opiates**

RELATED DISEASES
1. **Alcohol use disorder**
2. **Cannabis use disorder**
3. **Substance use disorder**
4. **Opioid use disorder**

GROUP INVOLVED IN
AGAUR_SGR17: 01460

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**15**	**53,30**	**3,55**	**60%**	**33%**



GROUP LEADER
Antoni Gual (HCB)
T. 93 227 54 00 (Ext.: 3167)
tgual@clinic.cat

POST-DOCTORAL RESEARCHERS
Mercè Balcells (HCB)
Pablo Barrio (HCB)
Hugo López Pelayo (IDIBAPS)
Laia Miquel (HCB)
Miquel Monràs (HCB)

PRE-DOCTORAL RESEARCHERS
Chrysanthi Blithikioti (IDIBAPS)
Pol Bruguera (HCB)
Elsa Caballeria (FCRB)
Mireia Graell (HCB)
Laura Nuño (HCB)
Clara Oliveras (HCB)

TECHNICIANS
Fleur Marie Booth (FCRB)
Silvia Matrai (FCRB)
Nina Potapova (FCRB)

NURSING STAFF
Lídia Teixidó (HCB)

PROBLEM

Most citizens consume drugs (alcohol, tobacco, cannabis, cocaine), often without being aware of them. The drug business (legal and illegal) lets a few individuals get rich while many suffer directly or indirectly and we all end up paying the price in high social and health costs related to substance use.

The research of this group, therefore, is developed within a broad framework, ranging from the molecular mechanisms of addiction to the study of socioeconomic costs or causes of stigmatisation suffered by people with addiction.

APPROACH

The group aims to understand why a person goes from consuming drugs to an addiction, what role the family and society play and how they can be part of the recovery. It does this by promoting quality care based on scientific evidence, adopting a broad perspective: psychological, social and medical.

New technologies are a reality in today's lifestyle and, therefore, they are also an essential part of our day-to-day endeavours.

IMPACT

The group will provide new preventive measures to reduce the number of people using drugs. For those who still decide to use drugs, the group adopts a harm-reduction principle, promoting informed choices, and up-to-date, accurate information; resulting in the least possible damage to health and well-being and, therefore, lower costs to the individual and society.

It has developed standardised units of measurement, such as the Standard Beverage Unit or the Standard Cannabis Unit, which facilitate the study of risks of consumption to health. Thus, the group's main goal is to create and validate useful treatments that allow the person to have more control over their life, their decisions and their health. Its objective is to provide tools that allow more people to be treated and to achieve their own goals; one such tool being Nalmefene (a drug that has been proven effective against alcoholism).
The overarching priority is to eliminate stigma.

RESEARCH LINES

- Epidemiology, prevention and health care costs.

- New assesment and therapeutic tools for addictive disorders.

- Treatment approach for addictive patients with organic complications.

PUBLICATIONS

Originals / I.F.: 53.299

1. Barrio P, Roncero C, Ortega L, Guardia J, Yuguero L, Gual A. **The More You Take It, the Better It Works: Six-Month Results of a Nalmefene Phase-IV Trial.** *JOURNAL OF CLINICAL MEDICINE*. 8(4):E471. I.F.: 5.688

2. Barrio P, Teixidor L, Andreu M, Gual A. **What Do Real Alcohol Outpatients Expect about Alcohol Transdermal Sensors?** *JOURNAL OF CLINICAL MEDICINE*. 8(6):E795. I.F.: 5.688

3. Ghiță A, Hernández-Serrano O, Fernández-Ruiz Y, Monras M, Ortega L, Mondon S, Teixidor L, Gual A, Porras-García B, Ferrer-García M, Gutiérrez-Maldonado J. **Cue-Elicited Anxiety and Alcohol Craving as Indicators of the Validity of ALCO-VR Software: A Virtual Reality Study.** *JOURNAL OF CLINICAL MEDICINE*. 8(8):E1153. I.F.: 5.688

4. Herreros I, Miquel L, Blithikioti C, Nuño L, Rubio Ballester B, Grechuta K, Gual A, Balcells-Oliveró M, Verschure P. **Motor Adaptation Impairment in Chronic Cannabis Users Assessed by a Visuomotor Rotation Task.** *JOURNAL OF CLINICAL MEDICINE*. 8(7):E1049. I.F.: 5.688

5. Lombardo-Quezada J, Colmenero J, López-Pelayo H, Gavotti C, Lopez A, Crespo G, Lopez E, Gual A, Lligoña A, Navasa M. Prediction of Alcohol Relapse Among Liver **Transplant Candidates With Less Than 6 Months of Abstinence Using the High-Risk Alcoholism Relapse Score.** *LIVER TRANSPLANTATION*. 25(8):1142-1154. I.F.: 4.159

6. Roncero C, Ortega L, Pérez-Pazos J, Lligoña A, Abad AC, Gual A, Sorribes M, Grau-López L, Casas M, Daigre C. **Psychiatric Comorbidity in Treatment-Seeking Alcohol Dependence Patients With and Without ADHD**. *JOURNAL OF ATTENTION DISORDERS*. 23(12):1497-1504. I.F.: 3.384

7. Barrio Giménez P, Ortega L, Guardia J, Roncero C, Yuguero L, Gual A. **A comparison between phase-III trials and a phase-IV study of nalmefene in alcohol use disorder patients. Is there a difference?** *ADICCIONES*. 31(4):284-288. I.F.: 3.167

8. Gomez-Gil, Esther; Simulionyte, Egle; Balcells-Olivero, Merce; Valdes, Manuel; Salamero, Manel; Guillamon, Antonio; Esteva, Isabel. **Patterns of alcohol, tobacco, and illicit drug use among transsexuals.** *ADICCIONES*. 31(3):189-195. I.F.: 3.167

9. Casajuana Kögel C, López-Pelayo H, Oliveras C, Colom J, Gual A, Balcells-Oliveró MM. **The relationship between motivations for cannabis consumption and problematic use.** *ADICCIONES*. 0(0):1221. I.F.: 3.167

10. Lopez-Pelayo, H; Wallace, P; Miquel, L; Segura, L; Baena, B; Barrio, P; Colom, J; Gual, A; EFAR group. **Factors affecting engagement of primary health care professionals and their patients in facilitated access to online alcohol screening and brief intervention.** *INTERNATIONAL JOURNAL OF MEDICAL INFORMATICS*. 127:95-101. I.F.: 2.731

11. López-Pelayo H, Miquel L, Altamirano J, Bataller R, Caballeria J, Ortega L, Lligoña A, Gual A. **Treatment retention in a specialized alcohol programme after an episode of alcoholic hepatitis: Impact on alcohol relapse.** *JOURNAL OF PSYCHOSOMATIC RESEARCH*. 116:75-82. I.F.: 2.722

12. López-Pelayo H, Caballeria E, Díaz E, Sánchez A, Segura L, Colom J, Wallace P, Gual A. **Digital brief interventions for risky drinkers are not the panacea: A pilot study exploring barriers for its implementation according to professionals' perceptions.** *HEALTH INFORMATICS JOURNAL*. 18:1460458219855177. I.F.: 2.297

13. Ghiță A, Teixidor L, Monras M, Ortega L, Mondon S, Gual A, Paredes SM, Villares Urgell L, Porras-García B, Ferrer-García M, Gutiérrez-Maldonado J. **Identifying Triggers of Alcohol Craving to Develop Effective Virtual Environments for Cue Exposure Therapy.** *FRONTIERS IN PSYCHOLOGY*. 10:74. I.F.: 2.129

14. Lopez-Pelayo, Hugo; Coma, Anna; Gual, Antoni; Zara, Corinne; Lligona, Anna. **Call for Action: Benzodiazepine Prescription Prevalence Analysis Shows Off-Label Prescription in One in Eleven Citizens.** *EUROPEAN ADDICTION RESEARCH*. 25(6):320-329. I.F.: 1.957

15. López-Lazcano A; López-Pelayo H; Lligoña A; Sánchez N; Vilas-Riotorto V; Priego A; Sánchez-González R; Rodríguez-Urrutia A; Quesada-Franco M; Maldonado J; Pintor L. **Translation, adaptation, and reliability of the Stanford Integrated Psychosocial Assessment for Transplantation in the Spanish population.** *CLINICAL TRANSPLANTATION*. 33(10):e13688. I.F.: 1.667

Review / I.F.: 4.223

1. Blithikioti C, Miquel L, Batalla A, Rubio B, Maffei G, Herreros I, Gual A, Verschure P, Balcells-Oliveró M. **Cerebellar alterations in cannabis users: A systematic review.** *ADDICTION BIOLOGY*. 24(6):1121-1137. I.F.: 4.223

Editorial / I.F.: 24.839

1. Nutt DJ, Gual A, Anderson P, Rehm J . **Why Less Is Always More in the Treatment of Alcohol Use Disorders.** *JAMA PSYCHIATRY*. 76(4):359-360. I.F.: 15.916

2. Barrio, Pablo Miquel, Laia Gual, Antoni. **Comments from the Editors on the Special Issue Assessment and Treatment of Addictions: New Tools for Old Problems.** JOURNAL OF CLINICAL MEDICINE. 8(10):E1717. I.F.: 5.688

3. Rehm, Juergen Heilig, Markus Gual, Antoni. **ICD-11 for Alcohol Use Disorders: Not a Convincing Answer to the Challenges.** *ALCOHOLISM-CLINICAL AND EXPERIMENTAL RESEARCH*. 43(11):2296-2300. I.F.: 3.235

GRANTS FOR RESEARCH IN PROGRESS

Gual A. **RTA - Red de Trastornos Adictivos 2017.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). RD16/0017/0009
Duration: 01/01/2017-31/12/2021

Gual A. **La TRV como biomarcador de alteraciones cerebrales en el consumo crónico de cánnabis (TRV-CAN).**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00874
Duration: 01/01/2018-31/12/2020

Gual A. **Definición del patrón de consumo de riesgo de cannabis: implicaciones para la detección y la intervención precoz.**
Sponsored by: Ministerio de sanidad, politica social e igualdad. MSSSI_PNSD17
Duration: 01/01/2018-31/12/2020

Gual A. **SCALA: Scale-up of Prevention and Management of Alcohol Use Disorders and Comorbid Depression in Latin America.**
Sponsored by: European commission. H2020-SC1_17_1
Duration: 01/12/2017-30/11/2021

Gual A. **FUTURIZE: A step ahead to tackle future trends in addictions.**
Sponsored by: European commission. JUST-2017-AG-DRU
Duration: 01/10/2018-31/03/2020

Gual A. **DEAP SEAS. Developing and Extending Evidence and Practice from the Standart European Alchol Survey.**
Sponsored by: European commission.
Duration: 18/12/2018-18/12/2021

Gual A. **Health Intrapreneurship Management Programme: Accelerator of Creativity in interdisciplinary Teams.**
Sponsored by: European commission. EIT_Campus19
Duration: 02/04/2019-31/12/2019

Gual A. FAR SEAS. **Fetal Alcohol Reduction and exchange of European knowledge after SEAS.**
Sponsored by: European commission.
Duration: 08/07/2019-07/07/2022

4.12 Clinical neurophysiology

LOCATION
HCB building

KEYWORDS
1. **Neurophysiology**
2. **Sleep**
3. **Neuropathic pain**
4. **Motor control and sensorimotor integration**
5. **Epilepsy**

RELATED DISEASES
1. **Sleep disorders**
2. **Epilepsy**
3. **Neuropathic pain**
4. **Dysautonomia**
5. **Coma**
6. **ANTI-IGLON5 disease**
7. **Neuromuscular disorders**

GROUP INVOLVED IN
CIBERNED

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**16**	**72,97**	**4,56**	**56%**	**19%**



GROUP LEADER
Alejandro Iranzo (HCB)
T. 93 227 54 13
airanzo@clinic.cat

EMERITUS
Josep Valls Solé (HCB)

RESEARCHERS
Maria del Mar Carreño (HCB)
Jordi Casanova (HCB)
Antonio Jesús Donaire (HCB)
Carles Gaig (HCB)
Judith Navarro (HCB)
Joan Santamaria (HCB)

PRE-DOCTORAL RESEARCHERS
Merve Albayrak (UB)
Estefanía Conde (FCRB)
Lilia Correa (UB)
Francisco Gil (UB)
Paula Marrero (UB)
Amaia Muñoz (HCB)
Lenin Alejandro Reyes (UB)

NURSING STAFF
Isabel Manzanares (HCB)

ADMINISTRATIVE STAFF
Mònica Serradell (FCRB)

PROBLEM

Very little is known about the physiological bases of the functioning of the nervous system and the pathophysiology of its diseases, such as sleep disorders, coma, epilepsy, neuropathic pain or dysautonomia (the abnormal functioning of the autonomous nervous system).

This makes it difficult for patients with diseases of the nervous system to find drugs or other therapeutic alternatives that will cure them or significantly improve their quality of life. Although we have a considerable amount of clinical, neurophysiological and basic knowledge of the nervous system and its diseases at our disposal, it continues to be insufficient.

APPROACH

The group evaluates the neurophysiological study of nervous system disorders, from the most basic level to clinical practice, including sleep disorders, epilepsy, chronic pain, coma and dysautonomic alterations.

Patients are studied with electrophysiological techniques such as EEG, overnight polysomnography, multiple audio latencies, somatosensory and nociceptive-evoked potentials, electromyogram, autonomic and trunk reflexes and the startle reaction (the body's response to being startled).

IMPACT

The group's research has led to the discovery of a new nervous system disorder (anti-IgLON5 disease), characterised by a triad consisting of a complex sleep disorder, cerebral protein antibodies and tauopathy (accumulation of Tau proteins) in the brain.

This has made it possible to: demonstrate that REM phase sleep disorder is a predictor for Parkinson's disease, provide surgical and pharmacological solutions for epilepsy, describe the pathophysiological bases of neuropathic pain and demonstrate that the subcortical motor systems participate in the execution of movements and position.

RESEARCH LINES

- Epilepsy.

- Motor control.

- Neuropathic pain.

- Sleep and sleep disorders.

PUBLICATIONS

Originals / I.F.: 72.97

1. Postuma RB, Iranzo A, Hu M, Högl B, Boeve BF, Manni R, Oertel WH, Arnulf I, Ferini-Strambi L, Puligheddu M, Antelmi E, Cochen De Cock V, Arnaldi D, Mollenhauer B, Videnovic A, Sonka K, Jung KY, Kunz D, Dauvilliers Y, Provini F, Lewis SJ, Buskova J, Pavlova M, Heidbreder A, Montplaisir JY, Santamaria J, Barber TR, Stefani A, St Louis EK, Terzaghi M, Janzen A, Leu-Semenescu S, Plazzi G, Nobili F, Sixel-Doering F, Dusek P, Bes F, Cortelli P, Ehgoetz Martens K, Gagnon JF, Gaig C, Zucconi M, Trenkwalder C, Gan-Or Z, Lo C, Rolinski M, Mahlknecht P, Holzknecht E, Boeve AR, Teigen LN, Toscano G, Mayer G, Morbelli S, Dawson B, Pelletier A. **Risk and predictors of dementia and parkinsonism in idiopathic REM sleep behaviour disorder: a multicentre study.** *BRAIN; A JOURNAL OF NEUROLOGY.* 142(3):744-759. I.F.: 11.814

2. Mollenhauer B., Caspell-Garcia C.J., Coffey C.S., Taylor P., Singleton A., Shaw L.M., Trojanowski J.Q., Frasier M., Simuni T., Iranzo A., Oertel W., Siderowf A., Weintraub D., Seibyl J., Toga A.W., Tanner C.M., Kieburtz K., Chahine L.M., Marek K., Galasko D. **Longitudinal analyses of cerebrospinal fluid α-Synuclein in prodromal and early Parkinson's disease.** *MOVEMENT DISORDERS.* 34(9):1354-1364. I.F.: 8.061

3. Gaig C, Ercilla G, Daura X, Ezquerra M, Fernández-Santiago R, Palou E, Sabater L, Höftberger R, Heidbreder A, Högl B, Iranzo A, Santamaria J, Dalmau J, Graus F. **HLA and microtubule-associated protein tau H1 haplotype associations in anti-IgLON5 disease.** *NEUROLOGY-NEUROIMMUNOLOGY & NEUROINFLAMMATION.* 6(6):e605. I.F.: 7.353

4. Gil F, Padilla N, Soria-Pastor S, Setoain X, Boget T, Rumiá J, Roldán P, Reyes D, Bargalló N, Conde E, Pintor L, Vernet O, Manzanares I, Ådén U, Carreño M, Donaire A. **Beyond the Epileptic Focus: Functional Epileptic Networks in Focal Epilepsy.** *CEREBRAL CORTEX.* 30(4):2338-2357. I.F.: 5.437

5. Gaig C, Iranzo A, Cajochen C, Vilaseca I, Embid C, Dalmau J, Graus F, Santamaria J. **Characterization of the sleep disorder of anti-IgLON5 disease.** *SLEEP.* 42(9):zsz133. I.F.: 4.571

6. Fernández-Arcos A, Morenas-Rodríguez E, Santamaria J, Sánchez-Valle R, Lladó A, Gaig C, Lleó A, Iranzo A. **Clinical and Video-Polysomnographic Analysis of Rem Sleep Behavior Disorder and other Sleep Disturbances in Dementia with Lewy Bodies.** *SLEEP.* 42(7):zsz086. I.F.: 4.571

7. Melpignano A, Parrino L, Santamaria J, Gaig C, Trippi I, Serradell M, Mutti C, Riccò M, Iranzo A. **Isolated rapid eye movement sleep behavior disorder and cyclic alternating pattern: is sleep microstructure a predictive parameter of neurodegeneration?** *SLEEP.* 42(10):zsz142. I.F.: 4.571

8. Campabadal A., Segura B., Junque C., Serradell M., Abos A., Uribe C., Baggio H., Gaig C., Santamaria J., Bargallo N., Iranzo A. **Comparing the accuracy and neuroanatomical correlates of the UPSIT-40 and the Sniffin' Sticks test in REM sleep behavior disorder.** *PARKINSONISM & RELATED DISORDERS.* 65:197-202. I.F.: 4.360

9. Correa L., Cardenas K., Casanova-Mollá J., Valls-Solé J. **Thermoalgesic stimuli induce prepulse inhibition of the blink reflex and affect conscious perception in healthy humans.** *PSYCHOPHYSIOLOGY.* 56(4):e13310. I.F.: 3.378

10. Iranzo A, Stefani A, Högl B, Santamaria J, SINBAR. **Sleep and sleep disorders in Franz Kafka's narrative works.** *SLEEP MEDICINE.* 55:69-73. I.F.: 3.360

11. Kumru H., Kofler M., Valls-Sole J., Vidal J. **Brainstem reflex excitability after high-frequency repetitive transcranial magnetic stimulation in healthy and spinal cord injury subjects.** *BRAIN RESEARCH BULLETIN.* 147:86-91. I.F.: 3.103

12. Campabadal, Anna; Segura, Barbara; Junque, Carme; Serradell, Monica; Abos, Alexandra; Uribe, Carme; Baggio, Hugo C.; Gaig, Carles; Santamaria, Joan; Compta, Yaroslau; Bargallo, Nuria; Iranzo, Alex. **Cortical Gray Matter and Hippocampal Atrophy in Idiopathic Rapid Eye Movement Sleep Behavior Disorder.** *FRONTIERS IN NEUROLOGY.* 10:312. I.F.: 2.635

13. Mayoral, Maria; Ninerola-Baizan, Aida; Marti-Fuster, Berta; Donaire, Antonio; Perissinotti, Andres; Rumia, Jordi; Bargallo, Nuria; Sala-Llonch, Roser; Pavia, Javier; Ros, Domenec; Carreno, Mar; Pons, Francesca; Setoain, Xavier. **Epileptogenic Zone Localization With 18 FDG PET Using a New Dynamic Parametric Analysis.** *FRONTIERS IN NEUROLOGY.* 10:380. I.F.: 2.635

14. Falip, Merce; Rodriguez-Bel, Laura; Castaner, Sara; Sala-Padro, Jacint; Miro, Julia; Jaraba, Sonia; Casasnovas, Carlos; Morandeira, Francisco; Berdejo, Javier; Carreno, Mar. **Hippocampus and Insula Are Targets in Epileptic Patients With Glutamic Acid Decarboxylase Antibodies.** *FRONTIERS IN NEUROLOGY.* 9:1143. I.F.: 2.635

15. Versace V, Campostrini S, Sebastianelli L, Saltuari L, Valls-Solé J, Kofler M. **Influence of posture on blink reflex prepulse inhibition induced by somatosensory inputs from upper and lower limbs.** *GAIT & POSTURE.* 73:120-125. I.F.: 2.414

16. Conde Blanco E; Anciones Martín C; Manzanares I; Gil López F; Roldán P; Donaire A; Rumiá J; Carreño M. **Hypothalamic hamartomas in adulthood: Clinical spectrum and treatment outcome-A unicenter experience**. *BRAIN AND BEHAVIOR.* 9(11):e01412. I.F.: 2.072

Review / I.F.: 45.93

1. Geis C, Planagumà J, Carreño M, Graus F, Dalmau J. **Autoimmune seizures and epilepsy.** *JOURNAL OF CLINICAL INVESTIGATION.* 129(3):926-940. I.F.: 12.282

2. Cortelli P., Calandra-Buonaura G., Benarroch E.E., Giannini G., Iranzo A., Low P.A., Martinelli P., Provini F., Quinn N., Tolosa E., Wenning G.K., Abbruzzese G., Bower P., Alfonsi E., Ghorayeb I., Ozawa T., Pacchetti C., Pozzi N.G., Vicini C., Antonini A., Bhatia K.P., Bonavita J., Kaufmann H., Pellecchia M.T., Pizzorni N., Schindler A., Tison F., Vignatelli L., Meissner W.G. **Stridor in multiple system atrophy: Consensus statement on diagnosis, prognosis, and treatment.** *NEUROLOGY.* 93(14):630-639. I.F.: 8.689

3. Lüders H; Akamatsu N; Amina S; Baumgartner C; Benbadis S; Bermeo-Ovalle A; Bleasel A; Bozorgi A; Carreño M; Devereaux M; Fernandez-Baca Vaca G; Francione S; García Losarcos N; Hamer H; Holthausen H; Jamal Omidi S; Kalamangalam G; Kanner A; Knake S; Lacuey N; Lhatoo S; Lim SH; Mani J; Matsumoto R; Miller J;

Noachtar S; Palmini A; Park J; Rosenow F; Shahid A; Schuele S; Steinhoff B; Szabo CÁ; Tandon N; Terada K; Van Emde Boas W; Widdess-Walsh P; Kahane P. **Critique of the 2017 epileptic seizure and epilepsy classifications.** *EPILEPSIA*. 60(6):1032-1039. I.F.: 5.562

4. Gaig C, Compta Y. **Neurological profiles beyond the sleep disorder in patients with anti-IgLON5 disease.** *CURRENT OPINION IN NEUROLOGY*. 32(3):493-499. I.F.: 4.647

5. Kofler M, Leis AA, Valls-Solé J. **Cutaneous silent periods - Part 1: Update on physiological mechanisms.** *CLINICAL NEUROPHYSIOLOGY*. 130(4):588-603. I.F.: 3.675

6. Kofler M, Leis AA, Valls-Solé J. **Cutaneous silent periods - Part 2: Update on pathophysiology and clinical utility.** *CLINICAL NEUROPHYSIOLOGY*. 130(4):604-615. I.F.: 3.675

7. Garcia-Rill E., Saper C., Rye D., Kofler M., Nonnekes J., Lozano A., Valls-Solé J., Hallett M. **Focus on the pedunculopontine nucleus. Consensus review from the May 2018 brainstem society meeting in Washington, DC, USA.** *CLINICAL NEUROPHYSIOLOGY*. 130(6):925-940. I.F.: 3.675

8. Lüders H; Vaca GFB; Akamatsu N; Amina S; Arzimanoglou A; Baumgartner C; Benbadis SR; Bleasel A; Bermeo-Ovalle A; Bozorgi A; Carreño M; Devereaux M; Francione S; Losarcos NG; Hamer H; Holthausen H; Jamal-Omidi S; Kalamangalam G; Kanner AM; Knake S; Lacuey N; Lhatoo S; Lim SH; Londoño LV; Mani J; Matsumoto R; Miller JP; Noachtar S; Palmini A; Park J; Rosenow F; Shahid A; Schuele S; Steinhoff BJ; Ákos Szabó C; Tandon N; Terada K; van Emde Boas W; Widdess-Walsh P; Kahane P. **Classification of paroxysmal events and the four-dimensional epilepsy classification system**. *EPILEPTIC DISORDERS*. 21(1):1-29. I.F.: 2.052

9. Valls-Sole, Josep. **Spontaneous, Voluntary, and Reflex Blinking in Clinical Practice.** *JOURNAL OF CLINICAL NEUROPHYSIOLOGY*. 36(6):415-421. I.F.: 1.673

Letters / I.F.: 4.571

1. Stefani A, Iranzo A, Sixel-Döring F, Videnovic A, Santamaria J, Trenkwalder C, Högl B. **Need for a consensus on definitions and on research methods in RBD and its prodromal phases.** SLEEP. 42(5):zsz057. I.F.: 4.571

Case Reports / I.F.: 8.272

1. Carreño M., Martí M., Aldecoa I., Painous C., Conde E., Valldeoriola F., Valls-Solé J., Bargalló N., Gil F., Manzanares I., Setoain X., Donaire A., Muñoz E., Roldán P., Boget T., Pintor L., Bailles E., Rumià J. **Unilateral pallidal stimulation for disabling dystonia due to Rasmussen's disease.** *JOURNAL OF NEUROLOGY NEUROSURGERY AND PSYCHIATRY*. 90(1):108-110. I.F.: 8.272

Consortium Publications / I.F.: 4.36

1. Compta Y., Dias S., Giraldo D., Pérez-Soriano A., Muñoz E., Saura J., Fernández M., Bravo P., Cámara A., Pulido-Salgado M., Painous C., Ríos J., Martí M., Pagonabarraga J., Valldeoriola F., Hernández-Vara J., Classen S., Puente V., Pont C., Caballol N., Tolosa E., Bayes A., Campdelacreu J., de Fàbregues O., Ávila A., Calopa M., Gaig C., Fabregat N., Pastor P., Aguilar M., Pujol M., Sánchez A., Planellas L., Ezquerra M., Fernández-Santiago R., Botta T., Tartaglia G. **Cerebrospinal fluid cytokines in multiple system atrophy: A cross-sectional Catalan MSA registry study.** *PARKINSONISM & RELATED DISORDERS*. 65:3-12. I.F.: 4.360

GRANTS FOR RESEARCH IN PROGRESS

Carreño MM. **Validación de la resonancia funcional en reposo y tractografia para la lateralización del lenguaje en pacientes epilépticos.**
Sponsored by: Instituto De Salud Carlos III (ISCIII). PI17/01211
Duration: 01/01/2018-31/12/2020

Casanova-Molla J. **Caracterización del daño axonal en la neuropatía por quimioterapia: perfil temporal de la degeneración y regeneración axonal y su repercusión en los diferentes sistemas funcionales.**
Sponsored by: Instituto De Salud Carlos III (ISCIII). PI 16/00984
Duration: 01/01/2017-31/12/2020

Iranzo A. **Detección in-vivo de alfa-sinucleina en biopsia de glándulas salivares menores en pacientes con trastorno de conducta del sueño REM, como modelo premotor de la enfermedad de Parkinson**
Sponsored by: Instituto De Salud Carlos III (ISCIII). PI16/01050
Duration: 01/01/2017-31/12/2019

Manzanares I. **Papel de la enfermera de epilepsia: satisfacción del paciente y eficacia del empowerment.**
Sponsored by: Sociedad Española de Epilepsia (SEEP). PatientValue17
Duration: 01/04/2017-

Santamaria CJ. **Vía visual aferente: innovación para trastorno del Sueño REM y Parkinson.**
Sponsored by: Instituto De Salud Carlos III (ISCIII). PI17/01228
Duration: 01/01/2018-31/12/2020

4.13 Neuropsychology

LOCATION
UB School of Medicine

KEYWORDS
1. **Magnetic resonance imaging**
2. **Structural and functional connectivity**
3. **Aging and degenerative illness**
4. **Non-invasive brain stimulation**
5. **Brain plasticity**
6. **Lifestyles**
7. **Brain Health**

RELATED DISEASES
1. **Parkinson's disease**
2. **Multisystem atrophy**
3. **Supranuclear palsy**
4. **Idiopathic rem sleep behavior disorder**
5. **Alzheimer's disease**

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**30**	**124,61**	**4,15**	**60%**	**17%**



GROUP LEADER
Carme Junqué (UB)
T. 93 403 92 98
cjunque@ub.edu

RESEARCHERS
Núria Bargalló (UB)
David Bartrés (UB)
Teresa Boget (UB)
Roser Sala (UB)

POST-DOCTORAL RESEARCHERS
Alexandra Abós (UB)
Gabriele Cattaneo (IDIBAPS)
Dídac Macià (UB)
Bàrbara Segura (UB)
Cristina Solé (UB)
Carme Uribe (UB)

PRE-DOCTORAL RESEARCHERS
Kilian Abellaneda (UB)
Anna Campabadal (UB)
Anna Inguanzo (UB)
Javier Oltra (UB)
Lídia Vaqué (UB)

PROBLEM

In an ever-ageing society, it is important to understand the risk factors, protective factors and cerebral mechanisms related to preservation of the cognitive function and mental health over time.

Ageing and the neurodegenerative disorders that come with it lead to significant cognitive and behavioural alterations in the daily lives of people who are affected and their families. We need to gain an understanding of the brain networks involved in these alterations, their possible modification and responses to pharmacological and behavioural interventions.

APPROACH

The group studies the brain networks involved in cognitive and behavioural deficits related to ageing and neurodegenerative conditions. To achieve this objective, it uses multimodal magnetic resonance imaging and transcranial magnetic and electric stimulation techniques.

IMPACT

The group's research is targeted at improving and solving problems related to what is known as 'Health, ageing and disease'. In recent years, the group has applied multimodal approaches that have enabled team members to increase their knowledge regarding changes in the structure and functional connectivity of the brain in relation with diverse phases of ageing and neurodegenerative diseases.
Maintaining the sound structure and function of the neural networks during our lifetime is essential for ageing well and depends largely on our habits and lifestyles.

RESEARCH LINES

- Ageing and brain health.

- Cerebral plasticity.

- Neuropsychology and neuroimaging in Parkinson's disease.

PUBLICATIONS

Originals / I.F.: 124.607

1. Illán-Gala I, Montal V, Borrego-Écija S, Vilaplana E, Pegueroles J, Alcolea D, Sánchez-Saudinós B, Clarimón J, Turón-Sans J, Bargalló N, González-Ortiz S, Rosen HJ, Gorno-Tempini ML, Miller BL, Lladó A, Rojas-García R, Blesa R, Sánchez-Valle R, Lleó A, Fortea J, Catalan Frontotemporal Dementia Initiative (CATFI) and the Frontotemporal Lobar Degeneration Neuroimaging Initiative (FTLDNI). **Cortical microstructure in the behavioural variant of frontotemporal dementia: looking beyond atrophy.** *BRAIN; A JOURNAL OF NEUROLOGY.* 142(4):1121-1133. I.F.: 11.814

2. Hoogland J, Boel JA, de Bie RMA, Schmand BA, Geskus RB, Dalrymple-Alford JC, Marras C, Adler CH, Weintraub D, Junque C, Pedersen KF, Mollenhauer B, Goldman JG, Tröster AI, Burn DJ, Litvan I, Geurtsen GJ, MDS Study Group. **"Validation of Mild Cognitive Impairment in Parkinson Disease". Risk of Parkinson's disease dementia related to level I MDS PD-MCI.** *MOVEMENT DISORDERS.* 34(3):430-435. I.F.: 8.061

3. Bartrés-Faz D, González-Escamilla G, Vaqué-Alcázar L, Abellaneda-Pérez K, Valls-Pedret C, Ros E, Grothe MJ. **Characterizing the molecular architecture of cortical regions associated with high educational attainment in older individuals.** *JOURNAL OF NEUROSCIENCE.* 39(23):4566-4575. I.F.: 6.074

4. Abellaneda-Pérez K, Vaqué-Alcázar L, Vidal-Piñeiro D, Jannati A, Solana E, Bargalló N, Santarnecchi E, Pascual-Leone A, Bartrés-Faz D. **Age-related differences in default-mode network connectivity in response to intermittent theta-burst stimulation and its relationships with maintained cognition and brain integrity in healthy aging.** *NEUROIMAGE.* 188:794-806. I.F.: 5.812

5. Casasnovas C., Ruiz M., Schlüter A., Naudí A., Fourcade S., Veciana M., Castañer S., Albertí A., Bargalló N., Johnson M., Raymond G.V., Fatemi A., Moser A.B., Villarroya F., Portero-Otín M., Artuch R., Pamplona R., Pujol A. **Biomarker Identification, Safety, and Efficacy of High-Dose Antioxidants for Adrenomyeloneuropathy: a Phase II Pilot Study.** *NEUROTHERAPEUTICS.* 16(4):1167-1182. I.F.: 5.552

6. Sala-Llonch R, Smith SM, Woolrich M, Duff EP. **Spatial parcellations, spectral filtering, and connectivity measures in fMRI: Optimizing for discrimination.** *HUMAN BRAIN MAPPING.* 40(2):407-419. I.F.: 4.554

7. Sala-Llonch R., Falgàs N., Bosch B., Fernández-Villullas G., Balasa M., Antonell A., Perissinotti A., Pavía J., Campos F., Lladó A., Lomeña F., Sánchez-Valle R. **Regional patterns of 18F-florbetaben uptake in presenilin 1 mutation carriers.** *NEUROBIOLOGY OF AGING.* 81:1-8. I.F.: 4.398

8. Falgàs N, Tort-Merino A, Balasa M, Borrego-Écija S, Castellví M, Olives J, Bosch B, Férnandez-Villullas G, Antonell A, Augé JM, Lomeña F, Perissinotti A, Bargalló N, Sánchez-Valle R, Lladó A. **Clinical applicability of diagnostic biomarkers in early onset cognitive impairment.** *EUROPEAN JOURNAL OF NEUROLOGY.* 26(8):1098-1104. I.F.: 4.387

9. Campabadal A., Segura B., Junque C., Serradell M., Abos A., Uribe C., Baggio H., Gaig C., Santamaria J., Bargallo N., Iranzo A. **Comparing the accuracy and neuroanatomical correlates of the UPSIT-40 and the Sniffin' Sticks test in REM sleep behavior disorder.** *PARKINSONISM & RELATED DISORDERS.* 65:197-202. I.F.: 4.360

10. Uribe C, Segura B, Baggio HC, Abos A, Garcia-Diaz AI, Campabadal A, Marti MJ, Valldeoriola F, Compta Y, Bargallo N, Junque C. **Progression of Parkinson's disease patients' subtypes based on cortical thinning: 4-year follow-up.** *PARKINSONISM AND RELATED DISORDERS.* 64:286-292. I.F.: 4.360

11. De la Rosa A, Solana E, Corpas R, Bartrés-Faz D, Pallàs M, Vina J, Sanfeliu C, Gomez-Cabrera MC. **Long-term exercise training improves memory in middle-aged men and modulates peripheral levels of BDNF and Cathepsin B.** *SCIENTIFIC REPORTS.* 9(1):3337. I.F.: 4.011

12. Abos A., Baggio H., Segura B., Campabadal A., Uribe C., Giraldo D., Perez-Soriano A., Muñoz E., Compta Y., Junque C., Marti M. **Differentiation of multiple system atrophy from Parkinson's disease by structural connectivity derived from probabilistic tractography.** *SCIENTIFIC REPORTS.* 9(1):16488. I.F.: 4.011

13. Falgàs N., Sánchez-Valle R., Bargalló N., Balasa M., Fernández-Villullas G., Bosch B., Olives J., Tort-Merino A., Antonell A., Muñoz-García C., León M., Grau O., Castellví M., Coll-Padrós N., Rami L., Redolfi A., Lladó A. **Hippocampal atrophy has limited usefulness as a diagnostic biomarker on the early onset Alzheimer's disease patients: A comparison between visual and quantitative assessment.** *NEUROIMAGE-CLINICAL.* 23:101927. I.F.: 3.943

14. Abos A., Segura B., Baggio H., Campabadal A., Uribe C., Garrido A., Camara A., Muñoz E., Valldeoriola F., Marti M., Junque C., Compta Y. **Disrupted structural connectivity of fronto-deep gray matter pathways in progressive supranuclear palsy.** *NEUROIMAGE-CLINICAL.* 23:101899. I.F.: 3.943

15. Operto G., Molinuevo J.L., Cacciaglia R., Falcon C., Brugulat-Serrat A., Suárez-Calvet M., Grau-Rivera O., Bargalló N., Morán S., Esteller M., Gispert J.D. **Interactive effect of age and APOE-ε4 allele load on white matter myelin content in cognitively normal middle-aged subjects.** *NEUROIMAGE-CLINICAL.* 24:101983. I.F.: 3.943

16. Baggio HC, Abos A, Segura B, Campabadal A, Uribe C, Giraldo DM, Perez-Soriano A, Muñoz E, Compta Y, Junque C, Marti MJ. **Cerebellar resting-state functional connectivity in Parkinson's disease and multiple system atrophy: Characterization of abnormalities and potential for differential diagnosis at the single-patient level.** *NEUROIMAGE-CLINICAL.* 22:101720. I.F.: 3.943

17. Corpas, Ruben; Solana, Elisabeth; De la Rosa, Adrian; Sarroca, Sara; Grinan-Ferre, Christian; Oriol, Mireia; Corbella, Emili; Rodriguez-Farre, Eduard; Vina, Jose; Pallas, Merce; Bartres-Faz, David; Carmen Gomez-Cabrera, Mari; Sanfeliu, Coral. **Peripheral Maintenance of the Axis SIRT1-SIRT3 at Youth Level May Contribute to Brain Resilience in Middle-Aged Amateur Rugby Players.** *FRONTIERS IN AGING NEUROSCIENCE.* 11:352. I.F.: 3.633

18. Tudela, Raul; Munoz-Moreno, Emma; Sala-Llonch, Roser; Lopez-Gil, Xavier; Soria, Guadalupe. **Resting State Networks in the TgF344-AD Rat Model of Alzheimer's Disease Are Altered From Early Stages.** *FRONTIERS IN AGING NEUROSCIENCE.* 11:213. I.F.: 3.633

19. Solé-Casals J., Serra-Grabulosa J.M., Romero-Garcia R., Vilaseca G., Adan A., Vilaró N., Bargalló N., Bullmore E.T. **Structural brain network of gifted children has a more integrated and versatile topology.** *BRAIN STRUCTURE & FUNCTION.* 224(7):2373-2383. I.F.: 3.622

20. Jovicich J, Babiloni C, Ferrari C, Marizzoni M, Moretti DV, Del Percio C, Lizio R, Lopez S, Galluzzi S, Albani D, Cavaliere L, Minati L, Didic

M, Fiedler U, Forloni G, Hensch T, Molinuevo JL, Bartrés Faz D, Nobili F, Orlandi D, Parnetti L, Farotti L, Costa C, Payoux P, Rossini PM, Marra C, Schönknecht P, Soricelli A, Noce G, Salvatore M, Tsolaki M, Visser PJ, Richardson JC, Wiltfang J, Bordet R, Blin O, Frisoniand GB, and the PharmaCog Consortium. **Two-Year Longitudinal Monitoring of Amnestic Mild Cognitive Impairment Patients with Prodromal Alzheimer's Disease Using Topographical Biomarkers Derived from Functional Magnetic Resonance Imaging and Electroencephalographic Activity.** *JOURNAL OF ALZHEIMER'S DISEASE.* 69(1):15-35. I.F.: 3.517

21. Hahner N, Benkarim OM, Aertsen M, Perez-Cruz M, Piella G, Sanroma G, Bargallo N, Deprest J, Gonzalez Ballester MA, Gratacos E, Eixarch E. **Global and Regional Changes in Cortical Development Assessed by MRI in Fetuses with Isolated Nonsevere Ventriculomegaly Correlate with Neonatal Neurobehavior.** *AMERICAN JOURNAL OF NEURORADIOLOGY.* 40(9):1567-1574. I.F.: 3.256

22. Castro-Fornieles J, de la Serna E, Calvo A, Pariente J, Andrés-Perpiña S, Plana MT, Romero S, Flamarique I, Gárriz M, Bargalló N. **Cortical thickness 20 years after diagnosis of anorexia nervosa during adolescence.** *EUROPEAN ARCHIVES OF PSYCHIATRY AND CLINICAL NEUROSCIENCE.* I.F.: 3.192

23. Castro-Fornieles J, Serna E, Calvo A, Blázquez A, Moya J, Lázaro L, Andrés-Perpiñá S, Plana MT, Gil L, Flamarique I, Martínez E, Pariente J, Moreno E, Bargallo N. **Functional MRI with a set-shifting task in adolescent anorexia nervosa: A cross-sectional and follow-up study.** *NEUROPSYCHOLOGIA.* 131:1-8. I.F.: 2.872

24. Campabadal, Anna; Segura, Barbara; Junque, Carme; Serradell, Monica; Abos, Alexandra; Uribe, Carme; Baggio, Hugo C.; Gaig, Carles; Santamaria, Joan; Compta, Yaroslau; Bargallo, Nuria; Iranzo, Alex. **Cortical Gray Matter and Hippocampal Atrophy in Idiopathic Rapid Eye Movement Sleep Behavior Disorder.** *FRONTIERS IN NEUROLOGY.* 10:312. I.F.: 2.635

25. Mayoral, Maria; Ninerola-Baizan, Aida; Marti-Fuster, Berta; Donaire, Antonio; Perissinotti, Andres; Rumia, Jordi; Bargallo, Nuria; Sala-Llonch, Roser; Pavia, Javier; Ros, Domenec; Carreno, Mar; Pons, Francesca; Setoain, Xavier. **Epileptogenic Zone Localization With 18 FDG PET Using a New Dynamic Parametric Analysis.** *FRONTIERS IN NEUROLOGY.* 10:380. I.F.: 2.635

26. Uribe, Carme; Puig-Davi, Arnau; Abos, Alexandra; Baggio, Hugo C.; Junque, Carme; Segura, Barbara. **Neuroanatomical and Functional Correlates of Cognitive and Affective Empathy in Young Healthy Adults.** *FRONTIERS IN BEHAVIORAL NEUROSCIENCE.* 13:85. I.F.: 2.622

27. Morris, Timothy P. Tormos Munoz, Jose-Maria Cattaneo, Gabriele Solana-Sanchez, Javier Bartres-Faz, David Pascual-Leone, Alvaro. **Traumatic Brain Injury Modifies the Relationship Between Physical Activity and Global and Cognitive Health: Results From the Barcelona Brain Health Initiative.** *FRONTIERS IN BEHAVIORAL NEUROSCIENCE.* 13:135. I.F.: 2.622

28. Vernooij MW, Pizzini FB, Schmidt R, Smits M, Yousry TA, Bargallo N, Frisoni GB, Haller S, Barkhof F. **Dementia imaging in clinical practice: a European-wide survey of 193 centres and conclusions by the ESNR working group.** *NEURORADIOLOGY.* 61(6):633-642. I.F.: 2.504

29. Farras-Permanyer L, Mancho-Fora N, Montalà-Flaquer M, Bartrés-Faz D, Vaqué-Alcázar L, Peró-Cebollero M, Guàrdia-Olmos J. **Age-related changes in resting-state functional connectivity in older adults.** *NEURAL REGENERATION RESEARCH.* 14(9):1544-1555. I.F.: 2.472

30. Campabadal A, Segura B, Baggio HC, Abos A, Uribe C, Garcia-Diaz AI, Marti MJ, Valldeoriola F, Compta Y, Bargallo N, Junque C. **Diagnostic Accuracy, Item Analysis and Age Effects of the UPSIT Spanish Version in Parkinson's Disease.** *ARCHIVES OF CLINICAL NEUROPSYCHOLOGY.* 34(4):435-444. I.F.: 2.226

Review / I.F.: 11.309

1. Abellaneda-Pérez K, Vaqué-Alcázar L, Solé-Padullés C, Bartrés-Faz D. **Combining non-invasive brain stimulation with functional magnetic resonance imaging to investigate the neural substrates of cognitive aging.** *JOURNAL OF NEUROSCIENCE RESEARCH.* I.F.: 4.139

2. Abellaneda-Pérez K., Vaqué-Alcázar L., Solé-Padullés C., Bartrés-Faz D. **Combining non-invasive brain stimulation with functional magnetic resonance imaging to investigate the neural substrates of cognitive aging.** *JOURNAL OF NEUROSCIENCE RESEARCH.* I.F.: 4.139

3. Moreno-Blanco D., Solana-Sánchez J., Sánchez-González P., Oropesa I., Cáceres C., Cattaneo G., Tormos-Muñoz J., Bartrés-Faz D., Pascual-Leone Á., Gómez E. **Technologies for Monitoring Lifestyle Habits Related to Brain Health: A Systematic Review.** *SENSORS.* 19(19):E4183. I.F.: 3.031

Letters / I.F.: 37.522

1. Stern Y, Chételat G, Habeck C, Arenaza-Urquijo E, Vemuri P, Estanga A, Bartrés-Faz D, Cantillon M, Clouston S, Elman J, Gold B, Jones R, Kempermann G, Lim Y, van Loenhoud A, Martínez-Lage P, Morbelli S, Okonkwo O, Ossenkoppele R, Pettigrew C, Rosen A, Scarmeas N, Soldan A, Udeh-Momoh C, Valenzuela M, Vuoksimaa E. **Mechanisms underlying resilience in ageing.** *NATURE REVIEWS NEUROSCIENCE.* 20(4):246. I.F.: 33.162

2. Rodriguez-Diehl R, Vilas D, Bargalló N, Tolosa E, Gelpi E. **Co-morbid demyelinating lesions and atypical clinical features in a patient with Parkinson's disease.** *PARKINSONISM AND RELATED DISORDERS.* 62:242-245. I.F.: 4.360

Case Reports / I.F.: 8.272

1. Carreño M., Martí M., Aldecoa I., Painous C., Conde E., Valldeoriola F., Valls-Solé J., Bargalló N., Gil F., Manzanares I., Setoain X., Donaire A., Muñoz E., Roldán P., Boget T., Pintor L., Bailles E., Rumià J. **Unilateral pallidal stimulation for disabling dystonia due to Rasmussen's disease.** *JOURNAL OF NEUROLOGY NEUROSURGERY AND PSYCHIATRY.* 90(1):108-110. I.F.: 8.272

GRANTS FOR RESEARCH IN PROGRESS

Bargalló N. **Validación de la Resonancia funcional de reposo y tractografia para la lateralización del lenguaje en pacientes epilépticos.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/01211
Duration: 01/01/2018-31/12/2020

Bartres D. **Barcelona Brain Health Initiative.**
Sponsored by: Obra social La Caixa (Fundació Abertis)
Duration: 01/07/2016-01/07/2019

Bartrés D. **Estudio de los cambios cerebrales inducidos por estimulación cerebral no invasiva como predictores del estado de salud cerebral futuro en personas de edad avanzada.**
Sponsored by: Ministerio de Ciencia, Innovación y Universidades (MICIUN). RTI2018-095181-B-C21
Duration: 01/01/2019-31/12/2022

Bartres D. **Healthy minds from 0-100 years: Optimising the use of European brain imaging cohorts (Lifebrain).**
Sponsored by: European commission
Duration: 01/01/2017-31/12/2021

Junqué C. **Brain connectivity changes during the degenerative process in Parkinson's disease.**
Sponsored by: Fundació la Marató de TV3. TV3_Neuro_14
Duration: 22/05/2015-31/12/2019

Junqué C. **Fenotipos cognitivos en la enfermedad de Parkinson mediante la identificación de patrones de neuroimagen multimodal.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO). PSI2017-86930-P
Duration: 01/01/2018-31/12/2020

DOCTORAL THESES

Junque C, Baggio HC. **MRI connectomics in movement disorders.**
PhD student: Alexandra Abos Ortega

Junque C, Segura B. **Cortical atrophy patterns associated to cognitive impairment in Parkinson's disease.**
PhD student: Carme Uribe Codesal

4.14 Advanced imaging in neuroimmunological diseases (ImaginEM)

LOCATION
CEK building, floor -1

KEYWORDS
1. **Multiple sclerosis**
2. **Neuroimage**

RELATED DISEASES
1. **Multiple sclerosis**
2. **Neuromyelitis optica**
3. **Mog diseases**
4. **Autoimmune encephalitis**

GROUP INVOLVED IN
RETIC
AGAUR_SGR17: 00266
MAGNIMS

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**13**	**72,12**	**5,55**	**77%**	**23%**



GROUP LEADER
Sara Llufriu (HCB-IDIBAPS)
T. 93 227 54 14
sllufriu@clinic.cat

RESEARCHERS
Yolanda Blanco (HCB)

POST-DOCTORAL RESEARCHERS
Eloy Martinez de las Heras (IDIBAPS)
Elisabeth Solana (FCRB)

PRE-DOCTORAL RESEARCHERS
Elisabet López Soley (UB)
Carmen Montejo (IDIBAPS)

TECHNICIANS
Ana Guerrero (IDIBAPS)

NURSING STAFF
Montserrat Artola (IDIBAPS)

COLLABORATORS
Maria Sepúlveda (HCB)

PROBLEM

Multiple sclerosis and other neuroimmune diseases are a relevant cause of disability in young adults. Despite the significant advances that have been made in their treatment, there are still many unknowns to solve.

Advanced magnetic resonance techniques can help to strengthen our knowledge of the bases of neurological dysfunction and the functioning of the human brain.

APPROACH

This research group combines technological development with the clinical application of new techniques in advanced magnetic resonance imaging in patients with neurological diseases.

These tools are allowing it to identify new biomarkers that can predict the evolution of multiple sclerosis and other disorders and, therefore, to customise treatment to each individual patient.

They can also provide very valuable information about the functioning of the neural networks and their ability to recover, both in a healthy brain and an unhealthy one.

IMPACT

The group's research has been able to quantify the impact of the damage of neurons and glia on patients with multiple sclerosis using biomarkers in spectroscopy.

The group also evaluated the clinical efficacy and neuroprotection of treatment with mesenchymal stem cells (adult stem cells that can be converted into various skeletal tissues). It has identified the neuronal networks that support the cognitive performance and pathological changes that patients suffer during the progression of multiple sclerosis.

In this sense, the group is leading a multicentre project within the MAGNIMS group that aims to describe the changes that occur in patients' brain networks over time, as well as the consequences of the collapse of these networks.

The group is conducting a clinical trial on cognitive rehabilitation to understand the efficacy of cognitive training and the mechanisms of brain plasticity induced by the treatment in multiple sclerosis.

RESEARCH LINES

- Cognitive rehabilitation and brain plasticity in multiple sclerosis.

- MRI and genetic markers of multiple sclerosis long-term progression.

- Structural connectivity in multiple sclerosis.

PUBLICATIONS

Originals / I.F.: 72.121

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GRANTS FOR RESEARCH IN PROGRESS

Blanco Y. **Antigen-specific therapy in patients with NMO treated with tolerated autologous dendritic cells (Phase 1b clinical trial).**
Sponsored by: The Guthy-Jackson Charitable Foundation. GJCF_NMO_18
Duration: 01/08/2018-31/12/2019

Llufriu S. **Rehabilitació cognitiva i plasticitat cerebral a l'Esclerosi Múltiple: avaluació a través d'un assaig clínic aleatoritzat i controlat.**
Sponsored by: Fundació Catalana de Neurología. Neurol_17
Duration: 05/05/2017-

Llufriu S, Saiz A. **Biomarcadores de resonancia magnética avanzada en sclerosis multiple: asociación con el perfil clinic evolutivo y sustrato genetico.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00587
Duration: 01/01/2016-30/06/2020

Llufriu S. **Red Temática de Investigación Cooperativa en Salud - Esclerosis multiple.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). RD16/0015/0003
Duration: 01/01/2017-31/12/2021

Llufriu S. **Rehabilitación cognitiva y plasticidad cerebral en la Esclerosis Múltiple: en búsqueda de la evidencia.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/01030
Duration: 01/01/2019-31/12/2021

Llufriu S**. Rehabilitación cognitiva y plasticidad cerebral en la Esclerosis Múltiple: evaluación a través de un ensayo clínico aleatorizado y controlado.**
Sponsored by: Fundación Merck Salud. FSalud_17Serono17
Duration: 01/06/2017-01/06/2020

4.15 Parkinson disease and other neurodegenerative movement disorders: clinical and experimental research

LOCATION
CELLEX building, floor 3B

KEYWORDS
1. **Parkinson disease**
2. **Movement disorders**
3. **Degenerative neurological diseases**

RELATED DISEASES
1. **Parkinson disease**
2. **Progressive supranuclear palsy**
3. **Multiple system atrophy**
4. **Huntington's disease**
5. **Dystonia**

GROUP INVOLVED IN
CIBERNED
AGAUR_SGR17: 01502

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**30**	**150,127**	**5,00**	**81%**	**31%**



GROUP LEADER
M. Josep Martí Domenech (HCB)
T. 93 227 57 85
mjmarti@clinic.cat

EMERITUS
Eduard Tolosa (UB)

RESEARCHERS
Yaroslau Compta (HCB)
Mario Antonio Ezquerra (IDIBAPS)
Ruben Fernandez Santiago (IDIBAPS)
José Esteban Muñoz García (HCB)
Francesc Valldeoriola (HCB)

PRE-DOCTORAL RESEARCHERS
Alicia Garrido (FCRB)
Cèlia Painous (FCRB)
Alejandra Pérez Soriano (IDIBAPS)
Lluis Planellas (FCRB)
Almudena Sánchez Gómez (HCB-FCRB)

TECHNICIANS
Manel Fernandez Sánchez (IDIBAPS-UB)

NURSING STAFF
Ana Cámara (HCB)
Donina O'biang (FCRB)
Idoia Zaro (HCB)

ADMINISTRATIVE STAFF
Laura Maragall (CIBER-FCRB)

COLLABORATORS
Marina Cosgaya (FCRB)
Marisol Gallardo (FCRB)
Pilar Santacruz (FCRB)

PROBLEM

Parkinson's disease is a common disorder and its incidence is expected to increase in coming years. Although its causes are not yet known, it has been established that genetic and environmental factors intervene and, in some cases, it is difficult to diagnose with precision.

At present, no curative treatments exist, only measures for stabilising and controlling the symptoms. One of the main problems, however, is that by the time that the most characteristic motor symptoms become apparent, the death of most of the dopaminergic neurons in the brain, which are essential for motor function, has already occurred.

This pre-symptomatic phase is common to all neurodegenerative diseases, so it is important to extend research in order to apply treatments that will restore or modify the progression of these pathologies.

APPROACH

The group conducts in-depth clinical studies, develops clinical trials and engages in neuroimaging, genetic, genomic and biomarker studies related to Parkinson's disease and other movement disorders, such as Huntington's disease and dystonia.

In addition, it conducts research on the initial stage of Parkinson's disease in patients at risk of developing this condition, when its motor symptoms have not yet appeared and neuroprotective therapies are still possible.

IMPACT

The group's research has made it possible to create complete biorepositories of biological samples from patients with Parkinson's disease (blood, cerebrospinal fluid, urine, DNA, RNA and cells) for use in future research projects.

Using these biorepositories, the group aims to investigate the presence and applicability of biomarkers that are useful in the correct diagnosis and prognosis of Parkinson's disease and atypical Parkinsonian disorders. Through the use of cell models, it strives to obtain information about the basic molecular processes associated with Parkinson's and other neurodegenerative diseases, as well as genetic associations among the population, to locate risk genes.

RESEARCH LINES

- Molecular basis in Parkinson's disease.
- Neurodegenerative movement disorders: diagnose and treatment.
- Parkinson's disease prodromal phase.

PUBLICATIONS

Originals / I.F.: 150.127

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21. Shoeibi A, Litvan I, Tolosa E, Ser T, Lee E. **Progression of two Progressive Supranuclear Palsy phenotypes with comparable initial disability.** *PARKINSONISM & RELATED DISORDERS.* 66:87-93. I.F.: 4.360

22. Aldaz T, Nigro P, Sánchez-Gómez A, Painous C, Planellas L, Santacruz P, Cámara A, Compta Y, Valldeoriola F, Martí MJ, Muñoz E. **Non-motor symptoms in Huntington's disease: a comparative study with Parkinson's disease.** *JOURNAL OF NEUROLOGY.* 266(6):1340-1350. I.F.: 4.204

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24. Abos A., Segura B., Baggio H., Campabadal A., Uribe C., Garrido A., Camara A., Muñoz E., Valldeoriola F., Marti M., Junque C., Compta Y. **Disrupted structural connectivity of fronto-deep gray matter pathways in progressive supranuclear palsy.** *NEUROIMAGE-CLINICAL.* 23:101899. I.F.: 3.943

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27. Campabadal, Anna; Segura, Barbara; Junque, Carme; Serradell, Monica; Abos, Alexandra; Uribe, Carme; Baggio, Hugo C.; Gaig, Carles; Santamaria, Joan; Compta, Yaroslau; Bargallo, Nuria; Iranzo, Alex. **Cortical Gray Matter and Hippocampal Atrophy in Idiopathic Rapid Eye Movement Sleep Behavior Disorder.** *FRONTIERS IN NEUROLOGY*. 10:312. I.F.: 2.635

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29. Wetmore J., Arbelo J., Catalán M., Valldeoriola F., Rodriguez-Blazquez C., Martinez-Martin P. **Psychometric properties of the apathy scale in advanced Parkinson's disease.** *PARKINSONS DISEASE*. 1965394. I.F.: 2.051

30. Narváez-Martínez Y, Roldán Ramos P, Hoyos JA, Culebras D, Compta Y, Cámara A, Muñoz E, Martí MJ, Valldeoriola F, Rumià J. **Single-Center Complication Analysis Associated with Surgical Replacement of Implantable Pulse Generators in Deep Brain Stimulation.** *STEREOTACTIC AND FUNCTIONAL NEUROSURGERY*. 97(2):101-105. I.F.: 1.905

Review / I.F.: 13.336

1. Cortelli P., Calandra-Buonaura G., Benarroch E.E., Giannini G., Iranzo A., Low P.A., Martinelli P., Provini F., Quinn N., Tolosa E., Wenning G.K., Abbruzzese G., Bower P., Alfonsi E., Ghorayeb I., Ozawa T., Pacchetti C., Pozzi N.G., Vicini C., Antonini A., Bhatia K.P., Bonavita J., Kaufmann H., Pellecchia M.T., Pizzorni N., Schindler A., Tison F., Vignatelli L., Meissner W.G. **Stridor in multiple system atrophy: Consensus statement on diagnosis, prognosis, and treatment.** *NEUROLOGY*. 93(14):630-639. I.F.: 8.689

2. Gaig C, Compta Y. **Neurological profiles beyond the sleep disorder in patients with anti-IgLON5 disease.** *CURRENT OPINION IN NEUROLOGY*. 32(3):493-499. I.F.: 4.647

Letters / I.F.: 16.992

1. Vilas D, Gelpi E, Aldecoa I, Grau O, Rodriguez-Diehl R, Jaumà S, Martí MJ, Tolosa E. **Lack of central and peripheral nervous system synuclein pathology in R1441G LRRK2-associated Parkinson's disease.** *JOURNAL OF NEUROLOGY NEUROSURGERY AND PSYCHIATRY*. 90(7):832-833. I.F.: 8.272

2. Rodriguez-Diehl R, Vilas D, Bargalló N, Tolosa E, Gelpi E. **Co-morbid demyelinating lesions and atypical clinical features in a patient with Parkinson's disease.** *PARKINSONISM AND RELATED DISORDERS*. 62:242-245. I.F.: 4.360

3. Valldeoriola F. **Simultaneous low-frequency deep brain stimulation of the substantia nigra pars reticulata and high-frequency stimulation of the subthalamic nucleus to treat levodopa unresponsive freezing of gait in Parkinson's disease: A pilot study.** *PARKINSONISM & RELATED DISORDERS*. S1353-8020(18):30537-6. I.F.: 4.360

Editorial / I.F.: 17.924

1. Ezquerra, Mario; Marti, Maria-Jose; Fernandez-Santiago, Ruben. **Parkinson's disease as a systemic pathology**. *AGING-US*. 11(4):1081-1082. I.F.: 5.515

2. Zetterberg H, Compta Y. **A tear fluid proteome of Parkinson's disease.** *PARKINSONISM & RELATED DISORDERS*. 63:1-2. I.F.: 4.360

3. Pérez-Soriano A; Cámara A; Compta Y. **Setting in motion physiotherapy for MSAp.** *PARKINSONISM & RELATED DISORDERS*. 67:72-73. I.F.: 4.360

4. Painous, Celia; Perissinotti, Andres; Marti, Maria J. **Is serotonin pathology a good biomarker in vivo for early Parkinson's disease?** *ANNALS OF TRANSLATIONAL MEDICINE*. 7(8):S351. I.F.: 3.689

Case Reports / I.F.: 9.995

1. Carreño M., Martí M., Aldecoa I., Painous C., Conde E., Valldeoriola F., Valls-Solé J., Bargalló N., Gil F., Manzanares I., Setoain X., Donaire A., Muñoz E., Roldán P., Boget T., Pintor L., Bailles E., Rumià J. **Unilateral pallidal stimulation for disabling dystonia due to Rasmussen's disease.** *JOURNAL OF NEUROLOGY NEUROSURGERY AND PSYCHIATRY*. 90(1):108-110. I.F.: 8.272

2. Roldán P., Najarro R., Di Somma A., Culebras D., Hoyos J., Compta Y., Cámara A., Muñoz E., Martí M., Valldeoriola F., Rumià J. **Malignant Glioma Developed on a Patient Under Deep Brain Stimulation: Pitfalls in Management.** *WORLD NEUROSURGERY*. 129:85-89. I.F.: 1.723

Consortium Publications / I.F.: 52.167

1. Mike A Nalls, Cornelis Blauwendraat, Costanza L Vallerga, Karl Heilbron, Sara Bandres-Ciga, Diana Chang, Manuela Tan, Demis A Kia, Alastair J Noyce, Angli Xue, Jose Bras, Emily Young, Rainer von Coelln, Javier Simón-Sánchez, Claudia Schulte, Manu Sharma, Lynne Krohn, Lasse Pihlstrøm, Ari Siitonen, Hirotaka Iwaki, Hampton Leonard, Faraz Faghri, J Raphael Gibbs, Dena G Hernandez, Sonja W Scholz, Juan A Botia, Maria Martinez, Jean-Christophe Corvol, Suzanne Lesage, Joseph Jankovic, Lisa M Shulman, Margaret Sutherland, Pentti Tienari, Kari Majamaa, Mathias Toft, Ole A Andreassen, Tushar Bangale, Alexis Brice, Jian Yang, Ziv Gan-Or, Thomas Gasser, Peter Heutink, Joshua M Shulman, Nicholas W Wood, David A Hinds, John A Hardy, Huw R Morris, Jacob Gratten, Peter M Visscher, Robert R Graham, Andrew B Singleton, and Me Research Team; System Genomics of Parkinson's Disease Consortium; International Parkinson's Disease Genomics Consortium. Disease.Genomics Consortium. **Identification of novel risk loci, causal insights, and heritable risk for Parkinson's disease: a meta-analysis of genome-wide association studies**. *LANCET NEUROLOGY*. 18(12):1091-1102. I.F.: 28.755

2. Bandres-Ciga S, Saez-Atienzar S, Bonet-Ponce L, Billingsley K, Vitale D, Blauwendraat C, Gibbs JR, Pihlstrøm L, Gan-Or Z,, Cookson MR, Nalls MA, Singleton

AB International Parkinson's Disease Genomics Consortium (IPDGC). **The endocytic membrane trafficking pathway plays a major role in the risk of Parkinson's disease.** *MOVEMENT DISORDERS.* 34(4):460-468. I.F.: 8.061

3. Asha Kishore, Ashwin Ashok Kumar Sreelatha, Marc Sturm, Felix von-Zweydorf, Lasse Pihlstrøm, Francesco Raimondi, Rob Russell, Peter Lichtner, Moinak Banerjee, Syam Krishnan, Roopa Rajan, Divya Kalikavil Puthenveedu, Sun Ju Chung, International Parkinson's Disease Genomics Consortium (IPDGC), Comprehensive Unbiased Risk Factor Assessment for Genetics and Environment in Parkinson's Disease (COURAGE-PD), Peter Bauer, Olaf Riess, Christian Johannes Gloeckner, Rejko Kruger, Thomas Gasser, Manu Sharma. **Understanding the role of genetic variability in LRRK2 in Indian population.** *MOVEMENT DISORDERS.* 34(4):496-505. I.F.: 8.061

4. Martinez-Martin, P; Radicati, F G; Rodriguez Blazquez, C; Wetmore, J; Kovacs, N; Chaudhuri, K Ray; Stocchi, F; Vuletic, PDCS European Study Group. **Extensive validation study of the Parkinson's Disease Composite Scale.** *EUROPEAN JOURNAL OF NEUROLOGY.* 26(10):1281-1288. I.F.: 4.387

5. Santos-García D; de Deus Fonticoba T; Suárez Castro E; Aneiros Díaz A; Paz González JM; Feal Panceiras MJ; García Sancho C; Jesús S; Mir P; Aguilar M; Pastor P; Hernández Vara J; de Fábregues-Boixar O; Puente V; Crespo Cuevas A; González-Aramburu I; Infante J; Carrillo Padilla F; Pueyo M; Escalante S; Bernardo N; Solano B; Cots Foraster A; Martinez-Martin P; COPPADIS Study Group. **High ultrasensitive serum C-reactive protein may be related to freezing of gait in Parkinson's disease patients.** *JOURNAL OF NEURAL TRANSMISSION.* 126(12):1599-1608. I.F.: 2.903

GRANTS FOR RESEARCH IN PROGRESS

Marti MJ, Compta Y. **Amplificación de autoagregación de alfa-sinucleina y 4R-tau en tejido cerebral y liquido cerebroespinal mediante RTQuIC como biomarcador diferencial de parkinsonismos degenerativos.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00096
Duration: 01/01/2018-31/12/2020

Marti MJ. **The Parkinson's Progression Markers Initiative (PPMI).**
Sponsored by: Michael J. Fox Foundation for Parkinson (MJFF). 041396
Duration: 06/11/2013-31/12/2023

Compta Y. **FAIR-PARK-II: Conservative iron chelation as a disease-modifying strategy in Parkinsons disease: a multicentric parallel-group ,placebo-controlled, randomized clinical trial of deferiprone.**
Sponsored by: European commission. H2020-PHC-2014-2s
Duration: 01/05/2015-30/04/2020

Ezquerra M. **Epigenetic analysis of iPSC-derived dopaminergic neurons and blood cells in Parkinson disease.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI14/00426
Duration: 01/01/2015-30/06/2019

Ezquerra M. **MicroRNAs as biomarker of conversion of REM behaviour disorder to Parkinson's disease.**
Sponsored by: Fundación Tatiana Pérez de Guzmán el Bueno. FundTatianaPG_Proy16
Duration: 23/11/2016-30/10/2020

Ezquerra M. **MicroRNAs as biomarkers of the prodromal stage of Parkinson's disease. Expansion of microRNA findings to Ashkenazi Jew PD Cohorts.**
Sponsored by: Michael J. Fox Foundation for Parkinson. MJFF_2015_BMar_f
Duration: 08/06/2018-07/12/2019

Fernández Santiago R. **The beginnings of Parkinson Disease: a study of early disease mechanisms in a humanized in-vitro model.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO). SAF2015_73508_JIN
Duration: 01/01/2017-31/12/2019

Martí MJ. **Parkinson and other Neurodegenerative Movement Disorders: Clinical and Experimental Research.**
Sponsored by: Generalitat de Catalunya. AGAUR_SGR17_01502
Duration: 01/01/2017-31/12/2020

Martí MJ. **Fox Trial Finder Spain.**
Sponsored by: Michael J. Fox Foundation for Parkinson. MJFF_2018
Duration: 01/01/2019-31/01/2020

4.16 Molecular neuropharmacology

LOCATION
IIBB-CSIC labs

KEYWORDS
1. **Neurodegeneration**
2. **Neuroinflammation**

RELATED DISEASES
1. **Multiple sclerosis**
2. **Experimental autoimmune encephalomyelitis**

GROUP INVOLVED IN
CIBERNED



GROUP LEADER
Guadalupe Mengod (IIBB-CSIC)
T. 93 363 83 23
guadalupe.mengod@iibb.csic.es

RESEARCHERS
Roser Cortés (IIBB-CSIC)
Mª Teresa Vilaró (IIBB-CSIC)

TECHNICIANS
Susana Muñoz (CIBER)

PROBLEM

Multiple sclerosis is a degenerative disease of the central nervous system that mainly affects young adults, especially women. It is a cause of significant health burdens, both individually and in the family and community.

It is a chronic inflammatory disease characterized by damage to the axons (the branches of neurons) and a loss of myelin from neurons in the brain and spinal cord. This occurs as a result of infiltration by white blood cells (lymphocytes and macrophages) and results in the loss of neurological functions. To find new therapies, researchers must understand how this inflammation works.

APPROACH

The group focuses its work on the analysis of phosphodiesterases, enzymes involved in neuroinflammation.

The group uses cell lines and primary cultures of macrophages, as well as a multiple sclerosis model in mice to find new therapeutic targets to treat this disease. Greater knowledge of the metabolic pathways involved and their alterations will help us identify new drugs capable of modifying the disease's progression.

IMPACT

The group has seen that some phosphodiesterases (enzymes that degrade phosphodiester bonds in cellular messengers, cyclic AMP and/or cyclic GMP) involved in neuroinflammation are expressed differently according to the sex of the animals. It has also shown a significant reduction of clinical symptoms when mice with experimental autoimmune encephalomyelitis are treated chronically with a phosphodiesterase 7 inhibitor, specific to the cAMP.

In the spinal cord of these treated mice changes in the messenger RNA levels of some phosphodiesterases were observed, suggesting a potential treatment for this disease.

RESEARCH LINES

The molecular neuropharmacology group studies the involvement of the cAMP cascade in the polarization of microglia and macrophages toward anti- or pro-inflammatory phenotypes both in cell culture -cell lines and primary cultures- and in the CNS of EAE (experimental autoimmune encephalomyelitis) mice, a multiple sclerosis animal model.

GRANTS FOR RESEARCH IN PROGRESS

Mengod G. **¿Están implicados los cambios fenotípicos de las microglía/macrófagos en los efectos beneficiosos de los inhibidores de PDEs del AMPc en la EAE crónica?**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00148
Duration: 01/01/2016-30/06/2019

Vilaró MT. **Modulación de circuitos cortico-mesencefálicos y cortico-límbicos por nuevas terapias antidepresivas.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00287
Duration: 01/01/2017-30/06/2020

4.17 Systems neuroscience

LOCATION
Còrsega 176

KEYWORDS
1. **Cerebral cortex**
2. **Brain states**
3. **Neural networks**
4. **Brain rhythms**
5. **Cortical models**
6. **Oscillations**
7. **Virtual reality**
8. **Body representation**

RELATED DISEASES
1. **Disorders of consciousness**
2. **Epilepsy**

GROUP INVOLVED IN
AGAUR_SGR17: 01296

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**12**	**88,32**	**7,36**	**75%**	**33%**



GROUP LEADER
Maria V. Sanchez-Vives
(ICREA-IDIBAPS)
T. 93 227 54 00 (Ext.: 4301)
msanche3@clinic.cat

POST-DOCTORAL RESEARCHERS
Jose Miguel Arcas (IDIBAPS)
Miquel Bosch (IDIBAPS)
Murat Demirtas (IDIBAPS)
Justyna Swidrak (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Almudena Barbero (IDIBAPS)
Alessandra Camassa (IDIBAPS)
Leonardo Dalla (IDIBAPS)
Tania Johnston (IDIBAPS)
José Manuel Sánchez Sánchez (IDIBAPS)
Melodia Torao (IDIBAPS)

TECHNICIANS
Marçal Bravo (IDIBAPS)
Tony Donegan (IDIBAPS)
Christopher Heidelmann (IDIBAPS)
Arnau Manasanch (IDIBAPS)
Carlos Prieto (IDIBAPS)
Brenda Elizabeth Ryan (IDIBAPS)

ADMINISTRATIVE STAFF
Patricia Carvajal (IDIBAPS)
Vanessa Fernández (IDIBAPS)

PROBLEM

How are the emergent activity patterns of the brain generated in different brain states, both physiological and pathological? What are the cellular and network underlying mechanisms?

These are questions of basic research in neurosciences that are critical to the design of strategies for exogenous modulation of brain activity in pathological states. Our group has also a focus on neurotechnology, and the design and testing of novel brain interfaces.

Finally, the understanding of the impact of embodiment in immersive virtual reality and its applications on rehabilitation is one of our objectives.

APPROACH

We use a combination of experimental and computational approaches. We use different electrophysiological techniques (from cellular to global brain approaches), novel neurotechnological tools that currently are mostly focused around graphene-based interfaces, brain stimulation, and photopharmacology in collaboration with the group of Dr. Gorostiza (IBEC).

But we consider that the technology employed must be determined by the questions to be answered, therefore we also use other tools like brain imaging (fMRI) or calcium imaging or collaborate with other groups. Immersive virtual reality and embodiment techniques are also our expertise, and are being employed in laboratory and clinical settings.

IMPACT

Our group has found that the slow oscillatory pattern of the brain is the default activity of the cerebral cortex, and is generated in situations of physical or functional isolation of the cortical network. Further, the alterations of this emergent pattern in conditions of early ageing, Alzheimer's disease, Williams syndrome, and Down syndrome, provide information about the underlying network alterations.

Our objectives are to investigate exogenous interventions for neuromodulation based on data-driven models to be applied in cortical dysfunction. In the field of a virtual reality applications, we investigate how modifying a virtual body modulates pain and brain plasticity.

RESEARCH LINES

- Cortical network dynamics.
- Brain states.
- Neurotechnology.
- Virtual embodiment.

PUBLICATIONS

Originals / I.F.: 88.315

1. Masvidal-Codina E, Illa X, Dasilva M, Calia AB, Dragojevi? T, Vidal-Rosas EE, Prats-Alfonso E, Martínez-Aguilar J, De la Cruz JM, Garcia-Cortadella R, Godignon P, Rius G, Camassa A, Del Corro E, Bousquet J, Hébert C, Durduran T, Villa R, Sanchez-Vives MV, Garrido JA, Guimerà-Brunet A . **High-resolution mapping of infraslow cortical brain activity enabled by graphene microtransistors.** *NATURE MATERIALS.* 18(3):280-288. I.F.: 38.887

2. Barbero-Castillo A, Weinert JF, Camassa A, Perez-Mendez L, Caldas-Martinez S, Mattia M, Sanchez-Vives MV. **Cortical network complexity under different levels of excitability controlled by electric fields.** *BRAIN STIMULATION.* 12(2):e97-e99. I.F.: 6.919

3. Capone C, Rebollo B, Muñoz A, Illa X, Del Giudice P, Sanchez-Vives MV, Mattia M . **Slow Waves in Cortical Slices: How Spontaneous Activity is Shaped by Laminar Structure.** *CEREBRAL CORTEX.* 29(1):319-335. I.F.: 5.437

4. Matamala-Gomez M, Diaz Gonzalez AM, Slater M, Sanchez-Vives MV. **Decreasing Pain Ratings in Chronic Arm Pain Through Changing a Virtual Body: Different Strategies for Different Pain Types.** *JOURNAL OF PAIN.* 20(6):685-697. I.F.: 5.424

5. Nierula B; Spanlang B; Martini M; Borrell M; Nikulin V; Sanchez-Vives M. **Agency and responsibility over virtual movements controlled through different paradigms of brain–computer interface.** *JOURNAL OF PHYSIOLOGY-LONDON.* I.F.: 4.950

6. Castano-Prat P, Perez-Mendez L, Perez-Zabalza M, Sanfeliu C, Giménez-Llort L, Sanchez-Vives MV. **Altered slow (<1 Hz) and fast (beta and gamma) neocortical oscillations in the 3xTg-AD mouse model of Alzheimer's disease under anesthesia.** *NEUROBIOLOGY OF AGING.* 79:142-151. I.F.: 4.398

7. Bourdin P; Martini M; Sanchez-Vives M. **Altered visual feedback from an embodied avatar unconsciously influences movement amplitude and muscle activity.** *SCIENTIFIC REPORTS.* 9(1):19747. I.F.: 4.011

8. Pastorelli, Elena; Capone, Cristiano; Simula, Francesco; Sanchez-Vives, Maria V.; Del Giudice, Paolo; Mattia, Maurizio; Paolucci, Pier Stanislao. **Scaling of a Large-Scale Simulation of Synchronous Slow-Wave and Asynchronous Awake-Like Activity of a Cortical Model With Long-Range Interconnections**. *FRONTIERS IN SYSTEMS NEUROSCIENCE.* 13:33. I.F.: 3.928

9. Dalla Porta, Leonardo Matias, Fernanda S. dos Santos, Alfredo J. Alonso, Ana Carelli, Pedro, V Copelli, Mauro Mirasso, Claudio R. **Exploring the Phase-Locking Mechanisms Yielding Delayed and Anticipated Synchronization in Neuronal Circuits.** *FRONTIERS IN SYSTEMS NEUROSCIENCE.* 13:41. I.F.: 3.928

10. De Bonis G, Dasilva M, Pazienti A, Sanchez-Vives MV, Mattia M, Paolucci PS. **Analysis pipeline for extracting features ofcortical slow oscillations.** *FRONTIERS IN SYSTEMS NEUROSCIENCE.* 13:70. I.F.: 3.928

11. D'Andola M, Giulioni M, Dante V, Del Giudice P, Sanchez-Vives MV. **Control of cortical oscillatory frequency by a closed-loop system**. *JOURNAL OF NEUROENGINEERING AND REHABILITATION.* 16(1):7. I.F.: 3.582

12. Navarro, Daniela; Alvarado, Mayvi; Figueroa, Alejandra; Gonzalez-Liencres, Cristina; Salas-Lucia, Federico; Pacheco, Pablo; Sanchez-Vives, Maria V.; Berbel, Pere. **Distribution of GABAergic Neurons and VGluT1 and VGAT Immunoreactive Boutons in the Ferret (Mustela putorius) Piriform Cortex and Endopiriform Nucleus. Comparison With Visual Areas 17, 18 and 19.** *FRONTIERS IN NEUROANATOMY.* 13:54. I.F.: 2.923

Review / I.F.: 12.097

1. Fontenele A., De Vasconcelos N., Feliciano T., Aguiar L., Soares-Cunha C., Coimbra B., Dalla Porta L., Ribeiro S., Rodrigues A., Sousa N., Carelli P., Copelli M. **Criticality between Cortical States.** *PHYSICAL REVIEW LETTERS.* 122(20):208101. I.F.: 9.227

2. Matamala-Gomez, Marta; Donegan, Tony; Bottiroli, Sara; Sandrini, Giorgio; Sanchez-Vives, Maria V.; Tassorelli, Cristina. **Immersive Virtual Reality and Virtual Embodiment for Pain Relief.** *FRONTIERS IN HUMAN NEUROSCIENCE.* 13:279. I.F.: 2.870

GRANTS FOR RESEARCH IN PROGRESS

Sanchez-Vives MV. **HBP SGA2: Human Brain Project Specific Grant Agreement 2.**
Sponsored by: European commission.
H2020_FLAG_HBP_17_785907
Dutarion: 01/04/2018-31/03/2020

Sanchez-Vives MV. **Graphene Core 2: Graphene Flagship Core Project 2.**
Sponsored by: European commission.
H2020_FLAG_GRA_17_785219
Duration: 01/04/2018-31/03/2020

Sanchez-Vives MV. **TRANSLACORTEX: Desde el estudio de la fisiología cortical a la comprensión y tratamiento de las patologías que la afectan.**
Sponsored by: Ministerio de Economia y Competitividad (MINECO).
BFU2017_85048_R
Duration: 01/01/2018-31/12/2020

Sanchez-Vives MV. **Neurovirtual.**
Sponsored by: Generalitat de Catalunya.
AGAUR_SGR17_01296
Duration: 01/01/2017-31/12/2020

Sanchez-Vives MV. **GraphCAT: comunidad emergente de grafeno de Catalunya.**
Sponsored by: Generalitat de Catalunya.
GENCAT_TecEmergent18
Duration: 01/07/2018-30/06/2021

Sanchez-Vives MV. **Cluster Emergente del Cerebro Humano (CECH).**
Sponsored by: Generalitat de Catalunya.
GENCAT_TecEmergent18
Duration: 01/01/2019-31/12/2021

Sanchez-Vives MV. **Dinámica de las oscilaciones lentas: experimentos, análisis, modelos e intervenciones terapéuticas (SloW-Dyn).**
Sponsored by: Ministerio de Economia y Competividad (MINECO).
PCIN-2015_162_C02_01
Duration: 01/12/2015-31/05/2019

Sanchez-Vives MV. **Rehabilitación domiciliaria de la rodilla inmovilizada mediante realidad virtual inmersiva.**
Sponsored by: Fundación de Investigación Médica Mútua Madrileña. FundMM_19
Duration: 24/09/2019-23/09/2022

4.18 Alzheimer's disease and other cognitive disorders

LOCATION
CELLEX building, floor 3B
HCB building, E8P4

KEYWORDS
1. **Alzheimer disease**
2. **Degenerative neurological diseases**

RELATED DISEASES
1. **Alzheimer's disease**
2. **Frontotemporal dementia**
3. **Primary progressive aphasia**
4. **Dementia with lewy bodies**
5. **Prion diseases**

GROUP INVOLVED IN
AGAUR_SGR17: 01507

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**32**	**224,15**	**7,00**	**84%**	**41%**



GROUP LEADER
Raquel Sánchez-Valle (HCB)
T. 93 227 57 85
rsanchez@clinic.cat

RESEARCHERS
Mircea Balasa (HCB)
Albert Lladó (HCB)
Lorena Rami (IDIBAPS)

POST-DOCTORAL RESEARCHERS
Anna Antonell (IDIBAPS)
Beatriz Bosch (FCRB)

PRE-DOCTORAL RESEARCHERS
Sergi Borrego (HCB)
Nina Coll (IDIBAPS)
Jose Miguel Contador (HCB)
Neus Falgàs (FCRB)
Núria Montagut (HCB)
Jaume Olives (FCRB)
Agnès Perez Millán (FCRB)
Oscar Ramos (IDIBAPS)
Mariona Ruiz Peris (FCRB)
Adria Tort (FCRB)

TECHNICIANS
Cristina Muñoz Garcia (FCRB)

NURSING STAFF
Guadalupe Fernández Villullas (FCRB)

COLLABORATORS
Magdalena Castellví (HCB)
José Lluis Molinuevo (HCB)

PROBLEM

Neurodegenerative dementias are one of the main causes of disability, dependency and death worldwide. Around 50 million people have dementia, and there are nearly 10 million new cases every year.

Alzheimer's disease is the most common neurodegenerative dementia, although there are many others, such as frontotemporal dementia, progressive aphasias, dementia with Lewy bodies, and prion diseases. The cause of these diseases in most patients are still unknown. An accurate diagnosis in the early phases of the disease is key for the optimal management of the disease.

APPROACH

The Alzheimer's disease and other cognitive disorders (ADCD) group is a multidisplinary team composed by neurologists, neuropsychologists, biologists, nurses, speech therapist, physicist and lab technicians.

The group works to better understand the causes of different forms of neurodegenerative dementias and to characterize the preclinical and early phases and the progression of these diseases with the general aim to establish an accurate early diagnosis and an accurate prognosis.

The group participates in international interventional clinical trials of modifying treatments for Alzheimer's disease, both sporadic and genetic forms of the disease and frontotemporal lobar degeneration.

IMPACT

In recent years, the group has analysed the usefulness of different diagnostic and prognostic biomarkers in Alzheimer's disease, frontotemporal dementia and dementia with Lewy bodies; characterized the initial phases of autosomal dominant Alzheimer's disease and genetic frotontemporal dementia; investigated new genetic causes and evaluated the impact of new diagnostic criteria in the clinical-neuropathological correlations.

The results have been presented in top-of their-field international conferences, and resulted in more than 100 scientific publications and several doctoral theses.

RESEARCH LINES

The main research lines of the Alzheimer's Disease and other Cognitive Disorders Unit are:

- The study of genetically determined dementias in preclinical and early clinical phases.

- Diagnostic and prognostic biomarkers of early-onset sporadic Alzheimer's disease.

- Healthy aging - Alzheimer's disease continuum (subjective cognitive decline, preclinical and prodromal Alzheimer's disease).

-Neuropathology of neurodegenerative diseases.

- Rare neurodegenerative dementias: Frontotemporal lobar degeneration, prion diseases and Lewy body dementia.

- Pharmacological and Non-pharmacologicerative cognitive disorders.

PUBLICATIONS

Originals / I.F.: 224.148

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Case Reports / I.F.: 6.878

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Consortium Publications / I.F.: 4.398

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GRANTS FOR RESEARCH IN PROGRESS

Antonell A. **Comparative study between genetic Alzheimer's disease and genetic Frontotemporal dementia using lymphoblastoid cell lines and brain tissue from patients.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00670
Duration:01/01/2018-31/12/2020

Balasa M. **Primary-specialized Care Partnership for an Earlier Diagnosis of Alzheimer's Disease.**
Sponsored by: Alzheimer's Association & Global Brain Health Institute.
GBHI_ALZ-18-542110
Duration:01/01/2018-31/07/2019

Sánchez-Valle R, Molinuevo JL. **MEDIT-AGEING: Investigating the impact of meditation training on mental health and wellbeing in the ageing population.**
Sponsored by: European commission.
H2020_PHC_15
Duration: 01/01/2016-31/12/2020

Rami L. **Subjective cognitive decline in preclinical Alzheimer's Disease: European initiative on harmonization and on a lifestyle-based prevention strategy.(EURO-SCD)**
Sponsoredby: Instituto de Salud Carlos III (ISCIII). AC14/00014
Duration: 01/01/2015-30/06/2019

Rami L. **Efectos de la pérdida de peso mediante dieta mediterránea hipocalórica y aumento de la actividad física sobre la congnición y la estructura y función cerebrales determinados por resonancia magnética funcional en individuos obesos con síndrome metabólico.**
Sponsoredby: Instituto de Salud Carlos III (ISCIII). PI14/00563
Duration: 01/01/2015-30/06/2019

Rami L. **Diseño y administración de nuevas pruebas cognitivas sensibles a los cambios cognitivos sutiles en sujetos con deterioro cognitivo subjetivo y biomarcadores positivos en enfermedad de Alzheimer.**
Sponsored by: Beca Proyecto Memoriable. kNOW Alzheimer_Stada
Duration: 01/10/2018-01/10/2019

Sánchez-Valle R. **Study of genetic frontotemporal dementia in preclinical and early stages of the disease: cognitive**

performance, structural and functional neuroimaging and biochemical markers (GENFI2-Barcelona site).
Sponsoredby: Fundació La Marató de TV3.
TV3_Neuro_14
Duration: 12/05/2015-11/05/2020

Sánchez-Valle R. **Estudio de biomarcadores y desarrollo de nuevas estrategias terapéuticas en una cohorte multicéntrica de Demencia Frontotemporal.**
Sponsored by: Generalitat de Catalunya.
PERIS_SLT002/16/00408
Duration: 27/03/2017-31/12/2019

Sánchez-Valle R. **Searching for therapeutic interventions in frontotemporal dementia with C9ORF72 repeat expansions in the presymptomatic stage (PreFrontALS).**
Sponsoredby: Instituto de Salud Carlos III (ISCIII). AC14/00013
Duration: 01/01/2015-30/06/2019

Sánchez-Valle R. **Genetic dementia (autosomal dominant Alzheimer's disease and genetic prion disease) in preclinical and early stages of the disease: cognitive performance, neuroimaging and biochemical markers.**
Sponsoredby: Instituto de Salud Carlos III (ISCIII). PI16/000235
Duration: 01/01/2017-30/06/2021

Sanchez-Valle R. **AETIONOMY: Organising Knowledge about Neurodegenerative Disease Mechanisms for the Improvement of Drug Development and Therapy.**
Sponsored by: European Commission.
IMI_12_8th_2stg
Duration: 01/01/2014-12/02/2019

Sanchez-Valle R. **ADPS: Alzheimer's Disease Prediction Service (ADPS): digital biomarker for Real-World Evidence (RWE) in AD.**
Sponsored by: European Commission.
EITHealth_2018
Duration: 01/01/2018-12/02/2019

Sánchez-Valle R. **Dominantly Inherited Alzheimer Network (DIAN).**
Sponsored by: National Institutes of Health.
NIH_PAR-13-147
Duration: 24/06/2019-23/06/2022

DOCTORAL THESES

Lladó A, Sanchez del Valle R. **Utilitat dels marcadors bioquímics i de neuroimatge per al diagnòstic de la malaltia d'Alzheimer d'inici precoç.**
PhD student: Neus Falgàs Martinez

4.19 Mechanisms of neurotoxicity and neurodegeneration

LOCATION
IIBB-CSIC labs

KEYWORDS
1. **Brain aging**
2. **Environment**
3. **Lifestyle**
4. **Cognitive loss**
5. **Neuroprotection**

RELATED DISEASES
1. **Alzheimer's disease**

GROUP INVOLVED IN
CIBERESP
AGAUR_SGR17: 000106

AWARDS
Innovation prize
Institution: Radio Molins de Rei
Awardee/s: Coral Sanfeliu

Tribute for scientific merits during the 2018-2019 academic year
Institution: CSIC
Awardee/s: Coral Sanfeliu

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**5**	**20,80**	**4,16**	**80%**	**0%**



GROUP LEADER
Coral Sanfeliu (IIBB-CSIC)
T. 93 363 83 18
coral.sanfeliu@iibb.csic.es

RESEARCHERS
Eduardo Rodríguez Farré (IIBB-CSIC)
Cristina Suñol (IIBB-CSIC)

POST-DOCTORAL RESEARCHERS
Ruben Corpas (IIBB-CSIC)

PRE-DOCTORAL RESEARCHERS
Elisa García Lara (IIBB-CSIC)

TECHNICIANS
Albert Parull (IIBB-CSIC)

COLLABORATORS
Samuel Aguirre (IIBB-CSIC)
Maria Puigcercós Alaó (IIBB-CSIC)

PROBLEM

The social and health improvements of recent decades have led to a significant increase in the life expectancy of the population, and these advances have been accompanied by an important rise in the incidence of diseases associated with age.

Lifestyle can also lead to unhealthy habits and environments. Most neurons in the brain age with us and, over time, memory and dementia issues may appear. In view of this scenario, new therapies are needed to prevent or decrease the onset of neurodegenerative changes.

APPROACH

The group uses animal models, cell cultures, and samples of human tissue to investigate neuroprotection and prevention therapies in the face of neurological lesions and cognitive loss.

Studying the mechanisms of neurotoxicity and neurodegeneration of Alzheimer's disease has allowed the group to define targets in the prevention of pathological brain ageing: some of these targets are changes in the brain such as the accumulation of abnormal proteins, inflammation, oxidative stress and decreased neurotrophic factors. The strategy is to strengthen the cellular mechanisms of defence against these processes with new drugs or therapies.

IMPACT

The group has obtained neuroprotection by activating mechanisms against the accumulation of anomalous proteins that causes Alzheimer's. In doing so, it has observed cognitive improvement in Alzheimer's disease model mice. It is interesting to confirm that these mechanisms were also activated in healthy mice.

Therefore, it might be possible to achieve a preventive effect and brain resilience.
The group wants to define the most powerful therapies that activate these molecular resilience pathways and, also, the influence of the environment and of lifestyle in neurodegenerative diseases.

RESEARCH LINES

- Increase of brain resilience by activation of SIRT1-SIRT3 axis.

- Neuronal effects of environmental chemicals.

- Neuroprotection by novel inhibitors of the soluble Epoxide hydrolase.

PUBLICATIONS

Originals / I.F.: 20.799

1. Corpas R., Griñán-Ferré C., Rodríguez-Farré E., Pallàs M., Sanfeliu C. **Resveratrol Induces Brain Resilience Against Alzheimer Neurodegeneration Through Proteostasis Enhancement**. *MOLECULAR NEUROBIOLOGY*. 56(2):1502-1516. I.F.: 4.586

2. Castano-Prat P, Perez-Mendez L, Perez-Zabalza M, Sanfeliu C, Giménez-Llort L, Sanchez-Vives MV. **Altered slow (<1 Hz) and fast (beta and gamma) neocortical oscillations in the 3xTg-AD mouse model of Alzheimer's disease under anesthesia.** *NEUROBIOLOGY OF AGING*. 79:142-151. I.F.: 4.398

3. Cosín-Tomàs M., Senserrich J., Arumí-Planas M., Alquézar C., Pallàs M., Martín-Requero Á., Suñol C., Kaliman P., Sanfeliu C. **Role of resveratrol and selenium on oxidative stress and expression of antioxidant and anti-aging genes in immortalized lymphocytes from Alzheimer's disease patients.** *NUTRIENTS*. 11(8):E1764. I.F.: 4.171

4. De la Rosa A, Solana E, Corpas R, Bartrés-Faz D, Pallàs M, Vina J, Sanfeliu C, Gomez-Cabrera MC. **Long-term exercise training improves memory in middle-aged men and modulates peripheral levels of BDNF and Cathepsin B.** *SCIENTIFIC REPORTS*. 9(1):3337. I.F.: 4.011

5. Corpas, Ruben; Solana, Elisabeth; De la Rosa, Adrian; Sarroca, Sara; Grinan-Ferre, Christian; Oriol, Mireia; Corbella, Emili; Rodriguez-Farre, Eduard; Vina, Jose; Pallas, Merce; Bartres-Faz, David; Carmen Gomez-Cabrera, Mari; Sanfeliu, Coral. **Peripheral Maintenance of the Axis SIRT1-SIRT3 at Youth Level May Contribute to Brain Resilience in Middle-Aged Amateur Rugby Players.** *FRONTIERS IN AGING NEUROSCIENCE*. 11:352. I.F.: 3.633

Review / I.F.: 3.603

1. Schosserer M., Banks G., Dogan S., Dungel P., Fernandes A., Marolt Presen D., Matheu A., Osuchowski M., Potter P., Sanfeliu C., Tuna B.G., Varela-Nieto I., Bellantuono I. **Modelling physical resilience in ageing mice.** *MECHANISMS OF AGEING AND DEVELOPMENT*. 177:91-102. I.F.: 3.603

GRANTS FOR RESEARCH IN PROGRESS

Sanfeliu C. **Unveiling Soluble Epoxide Hydrolase as a new pharmacological target in Alzheimers disease: focus on inflammation and proteolysis.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
SAF-2016-77703-C2-2-R
Duration: 30/12/2016-29/12/2019

4.20 Cellular neurobiology

LOCATION
UB School of Medicine
IIBB-CSIC labs

KEYWORDS
1. **Neuroinflammation**
2. **Microglia**
3. **CD200**
4. **CD200R**
5. **C/EBPs**
6. **Neurodegenerative diseases**

RELATED DISEASES
1. **Parkinson's disease**
2. **Amytrophic lateral sclerosis**
3. **Multiple sclerosis**
4. **Alzheimer's disease**
5. **Huntington's disease**

GROUP INVOLVED IN
AGAUR_SGR17: 00939

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**3**	**10,86**	**3,62**	**33%**	**0%**



GROUP LEADER
Josep Saura (UB)
T. 93 402 19 20
josepsaura@ub.edu

RESEARCHERS
Joan Serratosa (IIBB-CSIC)
Carme Solà (IIBB-CSIC)

TECHNICIANS
Rosario Ruiz López (UB)

PROBLEM

Glial cells are essential for the proper functioning of neurons. When there is some type of alteration in the nervous system, glial cells organise a coordinated response to try to solve or minimise the problem.

This response is very similar to inflammatory reactions (neuroinflammation). Although essentially a protective solution, if it is too intense or too prolonged in time it can cause damage to the nervous tissue. There is a wealth of scientific evidence demonstrating that neuroinflammation is involved in the progression of most neurological diseases.

APPROACH

The group's main objective is to contribute to the discovery of strategies to reduce the harmful effects of neuroinflammation in human diseases.
To achieve this, the group is working on: the development of new tools to study neuroinflammation; the identification of the elements of the neuro-inflammatory response responsible for its harmful effects; and the discovery of therapeutic strategies that inhibit harmful elements of the neuro-inflammatory response or enhance beneficial ones.

IMPACT

The group has developed new methods to cultivate the main cell types in neuroinflammation (microglia and astrocytes) and new methods to co-activate neurons with microglia that allow to study the neurotoxic role of the neuro-inflammatory response in vitro.

The group is working to determine the role played by various microglia cell proteins (the C/EBPs and the CD200/CD200R1 system) in the neuro-inflammatory response. That is why it is designing experiments that enable it to establish whether these proteins can serve as therapeutic targets for new drugs that are capable of inhibiting the neuro-inflammatory response.

RESEARCH LINES

- Characterization and optimization of protocols for primary glial cultures.

- The PPARgamma agonist MIN-102 as potential therapeutic agent in neurological disorders.

- The microglial inhibitory receptor CD200R1 in the control of neuroinflammation.

- The transcription factors C/EBPδ and C/EBPβ in neuroinflammation.

PUBLICATIONS

Originals / I.F.: 10.856

1. Compta Y., Dias S., Giraldo D., Pérez-Soriano A., Muñoz E., Saura J., Fernández M., Bravo P., Cámara A., Pulido-Salgado M., Painous C., Ríos J., Martí M., Pagonabarraga J., Valldeoriola F., Hernández-Vara J., Classen S., Puente V., Pont C., Caballol N., Tolosa E., Bayes A., Campdelacreu J., de Fàbregues O., Ávila A., Calopa M., Gaig C., Fabregat N., Pastor P., Aguilar M., Pujol M., Sánchez A., Planellas L., Ezquerra M., Fernández-Santiago R., Botta T., Tartaglia G. **Cerebrospinal fluid cytokines in multiple system atrophy: A cross-sectional Catalan MSA registry study.** *PARKINSONISM & RELATED DISORDERS.* 65:3-12. I.F.: 4.360

2. Rabaneda-Lombarte N, Xicoy-Espaulella E, Serratosa J, Saura J, Solà C. **Parkinsonian Neurotoxins Impair the Pro-inflammatory Response of Glial Cells.** *FRONTIERS IN MOLECULAR NEUROSCIENCE*. 11:479. I.F.: 3.720

3. Comella Bolla A, Valente T, Miguez A, Brito V, Gines S, Solà C, Straccia M, Canals JM. **CD200 is up-regulated in R6/1 transgenic mouse model of Huntington's disease.** *PLOS ONE*. 14(12):e0224901. I.F.: 2.776

GRANTS FOR RESEARCH IN PROGRESS

Saura J. **Nanoparticle delivery system for neurodegenerative disorders.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). AC14/00016
Duration: 01/01/2015-30/06/2020

Saura J. **C/EBPs microgliales como potencial diana terapéutica en la enfermedad de Parkinson.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI14/00302
Duration: 01/01/2015-30/06/2020

Solà C. **El sistema CD200-CD200R1 como diana terapéutica y biomarcador en enfermedades neurológicas: la enfermedad de Parkinson.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00033
Duration: 01/01/2016-30/09/2019

Solà C. **Búsqueda de nuevas indicaciones terapéuticas en el ámbito de enfermedades neurodegenerativas y mitocondriales para el compuesto PPAR gamma agonista MIN-102.**
Sponsored by: Ministerio de Ciencia, Innovación y Universidades (MCIU). RTC-2017-5867-1
Duration: 01/01/2018-31/12/2020

DOCTORAL THESES

Solà C, Saura J. **Brain immune response as therapeutic target in the treatment of Parkinson's disease.**
PhD Student: Neus Rabaneda Lombarte

4.21 Multimodal neuroimaging in high risk and early psychosis

LOCATION
CEK building, floor -1

KEYWORDS
1. **Psychotic disorders**
2. **Adolescence**
3. **Brain development**
4. **Brain imaging**

RELATED DISEASES
1. **Psychotic disorders**
2. **Schizophrenia**
3. **Bipolar disorders**
4. **Neurodevelopmental disorders**
5. **Nmda receptor encefalitis**

GROUP INVOLVED IN
CIBERSAM_G04
AGAUR_SGR17: 00881
UBNeuro

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**5**	**25,10**	**5,02**	**60%**	**40%**



GROUP LEADER
Gisela Sugranyes (HCB-IDIBAPS)
T. 93 227 54 00 (Ext.: 4187)
gernest@clinic.cat

POST-DOCTORAL RESEARCHERS
Isabel Valli (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Adriana Fortea (HCB)
Daniel Ilzarbe (HCB)
Mireia Masias (IDIBAPS)

TECHNICIANS
Francina Badia (FCRB)

PROBLEM

Psychotic disorders are one of the first causes of disability among young people. One of the strongest determinants of long-term outcome is early detection of the disorder. However, at present, diagnosis still relies on clinical interview.

It is possible that some of the changes that occur in the brain of patients with psychotic disorders begin years before clinical symptoms emerge. Therefore, the group has set out to identify brain markers with the potential to inform of the risk of disease before clinical onset of the disorder.

APPROACH

The group studies children and adolescents through clinical interviews, neuropsychological tests, brain magnetic resonance imaging, and blood or saliva samples, which are repeated over follow-up.

It evaluates both typically developing individuals and young people at different stages of psychosis risk, either because they have mild or non-specific symptoms, or because they have a family history of the disorder. It also evaluates young people with a recent diagnosis of psychotic disorder or with a specific type of autoimmune encephalitis, which is an illness that in some cases has similar manifestations to psychosis.

IMPACT

So far, the group has demonstrated that young people with an increased risk of psychosis show changes in brain structure, and specifically, that a more accentuated loss of cortical thickness is associated with the development of psychosis symptoms.

It has also found that young people with psychotic disorders have poorer connectivity in the frontal area of the brain, which could be related to some of the social difficulties that they often present.

The next step includes combining magnetic resonance data with other biological measures, to try to predict the development of psychotic disorders in high-risk population.

RESEARCH LINES

- Characterisation of neural substrates of vulnerability to psychosis, and relationship with clinical manifestations, in youth in the early stages of psychosis.

- Multimodal prediction of psychosis in high risk youth.

- New treatment options for youth with emerging psychosis.

- Understanding trajectories of change in brain structure / function leading to health and disease during youth.

PUBLICATIONS

Originals / I.F.: 25.10

1. De Zwarte SMC, Brouwer RM, Agartz I, Alda M, Aleman A, Alpert KI, Bearden CE, Bertolino A, Bois C, Bonvino A, Bramon E, Buimer EEL, Cahn W, Cannon DM, Cannon TD, Caseras X, Castro-Fornieles J, Chen Q, Chung Y, De la Serna E, Di Giorgio A, Doucet GE, Eker MC, Erk S, Fears SC, Foley SF, Frangou S, Frankland A, Fullerton JM, Glahn DC, Goghari VM, Goldman AL, Gonul AS, Gruber O, de Haan L, Hajek T, Hawkins EL, Heinz A, Hillegers MHJ, Hulshoff Pol HE, Hultman CM, Ingvar M, Johansson V, Jönsson EG, Kane F, Kempton MJ, Koenis MMG, Kopecek M, Krabbendam L, Krämer B, Lawrie SM, Lenroot RK, Marcelis M, Marsman JC, Mattay VS, McDonald C, Meyer-Lindenberg A, Michielse S, Mitchell PB, Moreno D, Murray RM, Mwangi B, Najt P, Neilson E, Newport J, van Os J, Overs B, Ozerdem A, Picchioni MM, Richter A, Roberts G, Aydogan AS, Schofield PR, Simsek F, Soares JC, Sugranyes G, Toulopoulou T, Tronchin G, Walter H, Wang L, Weinberger DR, Whalley HC, Yalin N, Andreassen OA, Ching CRK, van Erp TGM, Turner JA, Jahanshad N, Thompson PM, Kahn RS, van Haren NEM. **The Association Between Familial Risk and Brain Abnormalities Is Disease Specific: An ENIGMA-Relatives Study of Schizophrenia and Bipolar Disorder.** *BIOLOGICAL PSYCHIATRY.* 86(7):545-556. I.F.: 11.501

2. Ilzarbe D., de la Serna E., Baeza I., Rosa M., Puig O., Calvo A., Masias M., Borras R., Pariente J.C., Castro-Fornieles J., Sugranyes G. **The relationship between performance in a theory of mind task and intrinsic functional connectivity in youth with early onset psychosis.** *DEVELOPMENTAL COGNITIVE NEUROSCIENCE.* 40:100726. I.F.: 4.920

3. Dolz M., Tor J., De la Serna E., Pardo M., Muñoz-Samons D., Rodríguez-Pascual M., Puig O., Sugranyes G., Usall J., Sánchez-Gistau V., Baeza I. **Characterization of children and adolescents with psychosis risk syndrome: The Children and Adolescents Psychosis Risk Syndrome (CAPRIS) study. EARLY INTERVENTION IN PSYCHIATRY.** 13(5):1062-1072. I.F.: 3.323

4. Sánchez-Gutiérrez T., Rodríguez-Toscano E., Llorente C., de la Serna E., Moreno C., Sugranyes G., Romero S., Calvo A., Baeza I., Sánchez-Gistau V., Espliego A., Castro-Fornieles J., Moreno D. **Neuropsychological, clinical and environmental predictors of severe mental disorders in offspring of patients with schizophrenia.** *EUROPEAN ARCHIVES OF PSYCHIATRY AND CLINICAL NEUROSCIENCE.* I.F.: 3.192

5. Santamarina-Perez, Pilar; Romero, Soledad; Mendez, Iria; Leslie, Sara M.; Packer, Mary M.; Sugranyes, Gisela; Picado, Marisol; Font, Elena; Moreno, Elena; Martinez, Esteve; Morer, Astrid; Romero, Miguel; Singh, Manpreet K. **Fronto-Limbic Connectivity as a Predictor of Improvement in Nonsuicidal Self-Injury in Adolescents Following Psychotherapy.** *JOURNAL OF CHILD AND ADOLESCENT PSYCHOPHARMACOLOGY.* 29(6):456-465. I.F.: 2.160

Letters / I.F.: 2.28

1. Molins C., Fortea A., Bioque M., Solé E., Parellada E. **Clozapine and Electroconvulsive Therapy Is an Effective and Safe Treatment during Pregnancy: A Case Report.** *JOURNAL OF ECT.* 35(3):E30-E32. I.F.: 2.280

GRANTS FOR RESEARCH IN PROGRESS

Sugranyes G. **Estudio del procesamiento perceptual temprano en adolescentes con esquizofrenia de debut reciente y pacientes con encefalitis anti-NMDAR para evaluar la hipótesis glutamatérgica de la esquizofrenia.**
Sponsored by: Generalitat de Catalunya. PERIS_SLT006/17/00362
Duration: 17/02/2018-31/12/2020

Sugranyes G. **Construction of a multimodal model with diagnostic and prognostic potential in youth at high risk for psychosis: integration of genetic, environmental and neuroimaging factors.**
Sponsored by: Fundacio Clinic per a la Recerca Biomedica (FCRB). PonsBartran18
Duration: 25/04/2018-

Sugranyes G. **Construcción de un modelo multimodal con capacidad diagnóstica y pronóstica de adolescentes con alto riesgo de psicosis: integración de factores genéticos, ambientales y de neuroimagen.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00976
Duration: 01/01/2019-31/12/2021

Sugranyes G. **From the synapse to brain structure and function: a comparative study between youth with early stage psychosis and patients with NMDA Receptro Encephalitis.**
Sponsored by: NARSAD17_YIG _02B
Duration: 15/02/2018-14/02/2020

4.22 Neurobiology

LOCATION
IIBB-CSIC labs
UB School of Medicine

KEYWORDS
1. **Neurodegeneration**
2. **Alzheimer's disease**
3. **Mitochondrial DNA**
4. **Microglia**
5. **Neuronal pentraxin**
6. **Neuronal death**
7. **Mitochondrial dynamics**

RELATED DISEASES
1. **Alzheimer**
2. **Parkinson**

GROUP INVOLVED IN
CIBERNED

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**4**	**21,96**	**5,49**	**100%**	**50%**



GROUP LEADER
Ramon Trullàs (IIBB-CSIC)
T. 93 363 83 03
ramon.trullas@iibb.csic.es

RESEARCHERS
Anna Colell (IIBB-CSIC)
Petar Podlesniy (CIBER)
Manuel José Rodríguez Allué (UB)

PRE-DOCTORAL RESEARCHERS
Cristina de Dios Conde (IIBB-CSIC)
Margalida Puigròs (CIBER)
Vicente Roca (IIBB-CSIC)

TECHNICIANS
Carmen Andrade (UB)
Núria Serra (CIBER)

PROBLEM

At present, there are no effective treatments to combat the causes of neurodegenerative diseases such as Alzheimer's and Parkinson's diseases, due to a lack of knowledge of the mechanisms directly responsible for the death of the neurons.

The group is working on identifying these molecular mechanisms that are essential for the neurodegenerative process to take place, and on finding the necessary tools to prevent this.

APPROACH

One of the molecular mechanisms that is essential for the survival of neurons is the production of energy, a process in which the mitochondria participate. These organelles also intervene in certain types of cell death (apoptosis), in the degradation of macromolecules (autophagy) and in inflammation.

The group has based its research on the hypothesis that neurodegeneration leads to alteration of the mitochondrial function. Studying the mitochondrial function, identifying the causes of its alteration and determining how it triggers neurodegeneration are the group's main objectives.

IMPACT

Mitochondria have their own DNA which regulates the energy they produce. The group has discovered that a reduction in mitochondrial DNA content precedes the development of Alzheimer's disease.

It is now investigating the role of mitochondrial DNA transcription and replication in neurodegenerative diseases, and how mitochondrial oxidative stress and changes in glutathione levels (an enzyme) regulate cell processes such as autophagy and contribute to cytotoxicity induced by beta-amyloid peptides, which play a crucial role in Alzheimer's disease.

RESEARCH LINES

- Study the role of mitochondrial function in neuroinflammation and amyloid beta (Aβ) - induced cell death.

- To investigate the role of mitochondrial DNA in synapse elimination and neurodegeneration in genetic models of neurodegenerative diseases.

- To study the mechanisms that alter amyloid beta (Aβ) clearance and disposal of dysfunctional mitochondria.

PUBLICATIONS

Originals / I.F.: 21.958

1. De Dios C, Bartolessis I, Roca-Agujetas V, Barbero-Camps E, Mari M, Morales A, Colell A. **Oxidative inactivation of amyloid beta-degrading proteases by cholesterol-enhanced mitochondrial stress.** *REDOX BIOLOGY*. 26:101283. I.F.: 7.793

2. Podlesniy P., Puigròs M., Serra N., Fernández-Santiago R., Ezquerra M., Tolosa E., Trullas R. **Accumulation of mitochondrial 7S DNA in idiopathic and LRRK2 associated Parkinson's disease**. *EBIOMEDICINE*. 48:554-567. I.F.: 6.680

3. Fanaee-Danesh E, Gali CC, Tadic J, Zandl-Lang M, Kober A, Agujetas VR, de Dios C, Tam-Amersdorfer C, Stracke A, Albrecher NM, Manavalan APC, Reiter M, Sun Y, Colell A, Madeo F, Malle E, Panzenboeck U. **Astaxanthin exerts protective effects similar to bexarotene in Alzheimer's disease by modulating amyloid beta and cholesterol homeostasis in blood-brain barrier endothelial cells.** *BIOCHIMICA ET BIOPHYSICA ACTA - MOLECULAR BASIS OF DISEASE*. 1865(9):2224-2245. I.F.: 4.328

4. Alvarez-Mora MI, Podlesniy P, Gelpi E, Hukema R, Madrigal I, Pagonabarraga J, Trullas R, Mila M, Rodriguez-Revenga L. **FXTAS: regional decrease of mitochondrial DNA copy number relates to clinical manifestations.** *GENES BRAIN AND BEHAVIOR*. 18(5):e12565. I.F.: 3.157

Review / I.F.: 4.868

1. Roca-Agujetas V., De Dios C., Lestón L., Marí M., Morales A., Colell A. **Recent Insights into the Mitochondrial Role in Autophagy and Its Regulation by Oxidative Stress.** *OXIDATIVE MEDICINE AND CELLULAR LONGEVITY*. 3809308. I.F.: 4.868

GRANTS FOR RESEARCH IN PROGRESS

Colell A. **Autophagy-inflammasome interplay as a therapeutic target for Alzheimer's disease.**
Sponsored by: Ministerio de Ciencia, Innovación y Universidades (MCIU).
RTI2018-095572
Duration: 01/01/2019-31/12/2022

Trullas R, Podlesniy P. **Replication and transcription of mitochondrial DNA as a key mechanism of the pathological sequence leading to neurodegeneration.**
Sponsored bt: Ministerio de Economía y Competitividad (MINECO).
SAF2017-89791-R
Duration: 01/01/2018- 31/12/2020

4.23 Bipolar and depressive disorders

LOCATION
HCB building
Mallorca 183 building

KEYWORDS
1. **Bipolar disorder**
2. **Depression**
3. **Cognition**

RELATED DISEASES
1. **Bipolar disorder**
2. **Depressive disorder**
3. **Addictions**
4. **Postnatal depression**

GROUP INVOLVED IN
CIBERSAM
AGAUR_SGR17: 01365

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	82	436,77	5,33	73%	29%



GROUP LEADER
Eduard Vieta (HCB)
T. 93 227 54 00 (Ext.: 3130)
evieta@clinic.cat

RESEARCHERS
Antonio Benabarre (HCB)
Miquel Àngel Fullana (HCB)
José Manuel Goikolea (HCB)
Iria Grande i Fullana (HCB)
Fernando Gutiérrez Ponce (HCB)
Diego Alberto Hidalgo (HCB-IDIBAPS)
Ana Isabel Martínez Arán (HCB)
Rocío Martín-Santos (HCB)
Isabella Pacchiarotti (HCB)
Luis Pintor (HCB-UB)
Joaquim Radua (IDIBAPS)
Carla Torrent (IDIBAPS)

POST-DOCTORAL RESEARCHERS
Caterina del Mar Bonnín (FCRB)
Silvia Cañizares (HCB)
Myriam Cavero (HCB)
Marina Garriga (IDIBAPS)
Joana Guarch (HCB)
Ester Jiménez Martínez (IDIBAPS)
Andrea Murru (HCB)
Victor Navarro (HCB)
María Reinares (CIBER)
Brissa Solé (IDIBAPS)
Anna Torres (HCB)
Imma Torres (CIBER)
Marc Valentí (HCB)
Norma Verdolini (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Ivette Morilla (HCB)
Laura Montejo (CIBER)
Estela Salagre (CIBER)
José Sánchez Moreno (CIBER)
Eva Solé (HCB)
Èlia Valls (CIBER)
Cristina Varo (CIBER)

TECHNICIANS
Rosa Maria Palaus (FCRB)

PROBLEM

Bipolar and depressive disorders are serious mental health conditions that affect almost 10% of the population at some point in their lives.

Our group takes an expert approach to bipolar disorder and depressive disorders, these being prevalent and complex pathologies that require in-depth knowledge of psychopharmacology and psychotherapy.

APPROACH

The group's research is highly translational. That is to say, it is geared towards a better understanding of bipolar and depressive disorders and corresponding improvements in clinical practice.

It employs a multidisciplinary approach, both to patient care and to teaching and research, and it investigates the neurobiological and anatomical-functional mechanisms that are involved in the clinical development and progression of these conditions, comorbidity (co-occurrence with other conditions), intervening neurocognitive mechanisms and the quest for new pharmacological, biophysical and psychosocial treatments.

IMPACT

The group has contributed to increasing the availability of new drugs for bipolar and depressive disorders, by designing and conducting clinical trials that have facilitated the introduction of new approaches to the pharmacological treatment of these diseases. It has demonstrated the efficacy of psychoeducation combined with medications as the standard treatment for bipolar disorder, as recognised by international therapeutic guides.

It has also contributed to the identification of patterns of neurocognitive deterioration and their neuroimaging correlates in depression and bipolar disorder.

RESEARCH LINES

- Clinical trials and innovation in psychopharmacology of bipolar and depressive disorders.

- Endophenotypes, genetics and biomarkers of affective disorders.

- Epidemiology and disability associated with bipolar and unipolar disorders.

- First affective and psychotic episodes.

- Innovative psychological interventions for bipolar disorder and depression.

- Neurocognition and neuroimaging of bipolar and unipolar disorders.

- Observational studies in affective disorders.

- Psychometrics of mental disorders.

PUBLICATIONS

Originals / I.F.: 436.767

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Bonvino A, Di Giorgio A, Neilson E, Mayer AR, Yun JY, Cannon DM, Lebedeva I, Tomyshev AS, Akhadov T, Kaleda V, Fatouros-Bergman H, Flyckt L,, Rosa PGP, Serpa MH, Zanetti MV, Hoschl C, Skoch A, Spaniel F, Tomecek D, McIntosh AM, Whalley HC, Knöchel C, Oertel-Knöchel V, Howells FM, Stein DJ, Temmingh HS, Uhlmann A, Lopez-Jaramillo C, Dima D, Faskowitz JI, Gutman BA, Jahanshad N, Thompson PM, Turner JA Karolinska Schizophrenia Project. **Reply to: New Meta- and Mega-analyses of Magnetic Resonance Imaging Findings in Schizophrenia: Do They Really Increase Our Knowledge About the Nature of the Disease Process?** *BIOLOGICAL PSYCHIATRY.* 85(7):e35-e39. I.F.: 11.501

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4. Vieta E. **Bipolar II Disorder: Frequent, Valid, and Reliable.** *CANADIAN JOURNAL OF PSYCHIATRY-REVUE CANADIENNE DE PSYCHIATRIE.* 64(8):541-543. I.F.: 4.080

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1. Burdick K.E., Millett C.E., Bonnín C.d.M., Bowie C.R., Carvalho A.F., Eyler L.T., Gallagher P., Harvey P.D., Kessing L.V., Lafer B., Langenecker S.A., Lewandowski K.E., López-Jaramillo C., Marshall D.F., Martinez-Aran A., McInnis M.G., McIntyre R.S., Miskowiak K.W., Porter R.J., Purdon S.E., Ryan K.A., Sumiyoshi T., Torres I.J., Van Rheenen T.E., Vieta E., Woodward N.D., Yatham L.N., Young A. **The International Consortium Investigating Neurocognition in Bipolar Disorder (ICONIC-BD).** *BIPOLAR DISORDERS.* 21(1):6-10. I.F.: 4.936

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3. Bernardo M, Cabrera B, Arango C, Bioque M, Castro-Fornieles J, Cuesta MJ, Lafuente A, Parellada M, Saiz-Ruiz J, Vieta E. **One decade of the first episodes project (PEPs): Advancing towards a precision psychiatry.** *REVISTA DE PSIQUIATRIA Y SALUD MENTAL.* 12(3):135-140. I.F.: 2.927

Case Reports / I.F.: 8.272

1. Carreño M., Martí M., Aldecoa I., Painous C., Conde E., Valldeoriola F., Valls-Solé J., Bargalló N., Gil F., Manzanares I., Setoain X., Donaire A., Muñoz E., Roldán P., Boget T., Pintor L., Bailles E., Rumià J. **Unilateral pallidal stimulation for disabling dystonia due to Rasmussen's disease.** *JOURNAL OF NEUROLOGY NEUROSURGERY AND PSYCHIATRY.* 90(1):108-110. I.F.: 8.272

Consortium Publications / I.F.: 8.584

1. Scott, J.; Etain, B.; Manchia, M.; Brichant-Petitjean, C.; Geoffroy, P.; Schulze, T.; Alda, M.; Bellivier, F.; Benabarre, A.; Jimenez, E.; Vieta, E. **An examination of the quality and performance of the Alda scale for classifying lithium response phenotypes.** *BIPOLAR DISORDERS.* I.F.: 4.936

2. Drange OK, Smeland OB, Shadrin AA, Finseth PI, Witoelar A, Frei O, Psychiatric Genomics Consortium Bipolar Disorder Working Group, Wang Y, Hassani S, Djurovic S, Dale AM, Andreassen OA. Vieta, E. **Genetic overlap between alzheimer's disease and bipolar disorder implicates the MARK2 and VAC14 genes.** *FRONTIERS IN NEUROSCIENCE.* 13:220. I.F.: 3.648

GRANTS FOR RESEARCH IN PROGRESS

Benabarre A. **Identificación de variables biológicas asociadas a la conducta suicida en el trastorno bipolar.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/01122
Duration: 01/01/2018-31/12/2020

Fullana MA. **El modelo de incertidumbre-anticipación: uso de la neuroimagen funcional para predecir la trayectoria de los síntomas de ansiedad y caracterizar las alteraciones cerebrales relacionadas.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00144
Duration: 14/12/2017-31/12/2020

Fullana MA. **¿Por qué el/la niño/a no puede dejar de lavarse? Aprendizaje de hábitos en el TOC infantil.**
Sponsored by: Fundación Alicia Koplowitz. Fund_A.Koplowitz_18
Duration: 01/11/2018-

Goikolea JM. **Effectiveness of brief intervention on substance use in bipolar disorders patients.**
Sponsored by: Fundació Clínic per a la Recerca Biomèdica (FCRB). PonsBartran16
Duration: 02/05/2016-

Goikolea JM. **Bases cerebrales de dos intervenciones psicoterapéuticas eficaces en el trastorno bipolar: la psicoeducación grupal y la rehabilitación funcional. Un estudio de neuroimagen multimodal.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI14/00723
Duration: 01/01/2015-30/11/2019

Grande I. **Disbiosis en el trastorno bipolar: MicrObiota Bipolar study (MOB study).**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00187
Duration: 01/01/2017-30/06/2021

Gutiérrez-Ponce F. **Un modelo integrado para la patología de la personalidad: estructura jerárquica, significación e impacto biográfico.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00536
Duration: 01/01/2016-30/06/2020

Martínez-Arán A. **Marcadors transdiagnòstics dels símptomes cognitius en els trastorns afectius.**
Sponsored by: Generalitat de Catalunya. PERIS_SLT006/17/00177
Duration: 17/02/2018-31/12/2020

Martínez-Arán A. **Eficacia de un módulo e-neurocognitivo como coadyudante a la rehabilitación funcional para pacientes con trastorno bipolar.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00330
Duration: 01/01/2016-30/06/2020

Martínez-Arán A. **Eficacia de la Rehabilitación Funcional adaptada a pacientes con primeros episodios psicóticos coadyuvante al tratamiento farmacológico versus tratamiento farmacológico habitual (FROzEN).**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00789
Duration: 01/01/2019-31/12/2021

Martin-Santos R. **Estudio de la actividad y conectividad cerebral en el Trastorno de ansiedad social: búsqueda de nuevos endofenotipos a través de la comparación con el S. Williams-Beuren". Estudio TASWI.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI14/01411
Duration: 01/01/2015- 30/06/2019

Martin-Santos R. **Estado de ánimo, cognición, inflamación y daño cerebral en pacientes con hepatitis C tratados con los "agentes antivirales directos" estudio de neuroimagen multimodal-Estudio PSICO-AAD.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/02297
Duration: 01/01/2018- 31/12/2020

Pacchiarotti I. **Obtención de un algoritmo de diagnóstico para el trastorno bipolar con máquinas de aprendizaje utilizando datos de neuroimagen estructural, variantes genéticas y función cognitive.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/01001
Duration: 01/01/2019-31/12/2021

Sanchez-Moreno J. **Efectos de un programa integral de terapia cognitiva basada en mindfulness, psicoeducación y rehabilitación funcional en el trastorno bipolar.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/00941
Duration: 01/01/2018-31/12/2020

Torrent C. **Estudi sobre l'eficàcia d'un programa de potenciació de reserva cognitiva en població d'alt risc genètic a desenvolupar un trastorn bipolar.**
Sponsored by: Generalitat de Catalunya. PERIS_SLT006/17/00352
Duration: 17/02/2018-31/12/2020

Torrent C. **Estudio sobre la eficacia de la potenciación de la reserva cognitiva en niños, adolescentes y adultos jóvenes de alto riesgo genético para esquizofrenia o trastorno bipolar.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/01066
Duration: 01/01/2018-31/12/2020

Vieta E. **Trastorn Bipolar.**
Sponsored by: Generalitat de Catalunya. AGAUR_SGR17_01365
Duration: 01/01/2017-31/12/2020

Vieta E. **Caracterització dels pròdroms i detecció de factors predictors pronòstics en una mostra de pacients bipolars amb un primer episodi maniac.**
Sponsored by: Generalitat de Catalunya. PERIS_SLT006/17/00357
Duration: 17/02/2018-31/12/2020

Vieta E. **INNOBRAIN: Noves tecnologies per a la innovació en rehabilitació i estimulació cognitiva.**
Sponsored by: Fundació Institut Guttmann. COMRDI15-1-0017-07
Duration: 02/01/2017-02/01/2020

Vieta E. **Implicación de variantes del gen DDR1 en la integridad de la mielina y en la velocidad de procesamiento cognitivo en pacientes con trastorno bipolar en fase eutímica.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00283
Duration: 01/01/2015-30/06/2020

Vieta E. **Estudio sobre la eficacia de un abordaje psicológico para la potenciación de la reserva cognitiva en población bipolar con un primer episodio reciente.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00805
Duration: 01/01/2019-31/12/2021

Vieta E. **R-LiNK: Optimizing response to Li treatment through personalized evaluation of individuals with bipolar I disorder: the R-LiNK initiative.**
Sponsored by: European Commission. H2020-SC1_17
Duration: 01/01/2018-31/12/2022

DOCTORAL THESES

Martín-Santos R. **Depressão pós-parto e reconhecimento de expressões faciais de emoções em bebés: construção de um conjunto de estímulos e efeitos agudos da ocitocina.**
PhD student: Mariana Donadon

Martín-Santos R. **Mood, immunity and brain connectivity in patients with chronic hepatitis C.**
PhD student: Giovanni Oriolo

Vieta E. **La seva malaltia i el seu regnat.**
PhD student: Maria Rosa Pigrau Santpere

4.24 Pathogenesis and new treatments in multiple sclerosis

LOCATION
CELLEX building, floor 3A

KEYWORDS
1. **Neuroprotection**
2. **Antigen tolerization**
3. **Systems biology**
4. **Neuroimaging**

RELATED DISEASES
1. **Multiple sclerosis**
2. **Neuromyelitis optica**
3. **Anti-mog associated encephalitis**

GROUP INVOLVED IN
RETIC
IMSVISUAL

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**12**	**75,63**	**6,30**	**75%**	**33%**



GROUP LEADER
Pablo Villoslada (IDIBAPS)
T. 93 227 54 00 (Ext.: 4802)
pvillosl@clinic.cat

POST-DOCTORAL RESEARCHERS
Magi Andorra (IDIBAPS)
Irene Pulido (IDIBAPS)

TECHNICIANS
Salut Albà (IDIBAPS)
Ana Isabel Guerrero (IDIBAPS)

ADMINISTRATIVE STAFF
Laura Planas (IDIBAPS)

PROBLEM

The principal objective of the Group is the study of Multiple Sclerosis and Neuromyelitis Optica, and the elucidation of the underlying immunopathogenic mechanisms involved in the inflammatory response.

We pursuit a translational medicine approach by developing new therapies and diagnostics for these diseases.

APPROACH

Our team is pioneering the application of Systems Medicine to the study of Multiple Sclerosis and the development of new tools for personalized medicine. We are developing new therapies such as the trophic factor like drug ACT-01 as neuroprotective therapy or antigen-specific tolerization using dendritic cells for stopping the disease.

We have developed new diagnostic tools such as molecular imaging of the retina to monitor disease progression.

We have combined omics, imaging and clinical information with machine learning tools in order to develop clinical decision support systems for personalized medicine. Lastly, the group has a commitment to innovation, both in terms of the generation of patents and as regards the creation of spin-off companies.

IMPACT

We have moved our therapeutic programs to clinical stages: the neuroprotectant BN201 has completed phase 1 and is now planning to start phase 2 trials, and the tolerogenic dendritic cell therapy has completed phase 1b trials and plan to move to phase 2 in the near future. The prognosis biomarkers based on OCT analysis are becoming use in clinical practice.

RESEARCH LINES

- The use of systems biology and omics to dissect the immunological mechanisms leading to brain damage in demyelinating diseases.

- The development of magnetic resonance imaging and optical coherence tomography techniques to elucidate substrates of clinical dysfunction, biomarkers of treatment response and mechanisms of brain plasticity in demyelinating diseases.

- Discovery of new therapies for Multiple Sclerosis and Neuromyelitis Optica.

PUBLICATIONS

Originals / I.F.: 75.633

1. Andorrà M, Alba-Arbalat S, Camos-Carreras A, Gabilondo I, Fraga-Pumar E, Torres-Torres R, Pulido-Valdeolivas I, Tercero-Uribe AI, Guerrero-Zamora AM, Ortiz-Perez S, Zubizarreta I, Sola-Valls N, Llufriu S, Sepulveda M, Martinez-Hernandez E, Armangue T, Blanco Y, Villoslada P, Sanchez-Dalmau B, Saiz A, Martinez-Lapiscina EH. **Using Acute Optic Neuritis Trials to Assess Neuroprotective and Remyelinating Therapies in Multiple Sclerosis.** *JAMA Neurol.* 77(2):234-244. IF: 12.321

2. Zubizarreta I, Flórez-Grau G, Vila G, Cabezón R, España C, Andorra M, Saiz A, Llufriu S, Sepulveda M, Sola-Valls N, Martinez-Lapiscina EH, Pulido-Valdeolivas I, Casanova B, Martinez Gines M, Tellez N, Oreja-Guevara C, Español M, Trias E, Cid J, Juan M, Lozano M, Blanco Y, Steinman L, Benitez-Ribas D, Villoslada P. **Immune tolerance in multiple sclerosis and neuromyelitis optica with peptide-loaded tolerogenic dendritic cells in a phase 1b trial.** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA.* 116(17):8463-8470. I.F.: 9.580

3. Kotelnikova E., Kiani N.A., Messinis D., Pertsovskaya I., Pliaka V., Bernardo-Faura M., Rinas M., Vila G., Zubizarreta I., Pulido-Valdeolivas I., Sakellaropoulos T., Faigle W., Silberberg G., Masso M., Stridh P., Behrens J., Olsson T., Martin R., Paul F., Alexopoulos L.G., Saez-Rodriguez J., Tegner J., Villoslada P. **MAPK pathway and B cells overactivation in multiple sclerosis revealed by phosphoproteomics and genomic analysis.** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA.* 116(19):9671-9676. I.F.: 9.580

4. Nolan-Kenney R.C., Liu M., Akhand O., Calabresi P.A., Paul F., Petzold A., Balk L., Brandt A.U., Martínez-Lapiscina E.H., Saidha S., Villoslada P., Al-Hassan A.A., Behbehani R., Frohman E.M., Frohman T., Havla J., Hemmer B., Jiang H., Knier B., Korn T., Leocani L., Papadopoulou A., Pisa M., Zimmermann H., Galetta S.L., Balcer L.J. **Optimal Intereye Difference Thresholds by Optical Coherence Tomography in Multiple Sclerosis: An International Study.** *ANNALS OF NEUROLOGY.* 85(5):618-629. I.F.: 9.496

5. Sepulveda M, Delgado-García G, Blanco Y, Sola-Valls N, Martinez-Lapiscina EH, Armangué T, Montejo C, Pulido-Valdeolivas I, Martinez-Hernandez E, Ariño H, Escudero D, Ruiz-García R, Llufriu S, Dalmau J, Graus F, Saiz A. **Late-onset neuromyelitis optica spectrum disorder: The importance of autoantibody serostatus.** *NEUROLOGY-NEUROIMMUNOLOGY & NEUROINFLAMMATION.* 6:6. I.F.: 7.353

6. Damotte V., Lizée A., Tremblay M., Agrawal A., Khankhanian P., Santaniello A., Gomez R., Lincoln R., Tang W., Chen T., Lee N., Villoslada P., Hollenbach J., Bevan C., Graves J., Bove R., Goodin D., Green A., Baranzini S., Cree B., Henry R., Hauser S., Gelfand J., Gourraud P. **Harnessing electronic medical records to advance research on multiple sclerosis.** *MULTIPLE SCLEROSIS JOURNAL.* 25(3):408-418. I.F.: 5.649

7. Villoslada P., Vila G., Colafrancesco V., Moreno B., Fernandez-Diez B., Vazquez R., Pertsovskaya I., Zubizarreta I., Pulido-Valdeolivas I., Messeguer J., Vendrell-Navarro G., Frade J., López-Sánchez N., Teixido M., Giralt E., Masso M., Dugas J., Leonoudakis D., Lariosa-Willingham K., Steinman L., Messeguer A. **Axonal and Myelin Neuroprotection by the Peptoid BN201 in Brain Inflammation.** *NEUROTHERAPEUTICS.* 16(3):808-827. I.F.: 5.552

8. Krohn S, Froeling M, Leemans A, Ostwald D, Villoslada P, Finke C, Esteban FJ. **Evaluation of the 3D fractal dimension as a marker of structural brain complexity in multiple-acquisition MRI.** *HUMAN BRAIN MAPPING.* 40(11):3299-3320. I.F.: 4.554

9. Solana E., Martinez-Heras E., Casas-Roma J., Calvet L., Lopez-Soley E., Sepulveda M., Sola-Valls N., Montejo C., Blanco Y., Pulido-Valdeolivas I., Andorra M., Saiz A., Prados F., Llufriu S. **Modified connectivity of vulnerable brain nodes in multiple sclerosis, their impact on cognition and their discriminative value.** *SCIENTIFIC REPORTS.* 9(1):20172. I.F.: 4.011

10. Solà-Valls N., Vicente-Pascual M., Blanco Y., Solana E., Llufriu S., Martínez-Heras E., Martínez-Lapiscina E., Sepúlveda M., Pulido-Valdeolivas I., Zubizarreta I., Saiz A. **Spanish validation of the telephone assessed Expanded Disability Status Scale and Patient Determined Disease Steps in people with multiple sclerosis.** *MULTIPLE SCLEROSIS AND RELATED DISORDERS.* 27:333-339. I.F.: 2.725

11. Martín-Gonzalo J., Pulido-Valdeolivas I., Wang Y., Wang T., Chiclana-Actis G., Algarra-Lucas M., Palmí-Cortés I., Travieso J., Torrecillas-Narváez M., Miralles-Martinez A., Rausell E., Gómez-Andrés D., Zanin M. **Permutation entropy and irreversibility in gait kinematic time series from patients with mild cognitive decline and early Alzheimer's dementia.** *ENTROPY.* 21:868. I.F.: 2.419

12. Gómez-Andrés D., Díaz J., Munell F., Sánchez-Montáñez Á., Pulido-Valdeolivas I., Suazo L., Garrido C., Quijano-Roy S., Bevilacqua J. **Disease duration and disability in dysfeRlinopathy can be described by muscle imaging using heatmaps and random forests.** *MUSCLE AND NERVE.* 59(4):436-444. I.F.: 2.393

Letters / I.F.: 12.321

1. Andorra M., Martinez-Lapiscina E. **Reporting of R 2 Statistics for Mixed-Effects Regression Models - Reply.** *JAMA NEUROLOGY.* 76(4):507-508. I.F.: 12.321

Editorial / I.F.: 20.503

1. Villoslada P, Green AJ, Galetta S. **Personalizing medical care for patients with MS: Monitoring brainstem damage by infrared oculography.** *NEUROLOGY.* 92(20):929-930. I.F.: 8.689

2. Villoslada P., Martinez-Lapiscina E. **Remyelination: A good neuroprotective strategy for preventing axonal degeneration?** *BRAIN; A JOURNAL OF NEUROLOGY.* 142(2):233-236. I.F.: 11.814

Consortium Publications / I.F.: 7.353

1. Cook, Lawrence J.; Rose, John W.; Alvey, Jessica S.; Jolley, Anna Marie; Kuhn, Renee; Marron, Brie; Pederson, Melissa; Enriquez, Rene; Yearley, Jeff; McKechnie, Stephen; Han, May H.; Tomczak, Anna J.; Levy, Michael; Mealy, Maureen A.; Coleman, Jessica; Bennett, Jeffrey L.; Johnson, Ruth; Barnes-Garcia, Myka; Traboulsee, Anthony L.; Carruthers, Robert L.; Lee, Lisa Eunyoung; Schubert, Julia J.; McMullen, Katrina; Kister, Ilya; Rimler, Zoe; Reid, Allyson; Sicotte, Nancy L.; Planchon, Sarah M.; Cohen, Jeffrey A.; Ivancic, Diane; Sedlak, Jennifer L.; Sand, Ilana Katz; Repovic, Pavle; Amezcua, Lilyana; Pruitt, Ana; Amundson, Erika; Chitnis, Tanuja; Mullin, Devin S.; Klawiter, Eric C.; Russo, Andrew W.; Riley, Claire S.; Onomichi, Kaho B.; Levine, Libby; Nelson, Katherine E.; Nealon, Nancy M.; Engel, Casey; Kruse-Hoyer, Mason; Marcille, Melanie; Tornes, Leticia; Rumpf, Anne; Greer, Angela; Behne, Megan Kenneally; Rodriguez, Renee R.; Behne, Daniel W.; Blackway, Derek W.; Coords, Brian; Blaschke, Terrence F.; Sheard, Judy; Smith, Terry J.; Behne, Jacinta M.; Yeaman, Guthy-Jackson Charitable Foundation International Clinical Consortium

(GJCF–ICC).**Collaborative International Research in Clinical and Longitudinal Experience Study in NMOSD.** *NEUROLOGY- NEUROIMMUNOLOGY & NEUROINFLAMMATION.* 6(5):e583. I.F.: 7.353

GRANTS FOR RESEARCH IN PROGRESS

Villoslada P. **Personalizing health care in Multiple Sclerosis using systems medicine tools.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). AC15/00052
Duration: 01/01/2016-30/09/2019

VilloladaP. **Estudio del daño axonal en esclerosis múltiple mediante estudios de neuroimagen de la vía óptica.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00061
Duration: 01/01/2016-31/12/2019

Villoslada P. **Sys4MS: Personalizing health care in Multiple Sclerosis using systems medicine tolos.**
Sponsored by: European Commission. ERACoSysMed_15
Duration: 01/05/2016-30/04/2019

Villoslada P. **MultipleMS: Multiple manifestations of genetic and non-genetic factors in Multiple Sclerosis disentangled with a multi-omics approach to accelerate personalised medicine.**
Sponsored by: European Commission. H2020-SC1
Duration: 01/01/2017-31/12/2021

Villoslada P. **Retinal molecular imaging in MS by Raman Spectroscopy to quantify inflammatory.**
Sponsored by: MERCK Healthcare KGaA. MerckSer_GMSI_16
Duration: 01/01/2017-31/03/2020

DOCTORAL THESES

Villsolada P. **Dynamics of central nervous system neuroaxonal injury in multiple sclerosis.**
PhD student: Magí Andorrà Inglés

ANNUAL SCIENTIFIC REPORT 2019

AREA 5

ONCOLOGY
AND HAEMATOLOGY



5

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AREA 5

ONCOLOGY AND HAEMATOLOGY

5.1 **Signal transduction and cell cycle**
Neus Agell

5.2 **Functional characterization of oncogenic mechanisms in lymphomagenesis**
Virginia Amador

5.3 **Cell proliferation and signaling**
Oriol Bachs

5.4 **Myeloma and other monoclonal gammopathies**
Joan Bladé

5.5 **Molecular pathology of lymphoid neoplasms**
Elías Campo

5.6 **Myeloid neoplasms**
Francisco Cervantes

5.7 **Experimental therapies in lymphoid neoplasms**
Dolors Colomer

5.8 **Molecular pathology of inflammatory conditions and solid tumours**
Miriam Cuatrecasas

5.9 **Endocytosis and intracellular trafficking of proteins and colesterol**
Carles Enrich

5.10 **Hemotherapy-hemostasis**
Ginés Escolar

5.11 **Mechanisms of progression in monoclonal gammopathies**
Carlos Fernández de Larrea

5.12 **Molecular and translational oncology**
Pere Gascón

5.13 **Lymphoid neoplasms**
Armando López Guillermo

5.14 **Biomedical epigenomics**
Iñaki Martín Subero

5.15 **Genetics**
Montserrat Milà

5.16 **Molecular biology of reproduction and development**
Rafael Oliva

5.17 **Microenvironment in lymphoma pathogenesis and therapy**
Patricia Pérez Galán

5.18 **Lipid trafficking and disease**
Albert Pol

5.19 **Diagnosis and therapy in oncology**
Francesca Pons

5.20 **Transcriptional regulation of gene expression**
Antonio Postigo

5.21 **Translational genomics and targeted therapies in solid tumours**
Aleix Prat

5.22 **Melanoma imaging, genetics and immunology**
Susana Puig

5.23 **Hematopoietic progenitor cell transplantation**
Álvaro Urbano-Ispizua

5.1 Signal transduction and cell cycle

LOCATION
CELLEX building, floor 1A
UB School of Medicine

KEYWORDS
1. **RAS**
2. **RAC**
3. **Replication stress**
4. **Cell cycle checkpoints**

RELATED DISEASES
1. **Cancer**

GROUP INVOLVED IN
AGAUR_SGR17: 1225

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**3**	**15,37**	**5,12**	**67%**	**-**



GROUP LEADER
Neus Agell (UB)
T. 93 402 19 07
neusagell@ub.edu

RESEARCHERS
Montserrat Jaumot (UB)
Francesc Tebar (IDIBAPS-UB)

PRE-DOCTORAL RESEARCHERS
Baraa Abusaker (UB)
Debora Cabot (UB)
Albert Chavero (UB)
Fernando Unzueta (UB)

TECHNICIANS
Sonia Brun (UB)

PROBLEM

Cancer is one of the most prevalent diseases in developed countries. Although great progress has been made in early detection and treatment, no effective strategies exist as yet in the majority of cases.

The cells that are resistant to treatment continue to proliferate, forming new tumours, even in tissues far from the initial tumour site, thus generating metastasis, the main cause of death in patients.

APPROACH

The objective of the group's studies is to improve cancer therapies to prevent the appearance, migration and proliferation of tumour cells.

One of the characteristics of tumour cells is their uncontrolled proliferation and migration. In other words, they act regardless of the internal and external signals they receive.

The study of the basic mechanisms that regulate such processes in normal cells and the way in which they are altered in cancer cells allows us to understand the development of tumours and thus know their weaknesses, in order to design new therapies.

IMPACT

The group's studies are focused on firstly understanding the DNA replication control mechanisms and secondly, the functioning of Ras family proteins, which appear mutated in many human tumours.

The group aims to find new strategies to suppress the genes that provoke tumours (oncogenes) and halt cell proliferation and migration, as well as inducing replication stress in tumour cells and causing their death.

RESEARCH LINES

- New strategies to inhibit oncogenic K-Ras.

- Replicative stress: response of untransformed cells versus tumor cells.

- Signaling, cytoskeleton and cellular migration.

PUBLICATIONS

Originals / I.F.: 15.37

1. Meneses-Salas E., García-Melero A., Kanerva K., Blanco-Muñoz P., Morales-Paytuvi F., Bonjoch J., Casas J., Egert A., Beevi S., Jose J., Llorente-Cortés V., Rye K., Heeren J., Lu A., Pol A., Tebar F., Ikonen E., Grewal T., Enrich C., Rentero C. **Annexin A6 modulates TBC1D15/Rab7/StARD3 axis to control endosomal cholesterol export in NPC1 cells**. *CELLULAR AND MOLECULAR LIFE SCIENCES*. I.F.: 7.014

2. Hoque, Monira; Elmaghrabi, Yasmin A.; Kose, Meryem; Beevi, Syed S.; Jose, Jaimy; Meneses-Salas, Elsa; Blanco-Munoz, Patricia; Conway, James R. W.; Swarbrick, Alexander; Timpson, Paul; Tebar, Francesc; Enrich, Carlos; Rentero, Carles; Grewal, Thomas. **Annexin A6 improves anti-migratory and anti-invasive properties of tyrosine kinase**

inhibitors in EGFR overexpressing human squamous epithelial cells. *FEBS JOURNAL*. . I.F.: 4.739

3. Garrido E., Jaumot M., Agell N., Granadino-Roldán J., Rubio-Martinez J. **Toward understanding calmodulin plasticity by molecular dynamics.** *FUTURE MEDICINAL CHEMISTRY*. 11(9):975-991. I.F.: 3.617

GRANTS FOR RESEARCH IN PROGRESS

Agell N. **La fosforilacion de KRAS, su interaccion con calmodulina, y la respuesta al estrés replicativo, en la progresion del cancer colorectal y en el diseño de nuevas terapias.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
SAF2016-76239-R
Duration: 30/12/2016-29/12/2019

Tebar F. **Contribution of endocytic compartment to cell migration: regulation by cholesterol, Annexin A6 and Rac1.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
BFU2015-66785-P.
Duration: 01/01/2016-31/12/2019.

DOCTORAL THESES

Agell N. **Replication stress: mechanisms and molecules involved in DNA replication progression and reinitiation.**
PhD student: Sònia Feu Coll

5.2 Functional characterization of oncogenic mechanisms in lymphomagenesis

LOCATION
CEK building, floor 2

KEYWORDS
1. **Lymphoma**
2. **Mantle cell lymphoma**
3. **SOX11**
4. **Tumor immune microenvironment**
5. **Immunecheckpoints**
6. **Immunesuppression**

RELATED DISEASES
1. **Lymphoma**
2. **Mantle cell lymphoma**

GROUP INVOLVED IN
AGAUR_SGR17: 1482

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**2**	**8,28**	**4,14**	**50%**	**-**



GROUP LEADER
Virginia Amador (IDIBAPS)
T. 93 227 54 00 (Ext.: 4582)
vamador@clinic.cat

POST-DOCTORAL RESEARCHERS
Patricia Balsas (FCRB)

PRE-DOCTORAL RESEARCHERS
Marta Sureda (IDIBAPS)

TECHNICIANS
Marta Leonor Rodríguez Borràs (IDIBAPS)

PROBLEM

Personalised therapies have great potential for the treatment of various types of cancer, such as lymphomas. However, resistance (to drugs) remains a problem that must be resolved. Normal cells within the tumour's micro-environment provide factors that help cancer cells to grow and survive despite the presence of drugs.

The identification and description of new signalling networks and factors responsible for cancer emergence, progression and resistance to drugs, in both cancer cells and normal cells in the tumour micro-environment, will be essential for the design of new therapeutic strategies for aggressive cancers with relapse, such as lymphomas.

APPROACH

The group identifies and describes the molecular mechanisms and the clinical impact of new oncogenic factors and the signalling pathways of aggressive lymphomas using innovative screening tools in primary patient samples, molecular and cellular biology tools and mimicking the tumour microenvironment in 3D cocultures.

It also conducts translational research, in which it generates lymphoma in murine models to test the treatments in vivo.

In this way it can better understand the disease and it can find new targets in order to develop specific therapies that benefit patients with aggressive relapsing lymphomas, many of them incurable to date.

IMPACT

The results of the group have helped to show that, as with solid tumours, the tumour micro-environment and the immune system play an important role in aggressive behaviour and response to current treatments against mantle cell lymphoma.

Its ultimate goal is to transfer the best experimental therapies to patients with aggressive lymphomas, to improve their response to treatments and their quality of life. Its experimental approaches will also allow the establishment of new biomarkers to stratify patients, which will result in a more accurate allocation of these new treatments.

RESEARCH LINES

Functional characterization of oncogenic mechanisms in lymphomagenesis.

The objective of the group is to identify and characterize the functional role of new candidates and signaling pathways, in both cancerous and normal cells of the tumor microenvironment, responsible for the appearance, maintenance and aggressive behavior of lymphomas, for a better understanding of the pathogenesis and to find potential candidates for tailored therapies.

PUBLICATIONS

Originals / I.F.: 8.276

1. Lee-Vergés E, Hanna BS, Yazdanparast H, Rodríguez V, Rodríguez ML, Giró A, Vidal-Crespo A, Rosich L, Amador V, Aymerich M, Villamor N, Delgado J, Lichter P, Pérez-Galán P, López-Guerra M, Campo E, Seiffert M, Colomer D. **Selective BTK inhibition improves bendamustine therapy**

response and normalizes immune effector functions in chronic lymphocytic leukemia. *INTERNATIONAL JOURNAL OF CANCER.* 144(11):2762-2773. I.F.: 4.982

2. Petrakis G, Veloza L, Clot G, Gine E, Gonzalez-Farre B, Navarro A, Bea S, Martínez A, Lopez-Guillermo A, Amador V, Ribera-Cortada I, Campo E. **Increased Tumor Angiogenesis in SOX11-positive Mantle Cell Lymphoma.** *HISTOPATHOLOGY.* 75(5):704-714. I.F.: 3.294

GRANTS FOR RESEARCH IN PROGRESS

Amador V. **Descifrando las redes moleculares del microambiente protector y de las células madre en los linfomas de células del manto agresivos para innovar en estrategias terapéuticas.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
BFU2015-64879-R
Duration: 01/01/2016-30/06/2019

Amador V. **Identifying immune system evasion mechanisms in aggressive Mantle Cell lymphoma (MCL).**
Sponsored by: Asociación Española Contra el Cáncer. AECC_Investigador18
Duration: 01/11/2018-31/12/2022

Amador V. **El microambiente inmune tumoral en la progresión y control de los linfomas de células del manto: caracterización de críticos factores inmunes y desafíos para la terapia.**
Sponsored by: Ministerio de Ciencia Innovacion y Universidades (MICIU).
(RTI2018-099793-B-I00)
Duration: 01/01/2019-31/12/2021

5.3 Cell proliferation and signaling

LOCATION
UB School of Medicine

KEYWORDS
1. **Cancer**
2. **Cancer therapies**
3. **Breast cancer**
4. **Inflammation**
5. **Cellular stress pathologies**

RELATED DISEASES
1. **Cancer**
2. **Cancer therapies**
3. **Breast cancer**
4. **Inflammation**
5. **Cellular stress pathologies**

GROUP INVOLVED IN
CIBERONC
ProteoRed

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**1**	**4,45**	**4,45**	**100%**	**-**



GROUP LEADER
Oriol Bachs (UB)
T. 93 403 52 86
obachs@ub.edu

RESEARCHERS
Rosa Aligué (UB)
Antoni Hurtado (UB)
María Jesús Pujol (UB)

POST-DOCTORAL RESEARCHERS
Edurne Gallastegui (UB)
Judit Macias (UB)
Ramon Marqués (UB)
Serena Orlando (UB)
Laura Sin Diaz (UB)
Tula Yanze (UB)

PRE-DOCTORAL RESEARCHERS
Carla Domuro (UB)
Rodrigo Duran (UB)
Julia Llanes (UB)
Edgar Martin Ramos (UB)
Jonatan Martinez Martin (UB)

PROBLEM

The group is trying to understand the processes that generate malignant tumours. Tumours are caused by alterations in the mechanisms that maintain and express the genetic information of cells, which is in their DNA. These alterations make the cells lose control over their replication and consequently, the accumulate in a disorderly fashion, generating the tumour.

For this reason, understanding the causes and effects of these alterations on cells is essential in finding new treatments to prevent tumours.

APPROACH

To understand how alterations in cancer cells generate a lack of control in cell replication, we must first understand how this replication is regulated in normal cells. Therefore, the group is studying the mechanisms that regulate the replication of normal cells and then analysing them in tumour cells.

To do this, the group uses a wide range of experimental techniques in order to study the molecules involved in these mechanisms.

IMPACT

The group hopes to identify the proteins involved in the control of cell proliferation that are altered in tumours and determine their impact on tumour development. In particular, it is working on a protein called p27 which appears very frequently in the most malignant human tumours.

The group has identified new functions of this protein that have enabled it to understand how its loss or reduction affects tumour development. Thus, the group's research aims to counteract this loss of p27 as a new anticancer treatment strategy.

RESEARCH LINES

- Involvement of p27 (KIP1) in cancer progression.

- Protein kinases in cancer.

- Breast cancer and hydroxy-tamoxifen.

PUBLICATIONS

Originals / I.F.: 4.453

1. Castellsagué E, Li R, Aligue R, González S, Sanz J, Martin E, Velasco À, Capellá G, Stewart CJR, Vidal A, Majewski J, Rivera B, Polak P, Matias-Guiu X, Brunet J, Foulkes WD . **Novel POLE pathogenic germline variant in a family with multiple primary tumors results in distinct mutational signatures.** *HUMAN MUTATION.* 40(1):36-41. I.F.: 4.453

GRANTS FOR RESEARCH IN PROGRESS

Aligué R. **Role of Calmodulin dependent kinases in glucose uptake and nutrient homeostasis: connexion with the mTOR pathway.**
Sponsored by: Ministerio de Economía y competitividad (MINECO). BFU2015-65311-R
Duration: 01/01/2016-31/12/2019

Bachs O. **CiberONC (Cancer network).**
Sponsored by Instituto de Salud Carlos III (ISCIII). CB16/12/00244
Duration: 01/01/2017-31/12/2021

Bachs O. **Carlos III Networked Proteomics Plattform (ProteoRed).**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PT13/0001/0036
Duration: 01/01/2017-31/12/2021

DOCTORAL THESES

Pujol MJ. **Paper de la proteïna p27 en la regulació de l'expressió d'alfa-sinucleïna: Implicacions en la Malaltia de Parkinson.**
PhD student: Carla Domuro Soriano

5.4 Myeloma and other monoclonal gammopathies

LOCATION
HCB building

KEYWORDS
1. **Multiple myeloma**
2. **Amyloidosis**
3. **Monoclonal gammopathy**
4. **Waldenstrom's macroglobulinemia**

RELATED DISEASES
1. **Multiple myeloma**
2. **Amyloidosis**
3. **Monoclonal gammopathy of undetermined significance**
4. **Waldenstrom's macroglobulinemia**

GROUP INVOLVED IN
AGAUR_SGR17: 792

AWARDS
Premi a l'excel·lència professional per la investagació biomèdica.
Institution: Col·legi de Metges de Barcelona
Awardee/s: Joan Bladé

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**9**	**74,78**	**8,31**	**56%**	**44%**



GROUP LEADER
Joan Bladé (HCB)
T. 93 227 54 00 (Ext.: 3352)
jblade@clinic.cat

RESEARCHERS
Maria Teresa Cibeira (HCB)
Laura Rosiñol (HCB)

POST-DOCTORAL RESEARCHERS
Natalia Tovar (HCB)

PRE-DOCTORAL RESEARCHERS
Raquel Jiménez (FCRB)
Ana Triguero (FCRB)

PROBLEM

Multiple myeloma (MM) accounts for 15% of malignant disease. It consists of the proliferation in the bone marrow of plasma cells that produce an abnormal protein. MM manifests with bone involvement, abnormal kidney function, anaemia, increased calcium levels, infections and tumours of the plasma cells (extramedullary disease).

Although the mean survival rate for patients has increased from 3 to 6 years, only 3% of cases are cured. Preventing the disease and improving treatment results are therefore the healthcare problems to be solved.

APPROACH

The group studies mechanisms of progression in people with monoclonal gammopathy of undetermined significance and in patients with MM who respond to treatment. It studies the efficacy of new models (phase-I and phase-II clinical trials) and of drug combinations (phase-III trials) to increase survival and the proportion of patients cured.

It also participates as the principal national investigator in clinical trials by the Spanish Myeloma Group, in trials by the pharmaceutical industry, and it will shortly begin a project with a phase-I clinical trial with anti-BCMA CAR-T-cell therapy (first-in-human).

IMPACT

The work carried out to date has enabled the group to develop international criteria for responding to MM (Bladé BJH 1998), describe evolving smouldering MM, provide a response to extramedullary involvement with new drugs, and obtain approval from the EMEA for pre-transplant induction treatment with VTD.

The group leader is among the top 1% of most cited researchers in the world, according to the Thompson&Reuters ranking agency.

RESEARCH LINES

- Cardiac involvement in al amyloidosis.

- Clinical trials.

- Extramedullary involvement in multiple myeloma.

- Mechanisms of progression in monoclonal gammopathies.

- Real life data.

PUBLICATIONS

Originals / I.F.: 74.781

1. Lahuerta JJ, Jiménez-Ubieto A, Paiva B, Martínez-López J, González-Medina J, López-Anglada L, Cedena MT, Puig N, Oriol A, Blanchard MJ, Ríos R, Martin J, Martínez R, Sureda A, Hernández MT, de la Rubia J, Krsnik I, Cabañas V, Palomera L, Bargay J, Mateos MV, Rosiñol L, San Miguel JF, Blade J. **Role of urine immunofixation in the complete response assessment of MM patients other than light-chain-only disease.** *BLOOD.* 133(25):2664-2668. I.F.: 16.562

2. Rosiñol L, Oriol A, Rios R, Sureda A, Blanchard MJ, Hernández MT, Martínez-Martínez R, Moraleda JM, Jarque I, Bargay J, Gironella M, de Arriba F, Palomera L, González-Montes Y, Martí JM, Krsnik I, Arguiñano JM, González ME, González AP, Casado LF, López-Anglada L, Paiva B, Mateos MV, San Miguel JF, Lahuerta JJ, Bladé J. **Bortezomib, lenalidomide, and dexamethasone as induction therapy prior to autologous transplant in multiple myeloma.** *BLOOD.* 134(16):1337-1345. I.F.: 16.562

3. Chari A, Martinez-Lopez J, Mateos MV, Bladé J, Benboubker L, Oriol A, Arnulf B, Rodriguez-Otero P, Pineiro L, Jakubowiak A, de Boer C, Wang J, Clemens PL, Ukropec J, Schecter J, Lonial S, Moreau P . **Daratumumab plus carfilzomib and dexamethasone in patients with relapsed or refractory multiple myeloma.** *BLOOD.* 134(5):421-431. I.F.: 16.562

4. Rodríguez-Otero P, Mateos MV, Martínez-López J, Hernández MT, Ocio EM, Rosiñol L, Martínez R, Teruel AI, Gutiérrez NC, Bargay J, Bengoechea E, González Y, de Oteyza JP, Gironella M, Nuñez-Córdoba JM, Encinas C, Martín J, Cabrera C, Palomera L, de Arriba F, Cedena MT, Puig N, Oriol A, Paiva B, Bladé J, Lahuerta JJ, San Miguel JF. **Predicting long-term disease control in transplant-ineligible patients with multiple myeloma: impact of an MGUS-like signature.** *BLOOD CANCER JOURNAL.* 9(4):36. I.F.: 7.895

5. Gutiérrez-García G., Cibeira M., Rovira M., Fernández de Larrea C., Tovar N., Rodríguez-Lobato L., Rosiñol L., Marín P., Solano-Vega J., Suárez-Lledó M., Bataller A., Solano M., de Llobet N., Domenech A., Borràs N., Lozano M., Cid J., Martínez C., Urbano-Ispizua Á., Esteve J., Carreras E., Fernández-Avilés F., Bladé J. **Improving security of autologous hematopoietic stem cell transplant in patients with light-chain amyloidosis.** *BONE MARROW TRANSPLANTATION.* 54(8):1295-1303. I.F.: 4.674

6. López-Corral L, Caballero-Velázquez T, López-Godino O, Rosiñol L, Pérez-Vicente S, Fernandez-Avilés F, Krsnik I, Morillo D, Heras I, Morgades M, Rifon JJ, Sampol A, Iniesta F, Ocio EM, Martin J, Rovira M, Cabero M, Castilla-Llorente C, Ribera JM, Torres-Juan M, Moraleda JM, Martinez C, Vázquez A, Gutierrez G, Caballero D, San Miguel JF, Mateos MV, Pérez-Simón JA . **Response to novel drugs before and after Allogeneic Stem Cell Transplantation in Multiple Myeloma relapsing patients.** *BIOLOGY OF BLOOD AND MARROW TRANSPLANTATION.* 25(9):1703-1712. I.F.: 3.599

7. Suárez-Lledó M, Marcos MÁ, Cuatrecasas M, Bombi JA, Fernández-Avilés F, Magnano L, Martínez-Cibrián N, Llobet N, Rosiñol L, Gutiérrez-García G, Jorge S, Martínez C, Rovira M, Urbano-Ispizua Á. **Quantitative PCR is faster, more objective and more reliable than immunohistochemistry for the diagnosis of Cytomegalovirus Gastrointestinal disease in allogeneic stem cell transplantation.** *BIOLOGY OF BLOOD AND MARROW TRANSPLANTATION.* 25(11):2281-2286. I.F.: 3.599

8. Cid J, Carbassé G, Suárez-Lledó M, Moreno DF, Martínez C, Gutiérrez-García G, Fernández-Avilés F, Rosiñol L, Giavedoni P, Mascaró JM, Agustí C, Marín P, Rovira M, Urbano-Ispizua Á, Lozano M. **Efficacy and safety of one-day offline extracorporeal photopheresis schedule processing one total blood volume for treating patients with graft-versus-host disease.** *TRANSFUSION.* 59(8):2636-2642. I.F.: 3.111

9. Jiménez-Segura R, Granell M, Gironella M, Abella E, García-Guiñón A, Oriol A, Cabezudo E, Clapés V, Soler JA, Escoda L, López-Pardo J, Fernández de Larrea C, Cibeira MT, Tovar N, Isola I, Bladé J, Rosiñol L, GEMMAC (Grup per l l'estudi del mieloma mútiple i l'amiloïdosi de Catalunya). **Pomalidomide-dexamethasone for treatment of soft-tissue plasmacytomas in patients with relapsed / refractory multiple myeloma.** *EUROPEAN JOURNAL OF HAEMATOLOGY.* 102(5):389-394. I.F.: 2.217

Letters / I.F.: 4.919

1. Rodas L., Garcia-Herrera A., Ramirez Bajo M., Fernandez-Larrea C., Cibeira M., Blasco M., Rosiñol L., Solé M., Blade J., Campistol J., Quintana L. **Six-2 glomerular expression for the prediction of renal outcome in systemic amyloidosis.** *AMYLOID-JOURNAL OF PROTEIN FOLDING DISORDERS.* 26(1):97-98. I.F.: 4.919

5.5 Molecular pathology of lymphoid neoplasms

LOCATION
CEK building, floor 2

KEYWORDS
1. **Lymphoid neoplasms**
2. **Genomic alterations**
3. **Epigenome**
4. **Transcriptional regulation**
5. **Molecular pathology**

RELATED DISEASES
1. **Lymphoid neoplasms**

GROUP INVOLVED IN
AGAUR_SGR17: 00709, 01107
RTICC
CIBERONC
ICGC
LLMPP

AWARDS
Oncology National Echevarne Fundation Award.
Institution: Fundación Echevarne
Awardee/s: Elias Campo

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**22**	**210,16**	**9,55**	**86%**	**55%**



GROUP LEADER
Elías Campo (HCB-UB)
T. 93 227 54 50
ecampo@clinic.cat

RESEARCHERS
Olga Balagué (HCB)
Sílvia Beà (IDIBAPS)
Luis Hernández Pous (IDIBAPS)
Pedro Jares (HCB-UB)
Antonio Martínez Pozo (HCB-UB)
Itziar Salaverria (IDIBAPS)

POST-DOCTORAL RESEARCHERS
Carles Barceló (IDIBAPS)
Guillem Clot (IDIBAPS)
Santiago Demajo (IDIBAPS)
Blanca Gonzalez Farre (HCB)
David Martín García (IDIBAPS)
Daniel Martínez Hernández (HCB)
Alba Navarro (CIBER)

PRE-DOCTORAL RESEARCHERS
Elena Fernandez Garnacho (IDIBAPS)
Ferran Nadeu (IDIBAPS)
Joan Enric Ramis (FCRB)
Julia Salmeron (IDIBAPS)

TECHNICIANS
Cristina Capdevila (IDIBAPS)
Noelia García Martínez (FCRB)
Rosó Marés (IDIBAPS)
Silvia Martín Román (CIBER)
Miguel Osuna (FCRB)

ADMINISTRATIVE STAFF
Mª Carmen Muro (FCRB)
Sílvia Ruiz (IDIBAPS)

PROBLEM

The group is striving to understand the molecular mechanisms involved in the development and progression of lymphoid neoplasms, a group of extremely heterogeneous cancers that are relatively common and affect the blood, lymph nodes and other organs in the form of leukaemia or lymphomas.

Our aim is to discover the mechanisms that transform lymphoid cells, in order to improve the diagnosis of these tumours, predict their evolution and identify the most effective treatments.

APPROACH

To understand the complexity of lymphoid neoplasms, the group approaches the study of these tumors from a multidisciplinary perspective , using advanced microscopy, DNA and RNA sequencing with next-generation sequencing technologies, biochips and bioinformatics studies.

These studies use tissues and cells that the patients themselves have donated to research. The group also uses animal models and cell cultures that reproduce, in the laboratory, the diseases to be studied.

All the experimental data that we obtain are combined with clinical observations of patients, and we use these results to design novel diagnostic tools, models to predict evolution of thes disease and orient new treatments .

IMPACT

The group has identified and characterized several lymphoid neoplasms about which very little was known. We have defined the way in which two oncogenes ,which are involved in the development of mantle cell lymphoma (cyclin D1 and SOX11) function, and have described the whole genome sequence and epigenomic alterations of chronic lymphatic leukaemia and mantle cell lymphoma that have change our view of these neoplasms.
This information has help to designed novel treatments, improve the diagnosis of diverse lymphomas and identified new mechanisms that could be used as targets for treatment.

RESEARCH LINES

- Genetic and molecular mechanisms involved in the pathogenesis of lymphoid neoplasms.

- Genomic alterations of chronic lymphocytic leukemia and mantle cell lymphoma.

- Identification of biomarkers for more precise diagnosis, prognosis and prediction for therapy.

PUBLICATIONS

Originals / I.F.: 210.162

1. Shuai S., Suzuki H., Diaz-Navarro A., Nadeu F., Kumar S.A., Gutierrez-Fernandez A., Delgado J., Pinyol M., López-Otín C., Puente X.S., Taylor M.D., Campo E., Stein L.D. **The U1 spliceosomal RNA is recurrently mutated in multiple cancers.** *NATURE.* 574(7780):712-716. I.F.: 43.070

2. Martín-Garcia D, Navarro A, Valdés-Mas R, Clot G, Gutiérrez-Abril J, Prieto M, Ribera-Cortada I, Woroniecka R, Rymkiewicz G, Bens S, de Leval L, Rosenwald A, Ferry JA, Hsi ED, Fu K, Delabie J, Weisenburger D, de Jong D, Climent F, O'Connor SJ, Swerdlow SH, Torrents D, Beltran S, Espinet B, González-Farré B, Veloza L, Costa D, Matutes E, Siebert R, Ott G, Quintanilla-Martinez L, Jaffe ES, López-Otín C, Salaverria I, Puente XS, Campo E, Beà S. **CCND2 and CCND3 hijack immunoglobulin light-chain enhancers in cyclin D1(-) mantle cell lymphoma.** *BLOOD.* 133(9):940-951. I.F.: 16.562

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Letters / I.F.: 17.824

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Case Reports / I.F.: 15.14

1. Sangiorgio V., Veloza L., Galvis K., López M., Frigola G., Campo E., Balagué O. **Kikuchi-Fujimoto disease and breast implants: is there a relationship?** *HAEMATOLOGICA.* 104(12):e581-e584. I.F.: 7.570

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GRANTS FOR RESEARCH IN PROGRESS

Beà S. **Caracterización de la inestabilidad genómica y las mutaciones somáticas en linfoma de células del manto y su impacto.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/01061
Duration: 01/01/2018-31/12/2020

Beà S. **Mutational landscape of follicular lymphoma at late relapse, early failure and histological transformation.**
Sponsored by: Asociación Española Contra el Cáncer. AECC_Proyectos18
Duration: 01/11/2018-31/10/2021

Campo E. **Patologia Molecular Oncològica (Prèviament Oncomorfologia Funcional Humana i Experimental).**
Sponsored by: Generalitat de Catalunya. AGAUR_SGR17_01142
Duration: 01/01/2017-30/09/2021

Campo E. **La Medicina Personalitzada a Catalunya-Càncer (MedPerCan). Estudi pilot sobre l'impacte de l'anàlisi genòmica en la presa de decisions en oncologia.**
Sponsored by: Generalitat de Catalunya. PERIS_Programes16 (SLT002/16/00374)
Duration: 27/03/2017-31/12/2019

Campo E. **Genomic and epigenomic drivers of disease evolution in chronic lymphocytic leukemia. Targets for clinical intervention.**
Sponsored by: Fundació la Caixa. LaCaixa_HealthRes17 (HR17-00221)
Duration: 31/12/2018-30/12/2021

Campo E. **Functional and Clinical Impact of Genomic Analysis in CLL.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PMP15/00007
Duration: 01/01/2016-30/09/2020

Campo E. **Impacto Clínico de la Heterogeneidad Genómica y Evolución Clonal en Neoplasias Linfoides B. Definición de Nuevos Modelos Diagnósticos y Pronósticos.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO). SAF2015-64885-R
Duration: 01/01/2016- 30/06/2019

Campo E. **GENOMLYMPH: Impacto clínico y biológico de las alteraciones genómicas en neoplasias linfoides.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO). SAF2016-81860-REDT
Duration: 01/07/2017-31/12/2020

Campo E. **Alteraciones genómicas y epigenómicas en la evolución de linfomas agresivos. Dianas para aplicaciones clínicas.**
Sponsored by: Ministerio de Ciencia Innovacion y Universidades (MICIU). RTI2018-094274-B-I00
Duration: 01/01/2019-31/12/2021

Campo E. **Genetic and cellular intratumor heterogeneity as predictor of chronic lymphocytic leukemia outcome and treatment.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). FIS_AC15/00028 - ERANET_TRANSC2_15 (TRS-2015-00000160)
Duration: 01/04/2016-31/03/2019

Campo E. **EUCANCan: a federated network of aligned and interoperable infrastructures for the homogeneous.**
Sponsored by: European Comission. CE_H2020-SC1_18_1s (825835)
Duration: 01/01/2019-31/12/2022

Campo E. **Single-cell genomics to comprehensively understand healthy B-cell maturation and transformation.**
Sponsored by: European Comission. CE_H2020-ERC-2018_Sy (810287_ECG)
Duration: 01/04/2019-31/03/2024

Campo E. **Molecular Diagnosis, Prognosis, and Therapeutic Targets in Mantle Cell Lymphoma.**
Sponsored by: National Institutes of Health, NIH_PAR-16-457_01
Duration: 19/09/2018-31/08/2023

Hernández L. **Búsqueda de lncRNAs relacionados con la polarización de macrófagos pro-tumorogénicos (M2-TAM) en linfomas foliculares/ difusos de células grandes y evaluación de su valor clínico.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00551
Duration: 01/01/2016-30/06/2019

Martinez A. **SLPC asociados a inmunodeficiencia: estudio de la transformación secretora y de la activación litica de los herpesvirus como nuevas dianas terapéuticas.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI14/00333
Duration: 01/01/2015-30/06/2019

Salaverria I. **Caracterización molecular, genética e inmunofenotípica de los linfomas de centro germinal en pacientes pediátricos, adolescentes y jóvenes adultos.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00580
Duration: 01/01/2016-31/12/2019

Salaverria I. **Linfomas en niños y adultos jóvenes: Impacto de las alteraciones genéticas y moleculares en la clasificación y estratificación de los pacientes.**
Sponsored by: Asociación Española Contra el Cáncer. AECC_Cancer_Infantil_Raros17
Duration: 01/12/2017-

Salaverria I. **Mutaciones con impacto diagnóstico y pronóstico en linfoma No-Hodgkin en pacientes inmunocompetentes y posttrasplantes (PTLD) pediátricos y adultos jóvenes.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00471
Duration: 01/01/2019-31/12/2021

DOCTORAL THESES

Campo E: **Targeted Therapies In CII. New Drugs Against CII Recurrent Mutations.**
PhD student: Neus Gimenez Carabaza

Beà S. **Caraterització genètica del Limfoma de Cèl·lules del Mantell i la Leucèmia limfàtica Crònica mitjançant microarrays i tècniques de seqüenciació: noves eines pel diagnòstic i pronòstic.**
PhD student: David Martín Garcia

5.6 Myeloid neoplasms

LOCATION
CEK building, floor 2

KEYWORDS
1. **Genomic profile**
2. **Myeloproliferative neoplasms**
3. **Acute myeloid leukemia**

RELATED DISEASES
1. **Primary myelofibrosis**
2. **Chronic myeloid leukemia**
3. **Essential thrombocythemia**
4. **Polycythemia vera**
5. **Myelodysplastic syndrome**
6. **Acute myeloid leukemia**
7. **Acute lymphoblastic leukemia**

GROUP INVOLVED IN
RTICC
AGAUR_SGR17: 01655

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**12**	**73,57**	**6,13**	**58%**	**42%**



GROUP LEADER
Francisco Cervantes (HCB)
T. 93 227 54 28
fcervan@clinic.cat

RESEARCHERS
Alberto Álvarez Larrán (HCB)
Marina Díaz Beyá (HCB)
Jordi Esteve (HCB)

PRE-DOCTORAL RESEARCHERS
Alex Bataller (FCRB)
Juan Gonzalo Correa (HCB)
Daniel Esteban (FCRB)
Anna Gaya (FCRB)
Francisca Guijarro (FCRB)

ADMINISTRATIVE STAFF
Laura Alcolea (HCB)

PROBLEM

In recent years there have been important advances in the treatment of patients with haematologic neoplasms. But for a significant proportion of these patients, the benefits obtained, in terms of both treatment response and survival, are still limited.

In view of this situation, greater knowledge of the biology of these neoplasms is sure to contribute to the improvement of therapeutic results and, therefore, of the prognosis and survival of patients.

APPROACH

The strategy of the group is to seek molecular alterations that can be used as therapeutic targets for tackling haematological neoplasms.

It also seeks to improve knowledge of the micro-environment in which neoplastic cells proliferate, along with the body's physiological defence mechanisms against this growth.

IMPACT

The results of the group's research have improved: the molecular definition of certain types of acute myeloblastic leukaemia; the establishment of correlations between the molecular phenotype and clinical-haematological data; and the prognosis for patients with chronic myeloproliferative neoplasms.

RESEARCH LINES

- Myeloid neoplasms.

PUBLICATIONS

Originals / I.F.: 73.569

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significance of recurring chromosomal abnormalities in transplanted patients with acute myeloid leukemia. *LEUKEMIA.* 33(8):1944-1952. I.F.: 9.944

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5. Puerta-Alcalde P, Cardozo C, Suárez-Lledó M, Rodríguez-Núñez O, Morata L, Fehér C, Marco F, Del Río A, Martínez JA, Mensa J, Rovira M, Esteve J, Soriano A, Garcia-Vidal C. C**urrent time-to-positivity of blood cultures in the febrile neutropenia: a tool to be used in stewardship de-escalation strategies.** *CLINICAL MICROBIOLOGY AND INFECTION.* 25(4):447-453. I.F.: 6.425

6. Bataller A, Garrote M, Oliver-Caldés A, López-Guerra M, Colomer D, Aymerich M, Camós M, Vega-García N, Díaz-Beyá M, Esteve J. **Early T-cell precursor lymphoblastic leukaemia: response to FLAG-IDA and high-dose cytarabine with sorafenib after initial refractoriness.** *BRITISH JOURNAL OF HAEMATOLOGY.* 185(4):755-757. I.F.: 5.206

7. Schmid C., Labopin M., Schaap N., Veelken H., Schleuning M., Stadler M., Finke J., Hurst E., Baron F., Ringden O., Bug G., Blaise D., Tischer J., Bloor A., Esteve J., Giebel S., Savani B., Gorin N., Ciceri F., Mohty M., Nagler A. **Prophylactic donor lymphocyte infusion after allogeneic stem cell transplantation in acute leukaemia – a matched pair analysis by the Acute Leukaemia Working Party of EBMT.** *BRITISH JOURNAL OF HAEMATOLOGY.* 184(5):782-787. I.F.: 5.206

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Review / I.F.: 12.198

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3. Montesinos, Pau; Bergua, Juan; Infante, Joana; Esteve, Jordi; Guimaraes, Jose Eduardo; Sierra, Jordi; Angel Sanz, Miguel. **Update on management and progress of novel therapeutics for R/R AML: an Iberian expert panel consensus.** *ANNALS OF HEMATOLOGY.* 98(11):2467-2483. I.F.: 2.850

Letters / I.F.: 7.57

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GRANTS FOR RESEARCH IN PROGRESS

Álvarez-Larrán A. **Evolución natural, caracterización molecular y disfunción endotelial de las neoplasias mieloproliferativas que debutan en forma de trombosis esplácnica.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00205
Duration: 01/01/2019-31/12/2021

Esteve J. **Estudio post-autorización prospectivo de terapia adaptada al riesgo en la leucemia mieloide aguda y síndromes mielodisplásicos de alto riesgo: importancia del perfil genómico y de la enfermedad residual mínima en la asignación del tratamiento.**
Sponsored by: Generalitat de Catalunya. PERIS (SLT002/16/00433)
Duration: 27/03/2017-31/12/2019

Esteve J. **Caracterización genética de la leucemia mieloblástica aguda de riesgo citogenético intermedio y genotipo NPM1/CEBPA/FLT3-ITD triple negativo; análisis mutacional, expresión de lncRNAs.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/01027
Duration: 01/01/2017-31/12/2020

5.7 Experimental therapies in lymphoid neoplasms

LOCATION
CEK building, floor 2

KEYWORDS
1. **Hematological malignancies**
2. **Targeted therapies**
3. **Preclinical models**

RELATED DISEASES
1. **Lymphoid malignancies**
2. **Chronic lymphocytic leukemia**
3. **Mantle cell lymphoma**

GROUP INVOLVED IN
CIBERONC
AGAUR_SGR17:1009
RTICC

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	16	81,65	5,10	75%	31%



GROUP LEADER
Dolors Colomer (HCB)
T. 93 227 54 00 (Ext.: 2269)
dcolomer@clinic.cat

RESEARCHERS
Marta Aymerich (HCB)
Mª Teresa Estrach (HCB)
María Rozman (HCB)
Neus Villamor (HCB)

POST-DOCTORAL RESEARCHERS
Fabian Arenas (CIBER)
Laia Rosich (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Neus Gimenez Carabaza (IDIBAPS)
Irene López Oreja (IDIBAPS)
Heribert Playà (CIBER)

TECHNICIANS
Ariadna Giró (CIBER)

PROBLEM

Recently, a large number of genetic alterations have been identified that have opened up a wide range of possibilities for the discovery of new therapeutic strategies and new predictive markers for lymphoid B neoplasms. Although more effective therapies have been developed lately, as yet there is still no curative treatment for these diseases.

In addition, the generation of resistance (due to the heterogeneity of both the tumour and the accompanying cells, the tumour microenvironment) is an obstacle to success in the long term.

APPROACH

The group's research focuses on the development and validation of new specific therapies, on the search for possible combinations with other drugs and on the study of resistance in preclinical models of chronic lymphatic leukaemia (CLL) and mantle cell lymphoma (MCL).

To carry out this experimental work, the group evaluates the efficacy of new drugs in isolated tumour cells of patients, in cellular lines and in animal models, taking into account the interaction between the tumour cell and its microenvironment.

IMPACT

The group wants to make sure that the experimental results have practical benefits and serve to improve patients' quality of life and life expectancy. The project is based on the development of new preclinical therapies, on the validation of these experimental results in mouse models, and on describing both the action and the resistance mechanisms.

The aim is that the results can be applied to clinical practice and thus to create personalised therapies based on the optimisation of treatment for each patient, improving benefits and avoiding adverse side effects.

RESEARCH LINES

- Characterization of the functional impact of driver mutations and the analysis of new potential therapeutic approaches.

- Development of predictive models recapitulating tumor heterogeneity and their impact on disease evolution, therapy resistance and susceptibility to novel targeted therapies.

- Mechanisms of resistance to targeted therapy.

PUBLICATIONS

Originals / I.F.: 81.65

1. Hanna B., Roessner P., Yazdanparast H., Colomer D., Campo E., Kugler S., Yosifov D., Stilgenbauer S., Schmidt M., Gabriel R., Lichter P., Seiffert M. **Control of chronic lymphocytic leukemia development by clonally-expanded CD8+T-cells that undergo functional exhaustion in secondary lymphoid tissues.** *LEUKEMIA.* 33(3):625-637. I.F.: 9.944

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6. Rivas-Delgado A, Magnano L, Moreno-Velázquez M, García O, Nadeu F, Mozas P, Dlouhy I, Baumann T, Rovira J, González-Farre B, Martínez A, Balague O, Delgado J, Villamor N, Giné E, Campo E, Sancho-Cia JM, López-Guillermo A. **Response duration and survival shorten after each relapse in patients with follicular lymphoma treated in the rituximab era.** *BRITISH JOURNAL OF HAEMATOLOGY.* 184(5):753-759. I.F.: 5.206

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10. Fernandez-de-Misa, R; Hernandez-Machin, B; Combalia, A; Muret, MPG; Servitje, O; Muniesa, C; Gallardo, F; Pujol, RM; Marti, RM; Ortiz-Brugues, A; Maronas-Jimenez, L; Ortiz-Romero, PL; Rius, LB; Izu, R; Roman, C; Canueto, J; Blanes, M; Morillo, M; Bastida, J; Penate, Y; Gala, SP; Lara, PE; Gil, AP; Estrach, T. **Prognostic factors in patients with primary cutaneous anaplastic large cell lymphoma: a multicentric, retrospective analysis of the Spanish Group of Cutaneous Lymphoma.** *JOURNAL OF THE EUROPEAN ACADEMY OF DERMATOLOGY AND VENEREOLOGY.* I.F.: 5.113

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12. Sorigue M, Magnano L, Miljkovic MD, Nieto-Moragas J, Santos-Gomez M, Villamor N, Junca J, Morales-Indiano C. **Positive predictive value of CD200 positivity in the differential diagnosis of chronic lymphocytic leukemia.** *CYTOMETRY PART B-CLINICAL CYTOMETRY.* I.F.: 2.938

13. Alvarez-Larrán A, López-Guerra M, Rozman M, Correa JG, Hernández-Boluda JC, Tormo M, Martínez D, Martín I, Colomer D, Esteve J, Cervantes F. **Genomic characterization in triple-negative primary myelofibrosis and other myeloid neoplasms with bone marrow fibrosis.** *ANNALS OF HEMATOLOGY.* 98(10):2319-2328. I.F.: 2.850

14. Bosch X., Jáuregui B., Villamor N., Morales-Ruiz M., Ortiz-Pérez J., Borràs R., Penela D., Soto-Iglesias D., Perea R., Doltra A., Prat-González S., Jiménez W., Mira Á., Lasalvia L., Berruezo A. **Monocyte Subsets Are Differently Associated with Infarct Size, Left Ventricular Function, and the Formation of a Potentially Arrhythmogenic Scar in Patients with Acute Myocardial**

Infarction. *JOURNAL OF CARDIOVASCULAR TRANSLATIONAL RESEARCH.* . I.F.: 2.756

15. Ojeda R., Arias-Guillén M., Gómez M., Vera M., Fontseré N., Rodas L., Filella X., Reverter J.C., Lozano F., Villamor N., Maduell F. **Study of Biocompatibility of Membranes in Online Hemodiafiltration.** *BLOOD PURIFICATION.* 19:1-9. I.F.: 2.363

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Letters / I.F.: 5.206

1. Bomben R, Roisman A, D'Agaro T, Castellano G, Baumann T, Delgado J, López-Guillermo A, Zucchetto A, Dal-Bo M, Bravin V, Slavutsky I, Vlasova A, Guigó R, Martin-Subero JI, Chapaprieta V, Beekman R, Martin-García D, Beà S, Salaverria I, Aymerich M, Campo E, Gattei V, Hernández L. **Expression of the transcribed ultraconserved region 70 and the related long non-coding RNA AC092652.2-202 has prognostic value in Chronic Lymphocytic Leukaemia.** *BRITISH JOURNAL OF HAEMATOLOGY.* 184(6):1045-1050. I.F.: 5.206

Case Reports / I.F.: 10.412

1. Oliver-Caldes A., Gonzalez-Farre B., Merino A., Rozman M. **Carcinocythaemia in an advanced stage of invasive ductal carcinoma of the breast.** *BRITISH JOURNAL OF HAEMATOLOGY.* 185(1):8. I.F.: 5.206

2. Bataller A, Combalia A, Garcia-Herrera A, Estrach T, Matutes E. **Isolated cutaneous lymphomatous form of adult T-cell leukaemia/lymphoma.** *BRITISH JOURNAL OF HAEMATOLOGY.* 185(2):205. I.F.: 5.206

GRANTS FOR RESEARCH IN PROGRESS

Colomer D. **Identificació de noves estratègies terapéutiques en la leucèmia limfàtica crònica (LLC).**
Sponsored by: Universitat de Barcelona.
2015-DI-075
Duration: 01/04/2016-31/03/2019

Colomer D. **Dianes terapèutiques i noves tècniques diagnostiques en neoplàsies limfoides.**
Sponsored by: Generalitat de Catalunya.
AGAUR_SGR17_01009
Duration: 01/01/2017-31/12/2020

Colomer D. **Estrategias terapéuticas dirigidas contra la heterogeneidad molecular y la resistencia en leucemia linfática crónica y linfoma de células del manto.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
SAF2015-67633-R
Duration: 01/01/2016-31/07/2019

Colomer D. **Nuevos modelos para el estudio de las alteraciones genéticas recurrentes y resistencia a fármacos en la leucemia crónica.**
Sponsored by: Ministerio de Ciencia Innovacion y Universidades (MICIU).
RTI2018-094584-B-I00
Duration: 01/01/2019-31/12/2021

Colomer D. **Red transfonteriza de immunoterapias personalizadas para linfomas no Hodgkin.**
Sponsored by: European Comission.
CE_Interreg-16_POCTE (EFA281/16)
Duration: 01/01/2018-31/12/2021

DOCTORAL THESES

Colomer D. **New drugs against CLL recurrent mutations.**
PhD student: Neus Gimenez Carabaza

5.8 Molecular pathology of inflammatory conditions and solid tumours

LOCATION
HCB building

KEYWORDS
1. **Solid tumours**
2. **Inflammatory diseases**

RELATED DISEASES
1. **Cancer**
2. **Molecular pathology**
3. **Inflammatory conditions**

GROUP INVOLVED IN
CIBEREHD
AGAUR_SGR17: 653
CIBERES

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	43	218,54	5,08	67%	33%



GROUP LEADER
Miriam Cuatrecasas (HCB)
T. 93 227 54 50
mcuatrec@clinic.cat

RESEARCHERS
Iban Aldecoa (HCB)
Llúcia Alós (HCB-UB)
Paola Cecilia Castillo (HCB)
Adriana García (HCB)
Carme Mallofré (HCB-UB)
Alfons Nadal (HCB-UB)
José Francisco Ramírez Ruz (HCB-UB)
Teresa Ribalta (HCB-UB)
María Adela Saco (HCB)

PRE-DOCTORAL RESEARCHERS
Iván Archilla Sanz (HCB)
Sherley Diaz Mercedes (HCB)

PROBLEM

The development and progression of human neoplasms and inflammatory diseases involve genetic and molecular mechanisms which can be learned through digital and molecular techniques applied to tissues.

APPROACH

The technological platforms applied to research in inflammatory diseases and human tumours enable the knowledge generated by basic research to be transferred to clinical practice.

For this reason, applied molecular pathology techniques are used at diagnostic level, including genetics, epigenetics, proteomics, glycomics, and digital pathology with artificial intelligence algorithms, spectral microscopy, and ex vivo confocal microscopy.

IMPACT

Thanks to the identification of therapeutic targets, the group has distinguished parameters that enable improvement of the diagnosis and prognosis of inflammatory and neoplastic diseases.

The group is a leader in the molecular diagnosis of lung and breast cancer and molecular nodal staging in colorectal cancer, as well as in the underlying molecular mechanisms in cutaneous and renal inflammatory processes, molecular characterisation techniques in melanoma and tumours of the central nervous system.

RESEARCH LINES

- Head and neck carcinomas, oncogenesis and prognostic factors.

- Molecular lymph node staging in colorectal carcinoma.

- Molecular techniques applied to melanocytic neoplasia, especially to melanoma diagnosis.

- Neurodegenerative diseases and tumors of the central nervous system.

- Skin and kidney involvement in haematological and systemic diseases.

- Transcriptional expression profiles involved in molecular mechanisms of carcinogenesis.

PUBLICATIONS

Originals / I.F.: 218.542

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Nachmani D., Pelletier J., Schumann U., Calleja-Cervantes M.E., Moran S., Guil S., Bueno-Costa A., Piñeyro D., Perez-Salvia M., Rosselló-Tortella M. **Epigenetic loss of RNA-methyltransferase NSUN5 in glioma targets ribosomes to drive a stress adaptive translational program.** *ACTA NEUROPATHOLOGICA.* 138(6):1053-1074. I.F.: 18.174

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4. Rakislova, Natalia Fernandes, Fabiola Lovane, Lucilia Jamisse, Luisa Castillo, Paola Sanz, Ariadna Marimon, Lorena Jesri, Susan Ferrando, Melania Delgado, Vima Novela, Obdeningo Muiuane, Venceslau Ismail, Mamudo R. Lorenzoni, Cesaltina Blau, Dianna M. Bassat, Quique Menendez, Clara Zaki, Sherif R. Carrilho, Carla Ordi, Jaume. **Standardization of Minimally Invasive Tissue Sampling Specimen Collection and Pathology Training for the Child Health and Mortality Prevention Surveillance Network.** *CLINICAL INFECTIOUS DISEASES.* 69(Supplement_4):S302-S310. I.F.: 9.055

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Letters / I.F.: 10.615

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Case Reports / I.F.: 39.019

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4. Soler-Perromat A., Vollmer I., Ramírez J., Sánchez M. **Invasive Mucinous Adenocarcinoma in Congenital Pulmonary Airway Malformation: A Case Report [Adenocarcinoma mucinoso invasivo sobre malformación congénita de la vía aérea pulmonar (MCVAP): a propósito de un caso].** *ARCHIVOS DE BRONCONEUMOLOGIA.* 55(7):384-385. I.F.: 4.214

5. Camprubí D., Balerdi L., Quintana L., Almuedo-Riera A., Valls M., García-Herrera A., Rodriguez-Valero N., Alvarez-Martínez M., Luyi Muñoz J. **Post-splenectomy acute glomerulonephritis due to a chronic infection with Plasmodium falciparum and malariae.** *JOURNAL OF TRAVEL MEDICINE.* 26(4):taz029. I.F.: 4.155

6. Barreiro-Capurro A, Mascaró JM, Galindo BA, Giavedoni P, Carrera C, Alos L, Puig S, Malvehy J. **Clinical and Dermoscopic Evaluation of Melanocytic Lesions in Patients with Chronic Graft Versus Host Disease.** *ACTA DERMATO-VENEREOLOGICA.* 99(9):777-782. I.F.: 3.531

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Consortium Publications / I.F.: 19.233

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GRANTS FOR RESEARCH IN PROGRESS

Cuatrecasas M. **Nuevas estrategias para la estratificación del riesgo de recidiva en pacientes con cáncer de colon en estadio II: Integración de perfiles genómicos y carga tumoral ganglionar.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/01304
Duration: 01/01/2018-31/12/2020

5.9 Endocytosis and intracellular trafficking of proteins and cholesterol

LOCATION
CELLEX building, floor 1B
UB School of Medicine

KEYWORDS
1. **Cell biology**
2. **Endocytosis and exocytosis**
3. **Lipids and cholesterol transport and storage**
4. **Signal transduction**
5. **Liver regeneration**

RELATED DISEASES
1. **NPC1**

GROUP INVOLVED IN
AGAUR_SGR17: 1225

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**3**	**19,55**	**6,52**	**100%**	**33%**



GROUP LEADER
Carles Enrich (UB)
T. 93 402 19 08
enrich@ub.edu

POST-DOCTORAL RESEARCHERS
Carles Rentero (UB)
Teresa Royo (UB)

VISITING SCIENTISTS
Albert Lu (University of Stanford, USA)

PROBLEM

Lysosomal storage disorders such as Niemann-Pick type C (NP-C) lead to the lysosomal accumulation of cholesterol and other lipids, resulting in malfunctions. This accumulation of cholesterol causes alterations in cell physiology, and these are responsible for the liver and neurodegenerative problems that affect patients with NP-C.

Only by performing a detailed analysis of the molecular components and their interactions with lysosomes can the group stimulate alternative pathways to reduce surplus lipids and reactivate the lysosomal function.

APPROACH

Our knowledge of the proteomic repertoire of lysosomes has opened the door to the study of the interactions between the proteins involved in cholesterol transport and removal. The group is now studying the way in which the regulation, overexpression and silencing of determined proteins in this lysosomal environment affect the accumulated lipid levels and how to restore the cell function. The most innovative strategy makes it possible to induce the formation of junctions between the lysosome membranes and other membranes of neighbouring compartments in order to promote molecular transfer.

IMPACT

The main objective is to restore the lysosomal and cellular function in vital organs such as the liver and brain in cell-based lysosomal storage disorder models. So far, the group has discovered a new pathway that enables the removal of cholesterol from the lysosomes that is independent of the most common transporter, the NPC1 protein (which is the cause of Niemann Pick type C disease).

RESEARCH LINES

- Annexin A6 and signalling.

- Annexin A6 in membrane trafficking and organization.

- Role of annexin A6 during liver regeneration.

PUBLICATIONS

Originals / I.F.: 19.546

1. Solsona-Vilarrasa E., Fucho R., Torres S., Nuñez S., Nuño-Lámbarri N., Enrich C., García-Ruiz C., Fernández-Checa J.C. **Cholesterol enrichment in liver mitochondria impairs oxidative phosphorylation and disrupts the assembly of respiratory supercomplexes.** *REDOX BIOLOGY.* 24:101214. I.F.: 7.793

2. Meneses-Salas E., García-Melero A., Kanerva K., Blanco-Muñoz P., Morales-Paytuvi F., Bonjoch J., Casas J., Egert A., Beevi S., Jose J., Llorente-Cortés V., Rye K., Heeren J., Lu A., Pol A., Tebar F., Ikonen E., Grewal T., Enrich C., Rentero C. **Annexin A6 modulates TBC1D15/Rab7/StARD3 axis to control endosomal cholesterol export in NPC1 cells.** *CELLULAR AND MOLECULAR LIFE SCIENCES.* I.F.: 7.014

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Reviews / I.F.: 4.183

1. Grewal T., Enrich C., Rentero C., Buechler C. **Annexins in Adipose Tissue: Novel Players in Obesity.** *INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES.* 20(14):E3449. I.F.: 4.183

GRANTS FOR RESEARCH IN PROGRESS

Enrich C, Tebar F. **Contribución del compartimiento endocítico a la migración celular: regulación por colesterol, annexin A6 y Rac1.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
BFU2015-66785-P
Duration: 01/01/2016-31/12/2020.

DOCTORAL THESES

Enrich C. **Estudio de los mecanismos moleculares del transporte de colesterol desde los endo-lisosomas: papel de la AnxA6 y los contactos de membranas.**
Elsa Meneses-Salas

5.10 Hemotherapy - hemostasis

LOCATION
HCB building

KEYWORDS
1. **Platelets**
2. **Coagulation**
3. **Thrombosis**
4. **Transfusion**
5. **Aphaeresis**

RELATED KEYWORDS
1. **Thrombosis**
2. **Hemorrhagic diathesis**
3. **Thrombotic microangiopathies**
4. **Chronic kidney disease**
5. **Obesity**
6. **Major depression**
7. **Hematopoietic stem cell transplantation complications**

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	21	85,24	4,06	33%	10%



GROUP LEADER
Ginés Escolar (HCB)
T. 93 227 54 00 (Ext.: 2034)
gescolar@clinic.cat

RESEARCHERS
Joan Cid (HCB)
Maribel Diaz Ricart (HCB)
Pablo García de Frutos (CSIC)
Miguel Lozano (HCB)
Anna Merino M (HCB)
Juan Monteagudo (HCB)
Arturo Pereira (HCB)
Juan Carlos Reverter (HCB)
Cristina Chantal Sanz (HCB)
Mª Dolors Tassies (HCB)

POST-DOCTORAL RESEARCHERS
Irene Lopez Vilchez (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Didac Jerez (FCRB)
Ana Belén Moreno (HCB)
Sergi Torramade (IDIBAPS)

TECHNICIANS
Patricia Molina (HCB)
Alex Ramos (HCB)

PROBLEM

Venous and arterial thrombosis, and associated vascular disease, are the leading cause of death and disability worldwide. Direct and indirect annual costs and some of its treatments exceed 49 billion euros in the European union, including direct health costs (24 billion euros), loss of productivity (17 billion euros) and patient care (9 billion euros).

It is expected that the medical costs associated with the treatment of these conditions, some of them preventable, will increase exponentially over the next two decades.

Macroangiopathic and microbial dysfunctions are likely to be strongly implicated in the origin of these diseases, which present high morbidity/mortality rates.

APPROACH

Haemorrhage and thrombosis represent the two sides of vascular and haemostatic alterations. The group explores the clinical, genetic, and molecular characteristics of both congenital and acquired haemostasis in order to obtain solid foundations for a better understanding of these disorders.

Endothelial dysfunction (ED, loss of endothelial function) is a common condition in many health disorders and leads to the most serious complications. Investigating the mechanisms of ED at the macro and microvascular level is of great importance in defining the objectives for preventing and/or correcting its harmful impact on the disorders in which it is involved.

IMPACT

The group has improved the characterisation of haemorrhagic and thrombotic phenotypes and it has identified common and specific biomarkers of ED; it has investigated and defined biomarkers of ED that predict graft versus host disease (GVHD) within the context of the transplantation of hematopoietic cell progenitors; it has explored therapeutic interventions in ED and microvascular complications; it has evaluated pharmacological/transfusion therapies; and it has developed algorithms for the diagnosis and treatment of thrombotic microangiopathies.

RESEARCH LINES

- Characterization of endothelial dysfunction in association with different pathological situations.

- Diagnosis and treatment of thrombotic microangiopathies.

- Evaluation of the physiological and pathological implications of circulating and/or platelet associated procoagulant microparticles in atherothrombosis.

- Search for biomarkers of graft-versus-host disease (GVHD).

- Study of the molecular mechanisms involved in the development of bleeding and thrombotic disorders.

PUBLICATIONS

Originals / I.F.: 85.24

1. O'Brien, Meagan P; Zafar, M Urooj; Rodriguez, Jose C; Okoroafor, Ibeawuchi; Heyison, Alex; Cavanagh, Karen; Rodriguez-Caprio, Gabriela; Weinberg, Alan; Escolar, Gines; Aberg, Judith A; Badimon, Juan J. **Targeting thrombogenicity and inflammation in chronic HIV infection.** *SCIENCE ADVANCES.* 5(6):eaav5463. I.F.: 12.804

2. Zubizarreta I, Flórez-Grau G, Vila G, Cabezón R, España C, Andorra M, Saiz A, Llufriu S, Sepulveda M, Sola-Valls N, Martinez-Lapiscina EH, Pulido-Valdeolivas I, Casanova B, Martinez Gines M, Tellez N, Oreja-Guevara C, Español M, Trias E, Cid J, Juan M, Lozano M, Blanco Y, Steinman L, Benitez-Ribas D, Villoslada P. **Immune tolerance in multiple sclerosis and neuromyelitis optica with peptide-loaded tolerogenic dendritic cells in a phase 1b trial.** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA.* 116(17):8463-8470. I.F.: 9.580

3. Palomo M, Blasco M, Molina P, Lozano M, Praga M, Torramade-Moix S, Martinez-Sanchez J, Cid J, Escolar G, Carreras E, Paules C, Crispi F, Quintana LF, Poch E, Rodas L, Goma E, Morelle J, Espinosa M, Morales E, Avila A, Cabello V, Ariceta G, Chocron S, Manrique J, Barros X, Martin N, Huerta A, Fraga-Rodriguez GM, Cao M, Martin M, Romera AM, Moreso F, Manonelles A, Gratacos E, Pereira A, Campistol JM, Diaz-Ricart M. **Complement Activation and Thrombotic Microangiopathies.** *CLINICAL JOURNAL OF THE AMERICAN SOCIETY OF NEPHROLOGY.* 14(12):1719-1732. I.F.: 6.243

4. Castella M, Boronat A, Martín-Ibáñez R, Rodríguez V, Suñé G, Caballero M, Marzal B, Pérez-Amill L, Martín-Antonio B, Castaño J, Bueno C, Balagué O, González-Navarro EA, Serra-Pages C, Engel P, Vilella R, Benitez-Ribas D, Ortiz-Maldonado V, Cid J, Tabera J, Canals JM, Lozano M, Baumann T, Vilarrodona A, Trias E, Campo E, Menendez P, Urbano-Ispizua Á, Yagüe J, Pérez-Galán P, Rives S, Delgado J, Juan M. **Development of a Novel Anti-CD19 Chimeric Antigen Receptor: A Paradigm for an Affordable CAR T Cell Production at Academic Institutions.** *MOL THER METHODS CLIN DEV.* 12:134-144. I.F.: 4.875

5. Martos L, Fernández-Pardo Á, López-Fernández MF, Ibáñez F, Herrero S, Tàssies D, González-Porras JR, Solmoirago MJ, Costa MJ, Reverter JC, Marco P, Roldán V, Lecumberri R, Velasco F, Oto J, Iruin G, Alonso MN, Vayá A, Bonanad S, Ferrando F, Martí E, Cid AR, Plana E, Oña F, Cuesta I, González-López TJ, España F, Medina P, Navarro S, Working Group of the Spanish Society of Thrombosis Haemostasis (SETH). **Identification of 58 mutations (26 Novel) in 94 of 109 symptomatic Spanish probands with protein C deficiency.** *THROMBOSIS AND HAEMOSTASIS.* 119(9):1409-1418. I.F.: 4.733

6. Martinez-Sanchez J., Hamelmann H., Palomo M., Mir E., Moreno-Castaño A.B., Torramade S., Rovira M., Escolar G., Cordes S., Kalupa M., Mertlitz S., Riesner K., Carreras E., Penack O., Diaz-Ricart M. **Acute Graft-vs.-Host Disease-Associated Endothelial Activation in vitro Is Prevented by Defibrotide.** *FRONTIERS IN IMMUNOLOGY.* 10(2339):2339. I.F.: 4.716

7. Gutiérrez-García G., Cibeira M., Rovira M., Fernández de Larrea C., Tovar N., Rodríguez-Lobato L., Rosiñol L., Marín P., Solano-Vega J., Suárez-Lledó M., Bataller A., Solano M., de Llobet N., Domenech A., Borràs N., Lozano M., Cid J., Martínez C., Urbano-Ispizua Á., Esteve J., Carreras E., Fernández-Avilés F., Bladé J. **Improving security of autologous hematopoietic stem cell transplant in patients with light-chain amyloidosis.** *BONE MARROW TRANSPLANTATION.* 54(8):1295-1303. I.F.: 4.674

8. Caldentey G, García De Frutos P, Cristóbal H, Garabito M, Berruezo A, Bosch X, San Antonio R, Flores-Umanzor E, Perea RJ, De Caralt TM, Rodríguez J, Ortiz-Pérez JT. **Serum levels of Growth Arrest-Specific 6 protein and soluble AXL in patients with ST-segment elevation myocardial infarction.** *EUROPEAN HEART JOURNAL-ACUTE CARDIOVASCULAR CARE.* 8(8):708-716. I.F.: 3.734

9. Molina A; Alcaraz J; Guiñón L; Pérez A; Segurana A; Reverter J; Bedini J; Merino A. **Study of the analytical performance at different concentrations of hematological parameters using Spanish EQAS data.** *CLINICAL CHEMISTRY AND LABORATORY MEDICINE.* 57(12):1980-1987. I.F.: 3.638

10. Cid J, Carbassé G, Suárez-Lledó M, Moreno DF, Martínez C, Gutiérrez-García G, Fernández-Avilés F, Rosiñol L, Giavedoni P, Mascaró JM, Agustí C, Marín P, Rovira M, Urbano-Ispizua Á, Lozano M. **Efficacy and safety of one-day offline extracorporeal photopheresis schedule processing one total blood volume for treating patients with graft-versus-host disease.** *TRANSFUSION.* 59(8):2636-2642. I.F.: 3.111

11. Arellano-Rodrigo E, Fernandez-Gallego V, López-Vilchez I, Molina P, Díaz-Ricart M, Zafar MU, Badimon JJ, van Ryn J, Escolar G. **Idarucizumab, but not procoagulant concentrates, fully restores dabigatran-altered platelet and fibrin components of hemostasis.** *TRANSFUSION.* 59(7):2436-2445. I.F.: 3.111

12. Cid, Joan; Carbasse, Gloria; Alba, Cristina; Perea, Dolores; Lozano, Miquel. **Leukocytapheresis in nonmobilized donors for cellular therapy protocols: Evaluation of factors affecting collection efficiency of cells.** *JOURNAL OF CLINICAL APHERESIS.* 34(6):672-679. I.F.: 3.088

13. Navarro V, Boulahfa I, Obach A, Jerez D, Diaz-Ricart M, Gastó C, Guarch J. **Switching to Imipramine Versus Add-on Mirtazapine in Venlafaxine-Resistant Major Depression: A 10-Week Randomized Open Study.** *JOURNAL OF CLINICAL PSYCHOPHARMACOLOGY.* 39(1):63-66. I.F.: 2.977

14. Navarro, Victor; Boulahfa, Ilham; Obach, Amadeu; Jerez, Didac; Diaz-Ricart, Maribel; Gasto, Cristobal; Guarch, Joana. **Lithium Augmentation Versus Citalopram Combination in Imipramine-Resistant Major Depression A 10-Week Randomized Open-Label Study.** *JOURNAL OF CLINICAL PSYCHOPHARMACOLOGY.* 39(3):254-257. I.F.: 2.977

15. Batlle, Montserrat; Castillo, Nadia; Alcarraz, Anna; Sarvari, Sebastian; Sanguesa, Gemma; Cristobal, Helena; Garcia de Frutos, Pablo; Sitges, Marta; Mont, Lluis; Guasch, Eduard. **Axl expression is increased in early stages of left ventricular remodeling in an**

animal model with pressure-overload. *PLOS ONE*. 14(6):e0217926-e0217926. I.F.: 2.776

16. Munrós J, Tàssies D, Reverter JC, Martin L, Pérez A, Carmona F, Martínez-Zamora MÁ. **Circulating Neutrophil Extracellular Traps Are Elevated in Patients With Deep Infiltrating Endometriosis.** *REPRODUCTIVE SCIENCES*. 26(1):70-76. I.F.: 2.559

17. Karimi S, Farré-Lladós J, Mir E, Escolar G, Casals-Terré J. **Hemostasis-On-a-Chip: Impedance Spectroscopy Meets Microfluidics for Hemostasis Evaluation.** *MICROMACHINES*. 10(8). I.F.: 2.426

18. Munrós J, Martínez-Zamora MA, Tàssies D, Reverter JC, Rius M, Gracia M, Ros C, Carmona F. **Total circulating microparticle levels after laparoscopic surgical treatment for endometrioma: a pilot, prospective, randomized study comparing stripping with CO2 laser vaporization.** *JOURNAL OF MINIMALLY INVASIVE GYNECOLOGY*. 26(3):450-455. I.F.: 2.414

19. Ojeda R., Arias-Guillén M., Gómez M., Vera M., Fontseré N., Rodas L., Filella X., Reverter J.C., Lozano F., Villamor N., Maduell F. **Study of Biocompatibility of Membranes in Online Hemodiafiltration.** *BLOOD PURIFICATION*. 19:1-9. I.F.: 2.363

20. Lozano M, Rivero A, Cid J. **Plasma exchange activity in the European Union.** *TRANSFUSION AND APHERESIS SCIENCE*. 58(3):278-280. I.F.: 1.412

21. Abonnenc M., Crettaz D., Sonego G., Escolar G., Tissot J., Prudent M. **Towards the understanding of the UV light, riboflavin and additive solution contributions to the in vitro lesions observed in Mirasol®-treated platelets.** *TRANSFUSION CLINIQUE ET BIOLOGIQUE*. 26(4):209-216. I.F.: 1.029

Review / I.F.: 5.555

1. Escolar G, McCullough J. **Platelet in vitro assays: their correspondence with their in vivo hemostatic potential.** *TRANSFUSION*. 59(12):3783-3793. I.F.: 3.111

2. Moreno DF; Cid J. **Enfermedad del injerto contra el receptor.** *MEDICINA CLINICA*. 152(1):22-28. I.F.: 1.277

3. Rodríguez-Pintó I; Lozano M; Cid J; Espinosa G; Cervera R. **Plasma exchange in catastrophic antiphospholipid syndrome.** *PRESSE MEDICALE*. 48(11P2):347-353. I.F.: 1.167

Letters / I.F.: 6.339

1. Pereira A, Río-Garma JD, García-Erce JA. O**n the cost-utility of methylene blue-photoinactivated plasma versus quarantine plasma in Spain.** BLOOD TRANSFUSION. 17(1):83. I.F.: 3.352

2. Navarro V., Boulahfa I., Obach A., Jerez D., Diaz-Ricart M., Gastó C., Guarch J. **Six-week outcome of 2-week antidepressant nonimprovers in severe major depression: A prospective naturalistic single-blind study.** *JOURNAL OF CLINICAL PSYCHOPHARMACOLOGY*. 39(4):417-418. I.F.: 2.977

Case Reports / I.F.: 8.004

1. Oliver-Caldes A., Gonzalez-Farre B., Merino A., Rozman M. **Carcinocythaemia in an advanced stage of invasive ductal carcinoma of the breast.** *BRITISH JOURNAL OF HAEMATOLOGY*. 185(1):8. I.F.: 5.206

2. Camprubí D, Pereira A, Rodriguez-Valero N, Almuedo A, Varo R, Casals-Pascual C, Bassat Q, Malvy D, Muñoz J. **Positive direct antiglobulin test in post-artesunate delayed haemolysis: more than a coincidence?** *MALARIA JOURNAL*. 18(1):123. I.F.: 2,798

GRANTS FOR RESEARCH IN PROGRESS

Escolar G. **HEMOTROM.**
Sponsored by: Generalitat de Catalunya.
AGAUR_SGR17_00675
Duration: 01/01/2017-31/12/2020

Escolar G. **Microchip-based point of care devices for a global evaluation of hemostasis under flow conditions: application to the screening of bleeding, thrombosis and monitoring of antithrombotic therapies.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). DTS16/00133
Duration: 01/01/2017-31/12/2019

DOCTORAL THESES

Tassies D, Martinez Zamora MA. **Nous mecanismes en la fisiopatologia de l'endometriosi profunda.**
PhD student: Jordina Munrós Feliu

5.11 Mechanisms of progression in monoclonal gammopathies

LOCATION
CEK building, floor 2

KEYWORDS
1. **Multiple myeloma**
2. **Immune checkpoints**
3. **CAR T cells**
4. **Immunotherapy**
5. **Monoclonal gammopathies**

RELATED DISEASES
1. **Myeloma multiple**

GROUP INVOLVED IN
AGAUR_SGR17: 00792

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**4**	**32,73**	**8,18**	**75%**	**50%**



GROUP LEADER
Carlos Fernández de Larrea
(IDIBAPS-HCB)
T.93 227 54 00 (Ext.: 2946)
cfernan1@clinic.cat

POST-DOCTORAL RESEARCHERS
Tania Díaz Sánchez (UB)
Ester Lozano (FCRB)
Mª Pau Mena (FCRB)
Luis Gerardo Rodriguez Lobato (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Aina Oliver Caldes (HCB)

PROBLEM

Multiple myeloma is a disease of the plasma cells, responsible for generating antibodies. The malignant proliferation of these cells, especially in the bone marrow, causes fractures, anaemia, renal insufficiency and elevation of calcium.

Therapies for treating multiple myeloma include chemotherapy, bone marrow autologous transplant, proteasome inhibitors, immunomodulatory agents, and monoclonal antibodies. Despite the wide range of therapies that exist to treat it, multiple myeloma is still an incurable pathology.

APPROACH

The group's line of work consists of identifying innovative treatment options related to the patient's immune system and the tumour's micro-environment. It studies, for example, molecules related to the control and evasion of myeloma after treatment in order to develop new therapeutic strategies.

In this direction, generating modified cells in the laboratory, called CAR T cells, enables a patient's lymphocytes (a type of white blood cell) to be targeted in a specific way so that they only attack malignant plasma cells.

IMPACT

The goal is the long-term remission of multiple myeloma; even the possibility that some patients may be cured thanks to the increased effect of the immune cells on the malignant cells.

An alternative is to return to the initial state of multiple myeloma, in which the balance between malignant plasma cells and other cells in the bone marrow allow the patient to live symptom-free and without suffering the consequences of the disease for many years.

RESEARCH LINES

- CAR-T cells against BCMA in multiple myeloma: prognostic factors related to their activity and development of a new generation of chimeric receptors.

- Mechanisms of immune control involved in the progression after treatment in the multiple myeloma.

- MicroRNA profile in bone marrow mesenchymal stromal cells from patients with multiple myeloma in different status disease.

PUBLICATIONS

Originals / I.F.: 32.728

1. Smith, Eric L. Harrington, Kim Staehr, Mette Masakayan, Reed Jones, Jon Long, Thomas J. Ng, Khong Y. Ghoddusi, Majid Purdon, Terence J. Wang, Xiuyan Do, Trevor Minh Thu Pham Brown, Jessica M. Fernandez De Larrea, Carlos Olson, Eric Peguero, Elizabeth Wang, Pei Liu, Hong Xu, Yiyang Garrett-Thomson, Sarah C. Almon, Steven C. Wendel, Hans-Guido Rivieres, Isabelle Liu, Cheng Sather, Blythe Brentjens, Renier J. **GPRC5D is a target for the immunotherapy of multiple myeloma with rationally designed CAR T cells.** *SCIENCE TRANSLATIONAL MEDICINE.* 11(485):eaau7746. I.F.: 17.161

2. Martín-Antonio B., Suñe G., Najjar A., Perez-Amill L., Antonaña-Vildosola A., Castella M., León S., Velasco-De Andrés M., Lozano F., Lozano E., Bueno C., Estanyol J., Munõz-Pinedo C., Robinson S., Urbano-Ispizua A. **Extracellular NK histones promote immune cell anti-tumor activity by inducing cell clusters through binding to CD138 receptor.** *JOURNAL FOR IMMUNOTHERAPY OF CANCER.* 7(1):259. I.F.: 8.676

3. Gutiérrez-García G., Cibeira M., Rovira M., Fernández de Larrea C., Tovar N., Rodríguez-Lobato L., Rosiñol L., Marín P., Solano-Vega J., Suárez-Lledó M., Bataller A., Solano M., de Llobet N., Domenech A., Borràs N., Lozano M., Cid J., Martínez C., Urbano-Ispizua Á., Esteve J., Carreras E., Fernández-Avilés F., Bladé J. **Improving security of autologous hematopoietic stem cell transplant in patients with light-chain amyloidosis**. *BONE MARROW TRANSPLANTATION.* 54(8):1295-1303. I.F.: 4.674

4. Jiménez-Segura R, Granell M, Gironella M, Abella E, García-Guiñón A, Oriol A, Cabezudo E, Clapés V, Soler JA, Escoda L, López-Pardo J, Fernández de Larrea C, Cibeira MT, Tovar N, Isola I, Bladé J, Rosiñol L, GEMMAC (Grup per l l'estudi del mieloma múltiple i l'amiloïdosi de Catalunya). **Pomalidomide-dexamethasone for treatment of soft-tissue plasmacytomas in patients with relapsed / refractory multiple myeloma.** *EUROPEAN JOURNAL OF HAEMATOLOGY.* 102(5):389-394. I.F.: 2.217

Letters / I.F.: 4.919

1. Rodas L., Garcia-Herrera A., Ramirez Bajo M., Fernandez-Larrea C., Cibeira M., Blasco M., Rosiñol L., Solé M., Blade J., Campistol J., Quintana L. **Six-2 glomerular expression for the prediction of renal outcome in systemic amyloidosis.** *AMYLOID-JOURNAL OF PROTEIN FOLDING DISORDERS.* 26(1):97-98. I.F.: 4.919

GRANTS FOR RESEARCH IN PROGRESS

Fernández de Larrea C. **Reposicionamiento de la Doxiciclina en el tratamiento de la amiloidosis AL cardiaca.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). AC16/00058
Duration: 01/01/2017-30/06/2021

Fernández de Larrea C. **Mecanismos de control inmunológico involucrados en la progresión tras tratamiento en el mieloma multiple.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00423
Duration: 01/01/2017-31/12/2019

Fernández de Larrea C. **ReDox: Repurposing doxycycline in the treatment of cardiac AL amyloidosis.**
Sponsored by: European Commission. E-RARE_JTC_2016
Duration: 01/05/2017-30/04/2020

5.12 Molecular and translational oncology

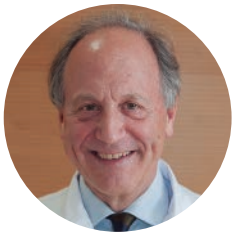
LOCATION
CELLEX building, floor 1A

KEYWORDS
1. **Inflammation and neuropeptides**
2. **Tumor microenvironment**
3. **Cell dormancy**
4. **Chemotherapy resistance**
5. **Tumor heterogeneity**
6. **Epigenetic plasticity**

GROUP INVOLVED IN
AGAUR_SGR17: 01305

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**6**	**16,70**	**2,78**	**67%**	**17%**



GROUP LEADER
Pere Gascón (HCB)
T. 93 227 54 02
gascon@clinic.cat

RESEARCHERS
Francisco Javier Avilés (HCB)
Isabel Vilaseca (HCB)

POST-DOCTORAL RESEARCHERS
Paloma Bragado (IDIBAPS)
Patricia Fernández Nogueira (FCRB)
Gemma Fuster (FCRB)
Mario Mancino (FCRB)

PRE-DOCTORAL RESEARCHERS
Núria Moragas (IDIBAPS)
Aleix Noguera (UB)
Leire Recalde (UB)

TECHNICIANS
Patricia Jauregui (FCRB)
Anna Lopez Plana (FCRB)

ADMINISTRATIVE STAFF
Darya Kulyk (FCRB)

STRATEGIC OBJECTIVES

The overall objective of our team is to understand how the microenvironment, in particular the nervous system, interacts with and influences tumour cells metabolism, proliferation or survival and how these mechanisms contribute to breast cancer progression and therapy resistance.

We want to identify new biomarkers and therapeutic targets that could be transfer to the clinical practice.

MAIN LINES OF RESEARCH

1. Stress and microenvironment influence in breast cancer.

1.1. Study the role of neuropeptides and neurotransmitters in the control of breast cancer progression .

1.3. Evaluate the potential of different components of the microenvironment such as fibroblasts or bone marrow mesenchymal stem cells on the generation of breast cancer heterogeneity .

1.2. Analyse the role of several stress factors, such as cathecolamines, glucocorticoids, hormones and neural related system factors in the transition of carcinoma ductal in situ to invasive.

2. Microenvironment and mechanisms of tumour dormancy and metastasis.

2.1. Determine the role of the TAC1 gene in the metastatic process in breast cancer .

2.2. Study the role of the microenvironment on disseminated tumour cells dormancy, survival and progression to metastasis.

2.3. Metastasis pathogenesis .

3. Tumor chemoresistance mechanisms:

3.1. Characterization of the mechanisms of epigenetic adaptation and cellular plasticity during the adquisition of chemoresistance.

3.2. Study the mechanisms of tumour progression in breast cancer HER2+ induced by the acquisition of resistance to Trastuzumab and Lapatinib. Role of fibroblasts on anti-HEr2 therapies resistance.

PUBLICATIONS

Originals / I.F.: 16.703

1. Gaig C, Iranzo A, Cajochen C, Vilaseca I, Embid C, Dalmau J, Graus F, Santamaria J. **Characterization of the sleep disorder of anti-IgLON5 disease.** *SLEEP.* 42(9):zsz133. I.F.: 4.571

2. Ludwig H, Gascón P, Bokemeyer C, Aapro M, Boccadoro M, Denhaerynck K,

Krendyukov A, MacDonald K, Abraham I. **Outcomes of chemotherapy-induced (febrile) neutropenia prophylaxis with biosimilar filgrastim (Zarzio®) initiated "same-day" (< 24 h), "per-guidelines" (24–72 h), and "late" (> 72 h): findings from the MONITOR-GCSF study.** *SUPPORTIVE CARE IN CANCER.* 27(6):2301-2312. I.F.: 2.754

3. Vilaseca I, Nogués-Sabaté A, Avilés-Jurado FX, Berenguer J, Grau JJ, Verger E, Nadal A, Muxí A, Bernal-Sprekelsen M, Blanch JL. **Factors of local recurrence and organ preservation with transoral laser microsurgery in laryngeal carcinomas; CHAID decision-tree analysis.** *HEAD AND NECK.* 41(3):756-764. I.F.: 2.442

4. Aapro M, Krendyukov A, Höbel N, Gascon P. **Treatment patterns and outcomes in patients with non-small cell lung cancer receiving biosimilar filgrastim for prophylaxis of chemotherapy-induced/febrile neutropaenia: Results from the MONITOR-GCSF study.** *EUROPEAN JOURNAL OF CANCER CARE.* 28(4):e13034. I.F.: 2.421

5. Ludwig H, Bokemeyer C, Aapro M, Boccadoro M, Gascón P, Denhaerynck K, Krendyukov A, Abraham I, MacDonald K. **Chemotherapy-induced neutropenia/febrile neutropenia prophylaxis with biosimilar filgrastim in solid tumors versus hematological malignancies: MONITOR-GCSF study**. *FUTURE ONCOLOGY.* 15(8):897-907. I.F.: 2.279

6. Camps Herrero, Carlos Anton Torres, Antonio Jesus Cruz-Hernandez, Juan Carrato, Alfredo Constenla, Manuel Diaz-Rubio, Eduardo Feyjoo Saus, Margarita Garcia-Foncillas, Jesus Gascon, Pere Guillem, Vicente. **Working towards a consensus on the oncological approach of breakthrough pain: a Delphi survey of Spanish experts.** *JOURNAL OF PAIN RESEARCH.* 12:2349-2358. I.F.: 2.236

Review / I.F.: 2.066

1. Gascón P, Krendyukov A, Mathieson N, Aapro M. **Epoetin alfa for the treatment of myelodysplastic syndrome-related anemia: A review of clinical data, clinical guidelines, and treatment protocols.** *LEUKEMIA RESEARCH.* 81:35-42. I.F.: 2.066

GRANTS FOR RESEARCH IN PROGRESS

Avilés FJ. **Head Neck Clínic.**
Sponsored by: Generalitat de Catalunya.
AGAUR_SGR17_01581
Duration: 01/01/2017-31/12/2020

Avilés FJ. **Microbiota tumour metabolic regulation as a prognostic factor in Head Neck Squamous Cell Carcinoma.**
Sponsored by: Fundación Cientifica Asociación Española Contra el Cancer.
(LABAE18025AVIL)
Duration: 30/11/2018-31/10/2021

Avilés FJ. **Microbiota y alteraciones metabólicas como factor pronóstico en el carcinoma escamoso de cabeza y cuello.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00844
Duration: 01/01/2019-31/12/2021

Bragado P. **El reloj de la metástasis: Regulación circadiana de las células tumorales diseminadas.**
Sponsored by: Fundación BBVA.
BBM-TRA-0041
Duration: 15/09/2018-14/09/2019

DOCTORAL THESES

Vilaseca I. **Llum de Banda Estreta en lesions premalignes i malignes del cap i coll. Utilitat i reproductibilitat de la tècnica.**
PhD student: Anna Nogués Sabaté

5.13 Lymphoid neoplasms

LOCATION
CEK building, floor 2

KEYWORDS
1. **Lymphoma**
2. **Chronic lymphocytic leukemia**
3. **Prognosis**
4. **Mutational profile and CNA**
5. **Clinical trials**

RELATED DISEASES
1. **Hodgkin lymphoma**
2. **Non-hodgkin lymphoma**
3. **Chronic lymphocytic leukemia**
4. **Other lymphoproliferative disorders**

GROUP INVOLVED IN
CIBERONC
GELTAMO, EMCLN, IELSG
LLMPP
ELI

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**17**	**166,38**	**9,79**	**82%**	**41%**



GROUP LEADER
Armando López-Guillermo (HCB)
T. 93 227 54 00 (Ext.: 2946)
alopezg@clinic.cat

RESEARCHERS
Julio Delgado (HCB)
Eva Giné (HCB)
Laura Carola Magnano (HCB)
Emili Montserrat (HCB)

POST-DOCTORAL RESEARCHERS
Tycho Stephan Baumann (HCB)

PRE-DOCTORAL RESEARCHERS
Pablo Mozas (FCRB)
Valentín Ortiz Maldonado (FCRB)
Alfredo Rivas (HCB)

ADMINISTRATIVE STAFF
Vanessa Arellano (HCB-FCRB)

PROBLEM

Lymphomas and other lymphoproliferative neoplasms are malignant diseases originated in the different steps of maturation of lymphoid cells. Their classification is highly complex, with more than 50 entities being recognized nowadays.

Although many cases could be currently cured or may survive for a long time with immunochemotherapy, still lymphoproliferative diseases lead to the death of a large number of patients.

The study of clinic-biological features of the disease, particularly genetic and molecular alterations, is essential to know the prognosis and choose the best treatment.

APPROACH

Different strategies are used for the group to improve the understanding on biology, prognosis and treatment of patients with lymphoproliferative disorders, including the following:

1) Epidemiology.
2) Gene expression.
3) Mutational landscape and copy number alterations.
4) Study of the microenvironment.
5) Clinical trials with new treatments and innovative procedures.

All of this is carried out in collaboration with other research groups of IDIBAPS.

IMPACT

The group has obtained results in different areas, from biological data that cannot yet be applied to patients, to clinical trials.

Its most notable results include the genetic characterization of chronic lymphocytic leukemia and diffuse large B-cell lymphoma, the development of prognostic scores and clinical guidelines for the principal lymphoproliferative diseases, and innovative trials with new molecules and therapies (i.e., CAR-T cells therapies).

RESEARCH LINES

- Genomic profile of lymphoproliferative disorders.

- Cellular microenvironment in CLL and other lymphomas.

- Prognostic models in lymphomas.

- Clinical trials in lymphoproliferative disorders, including advanced therapies.

PUBLICATIONS

Originals / I.F.: 166.383

1. Shuai S., Suzuki H., Diaz-Navarro A., Nadeu F., Kumar S.A., Gutierrez-Fernandez A., Delgado J., Pinyol M., López-Otín C., Puente X.S., Taylor M.D., Campo E., Stein L.D. **The U1 spliceosomal RNA is recurrently mutated in multiple cancers**. NATURE. 574(7780):712-716. I.F.: 43.070

2. Bachy E., Seymour J., Feugier P., Offner F., López-Guillermo A., Belada D., Xerri L., Catalano J., Brice P., Lemonnier F., Martin A., Casasnovas O., Pedersen L., Dorvaux V., Simpson D., Leppa S., Gabarre J., Da Silva M., Glaisner S., Ysebaert L., Vekhoff A., Intragumtornchai T., Le Gouill S., Lister A., Estell J., Milone G., Sonet A., Farhi J., Zeuner H., Tilly H., Salles G. **Sustained Progression-Free Survival Benefit of Rituximab Maintenance in Patients With Follicular Lymphoma: Long-Term Results of the PRIMA Study.** *JOURNAL OF CLINICAL ONCOLOGY*. 37(31):2815-2824. I.F.: 28.245

3. Baliakas P, Jeromin S, Iskas M, Puiggros A, Plevova K, Nguyen-Khac F, Davis Z, Rigolin GM, Visentin A, Xochelli A, Delgado J, Baran-Marszak F, Stalika E, Abrisqueta P, Durechova K, Papaioannou G, Eclache V, Dimou M, Iliakis T, Collado R, Doubek M, Calasanz MJ, Ruiz-Xiville N, Moreno C, Jarosova M, Leeksma AC, Panayiotidis P, Podgornik H, Cymbalista F, Anagnostopoulos A, Trentin L, Stavroyianni N, Davi F, Ghia P, Kater AP, Cuneo A, Pospisilova S, Espinet B, Athanasiadou A, Oscier D, Haferlach C, Stamatopoulos K, ERIC, the European Research Initiative on CLL. **Cytogenetic complexity in chronic lymphocytic leukemia: definitions, associations, and clinical impact.** *BLOOD*. 133(11):1205-1216. I.F.: 16.562

4. Younes A., Brody J., Carpio C., Lopez-Guillermo A., Ben-Yehuda D., Ferhanoglu B., Nagler A., Ozcan M., Avivi I., Bosch F., Caballero Barrigón M., Hellmann A., Kuss B., Ma D., Demirkan F., Ya?ci M., Horowitz N., Marlton P., Cordoba R., Wrobel T., Buglio D., Streit M., Hodkinson B., Schaffer M., Alvarez J., Ceulemans R., Balasubramanian S., de Jong J., Wang S., Fourneau N., Jurczak W. **Safety and activity of ibrutinib in combination with nivolumab in patients with relapsed non-Hodgkin lymphoma or chronic lymphocytic leukaemia: a phase 1/2a study.** *THE LANCET HAEMATOLOGY*. 6(2):e67-e78. I.F.: 11.990

5. Recasens-Zorzo C, Cardesa-Salzmann T, Petazzi P, Ros-Blanco L, Esteve-Arenys A, Clot G, Guerrero-Hernández M, Rodríguez V, Soldini D, Valera A, Moros A, Climent F, González-Barca E, Mercadal S, Arenillas L, Calvo X, Mate JL, Gutiérrez-García G, Casanova I, Mangues R, Sanjuan-Pla A, Bueno C, Menéndez P, Martínez A, Colomer D, Tejedor RE, Teixidó J, Campo E, López-Guillermo A, Borrell JI, Colomo L, Pérez-Galán P, Roué G. **Pharmacological modulation of CXCR4 cooperates with BET bromodomain inhibition in diffuse large B-cell lymphoma.** *HAEMATOLOGICA*. 104(4):778-788. I.F.: 7.570

6. Fuster C, Martín-Garcia D, Balagué O, Navarro A, Nadeu F, Costa D, Prieto M, Salaverria I, Espinet B, Rivas-Delgado A, Terol MJ, Giné E, Forcada P, Ashton-Key M, Puente XS, Swerdlow SH, Beà S, Campo E. **Cryptic insertions of the immunoglobulin light chain enhancer region near CCND1 in t(11;14)-negative mantle cell lymphoma.** *HAEMATOLOGICA*. I.F.: 7.570

7. Giménez N, Martínez-Trillos A, Montraveta A, Lopez-Guerra M, Rosich L, Nadeu F, Valero JG, Aymerich M, Magnano L, Rozman M, Matutes E, Delgado J, Baumann T, Gine E, González M, Alcoceba M, Terol MJ, Navarro B, Colado E, Payer AR, Puente XS, López-Otín C, Lopez-Guillermo A, Campo E, Colomer D, Villamor N. **Mutations in the RAS-BRAF-MAPK-ERK pathway define a specific subgroup of patients with adverse clinical features and provide new therapeutic options in chronic lymphocytic leukemia.** *HAEMATOLOGICA*. 104(3):576-586. I.F.: 7.570

8. Rivas-Delgado A, Magnano L, Moreno-Velázquez M, García O, Nadeu F, Mozas P, Dlouhy I, Baumann T, Rovira J, González-Farre B, Martínez A, Balague O, Delgado J, Villamor N, Giné E, Campo E, Sancho-Cia JM, López-Guillermo A. **Response duration and survival shorten after each relapse in patients with follicular lymphoma treated in the rituximab era.** *BRITISH JOURNAL OF HAEMATOLOGY*. 184(5):753-759. I.F.: 5.206

9. Magnano L, Alonso-Alvarez S, Alcoceba M, Rivas-Delgado A, Muntañola A, Nadeu F, Setoain X, Rodríguez S, Andrade-Campos M, Espinosa-Lara N, Rodríguez G, Sancho JM, Moreno M, Mercadal S, Carro I, Salar A, Garcia-Pallarols F, Arranz R, Cannata J, Terol MJ, Teruel AI, Jiménez-Ubieto A, Rodriguez A, González de Villambrosía S, Bello JL, López L, Novelli S, de Cabo E, Infante ME, Pardal E, Monsalvo S, González M, Martín A, Caballero MD, López-Guillermo A, Grupo Español de Linfomas y Trasplante Autólogo de Médula Ósea (GELTAMO). **Life expectancy of follicular lymphoma patients in complete response at 30 months is similar to that of the Spanish general population.** *BRITISH JOURNAL OF HAEMATOLOGY*. 185(3):480-491. I.F.: 5.206

10. Redondo AM, Valcárcel D, González-Rodríguez AP, Suárez-Lledó M, Bello JL, Canales M, Gayoso J, Colorado M, Jarque I, Del Campo R, Arranz R, Terol MJ, Rifón JJ, Rodríguez MJ, Ramírez MJ, Castro N, Sánchez A, López-Jiménez J, Montes-Moreno S, Briones J, López A, Palomera L, López-Guillermo A, Caballero D, Martín A, Grupo Español de Linfomas y Trasplante Autólogo de Médula Ósea (GELTAMO). **Bendamustine as part of conditioning of autologous stem cell transplantation in patients with aggressive lymphoma: a phase 2 study from the GELTAMO group.** *BRITISH JOURNAL OF HAEMATOLOGY*. 184(5):797-807. I.F.: 5.206

11. Roisman A, Castellano G, Navarro A, Gonzalez-Farre B, Pérez-Galan P, Esteve-Codina A, Dabad M, Heath S, Gut M, Bosio M, Bellot P, Salembier P, Oliveras A, Slavutsky I, Magnano L, Horn H, Rosenwald A, Ott G, Aymerich M, López-Guillermo A, Jares P, Martín-Subero JI, Campo E, Hernández L. **Differential expression of long non-coding RNAs are related to proliferation and histological diversity in follicular lymphomas.** *BRITISH JOURNAL OF HAEMATOLOGY*. 184(3):373-383. I.F.: 5.206

12. Lee-Vergés E, Hanna BS, Yazdanparast H, Rodríguez V, Rodríguez ML, Giró A, Vidal-Crespo A, Rosich L, Amador V, Aymerich M, Villamor N, Delgado J, Lichter P, Pérez-Galán P, López-Guerra M, Campo E, Seiffert M, Colomer D. **Selective BTK inhibition improves bendamustine therapy response and normalizes immune effector functions in chronic lymphocytic leukemia.** *INTERNATIONAL JOURNAL OF CANCER*. 144(11):2762-2773. I.F.: 4.982

13. Castella M, Boronat A, Martín-Ibáñez R, Rodríguez V, Suñé G, Caballero M, Marzal B, Pérez-Amill L, Martín-Antonio B, Castaño J, Bueno C, Balagué O, González-Navarro EA, Serra-Pages C, Engel P, Vilella R, Benitez-Ribas D, Ortiz-Maldonado V, Cid J, Tabera J, Canals JM, Lozano M, Baumann T, Vilarrodona A, Trias E, Campo E, Menendez P,

Urbano-Ispizua Á, Yagüe J, Pérez-Galán P, Rives S, Delgado J, Juan M. **Development of a Novel Anti-CD19 Chimeric Antigen Receptor: A Paradigm for an Affordable CAR T Cell Production at Academic Institutions.** *MOL THER METHODS CLIN DEV.* 12:134-144. I.F.: 4.875

14. Suárez-Lledó M, Marcos MÁ, Cuatrecasas M, Bombi JA, Fernández-Avilés F, Magnano L, Martínez-Cibrián N, Llobet N, Rosiñol L, Gutiérrez-García G, Jorge S, Martínez C, Rovira M, Urbano-Ispizua Á. **Quantitative PCR is faster, more objective and more reliable than immunohistochemistry for the diagnosis of Cytomegalovirus Gastrointestinal disease in allogeneic stem cell transplantation.** *BIOLOGY OF BLOOD AND MARROW TRANSPLANTATION.* 25(11):2281-2286. I.F.: 3.599

15. Veloza L, Teixido C, Castrejon N, Climent F, Carrió A, Marginet M, Soldini D, González-Farré B, Ribera-Cortada I, Lopez-Guillermo A, González-Barca E, Sierra A, Herrera M, Gómez C, Garcia A, Balagué O, Campo E, Martinez A. **Clinicopathological evaluation of the programmed cell death 1 (PD1)/programmed cell death-ligand 1 (PD-L1) axis in post-transplant lymphoproliferative disorders: association with Epstein-Barr virus, PD-L1 copy number alterations, and outcome.** *HISTOPATHOLOGY.* 75(6):799-812. I.F.: 3.294

16. Petrakis G, Veloza L, Clot G, Gine E, Gonzalez-Farre B, Navarro A, Bea S, Martínez A, Lopez-Guillermo A, Amador V, Ribera-Cortada I, Campo E. **Increased Tumor Angiogenesis in SOX11-positive Mantle Cell Lymphoma.** *HISTOPATHOLOGY.* 75(5):704-714. I.F.: 3.294

17. Sorigue M, Magnano L, Miljkovic MD, Nieto-Moragas J, Santos-Gomez M, Villamor N, Junca J, Morales-Indiano C. **Positive predictive value of CD200 positivity in the differential diagnosis of chronic lymphocytic leukemia.** *CYTOMETRY PART B-CLINICAL CYTOMETRY.* I.F.: 2.938

Review / I.F.: 32.274

1. Carbone A., Roulland S., Gloghini A., Younes A., von Keudell G., López-Guillermo A., Fitzgibbon J. **Follicular lymphoma.** *NATURE REVIEWS DISEASE PRIMERS.* 5(1):83. I.F.: 32.274

Letters / I.F.: 29.267

1. Moysiadis T, Baliakas P, Rossi D, Catherwood M, Strefford JC, Delgado J, Anagnostopoulos A, Belessi C, Stavroyianni N, Pospisilova S, Oscier D, Gaidano G, Campo E, Rosenquist R, Ghia P, Stamatopoulos K. **Different time-dependent changes of risk for evolution in chronic lymphocytic leukemia with mutated or unmutated antigen b-receptors.** *LEUKEMIA.* 33(7):1801-1805. I.F.: 9.944

2. Guedan, Sonia; Delgado, Julio. **Immobilizing A Moving Target: CAR T Cells Hit CD22.** *CLINICAL CANCER RESEARCH.* 25(17):5188-5190. I.F.: 8.911

3. Bomben R, Roisman A, D'Agaro T, Castellano G, Baumann T, Delgado J, López-Guillermo A, Zucchetto A, Dal-Bo M, Bravin V, Slavutsky I, Vlasova A, Guigó R, Martin-Subero JI, Chapaprieta V, Beekman R, Martin-García D, Beà S, Salaverria I, Aymerich M, Campo E, Gattei V, Hernández L. **Expression of the transcribed ultraconserved region 70 and the related long non-coding RNA AC092652.2-202 has prognostic value in Chronic Lymphocytic Leukaemia.** *BRITISH JOURNAL OF HAEMATOLOGY.* 184(6):1045-1050. I.F.: 5.206

4. Moreno C, Delgado J, Byrd JC, Zvagelsky WL, Suzuki S, Hsu E, James DF, Montserrat E. **Changes in clinical stage identify patients with CLL and different outcome within iwCLL partial response: RESONATE study.** *BRITISH JOURNAL OF HAEMATOLOGY.* 185(1):148-150. I.F.: 5.206

Consortium Publications / I.F.: 3.357

1. Penalver, Francisco-Javier; Marquez, Jose-Antonio; Duran, Soledad; Giraldo, Pilar; Martin, Alejandro; Montalban, Carlos; Sancho, Juan-Manuel; Ramirez, Maria-Jose; Terol, Maria-Jose; Capote, Francisco-Javier; Gutierrez, Antonio; Sanchez, Blanca; Lopez, Andres; Salar, Antonio; Rodriguez-Caravaca, Gil; Canales, Miguel; Caballero, Maria-Dolores; Bello Lopez, Jose Luis; Carbonell, Felix; Ferrer Bordas, Secundino; Font Lopez, Patricia; Perez Persona, Ernesto; Lopez Guillermo, Armando; Hernandez Martin, Roberto; Ramon Mayans, Jose; Palomera, Luis; Perez Ceballos, Elena; Queizan Hernandez, Jose Antonio; Riaza Grau, Rosalia; de la Cruz, Fatima; Sanchez Salinas, Andres;GELTAMO Spanish Lymphoma Cooperati. **Response-adapted treatment with rituximab, bendamustine, mitoxantrone, and dexamethasone followed by rituximab maintenance in patients with relapsed or refractory follicular lymphoma after first-line immunochemotherapy: Results of the RBMDGELTAMO08 phase II trial.** *CANCER MEDICINE.* 8(16):6955-6966. I.F.: 3.357

GRANTS FOR RESEARCH IN PROGRESS

Delgado J. **Rol de los nuevos fármacos en la optimización del efecto antitumoral del tratamiento mediante linfocitos T con receptores antigénicos quiméricos anti CD19 (CART19) en leucemia linfática crónica.**
Sponsored by: Fundación Española de Hematología y Hemoterapia (FEHH).
BECAS17_02
Duration: 01/03/2018-

Delgado J. **CART19-BE-02: Phase II clinical trial on the use of ARI-0001 cells in patients with CD19+ relapsed/refractory acute lymphoid leukemia.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PIC18/00012
Duration: 01/01/2019-31/12/2022

López A. **Estudio longitudinal del perfil mutacional del linfoma difuso de células grandes mediante técnicas de biopsia líquida. Significado biológico e impacto clínico.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00420
Duration: 01/01/2017-31/12/2019

López A. **Sequential assessment of the mutational landscape of follicular lymphoma in different clinical situations, including late relapse, early failure and histological transformation.**
Sponsored by: Gilead Sciences.
GLD17/00197
Duration: 11/12/2017-

Magnano L. **Caracterización del perfil inmune de pacientes con linfoma folicular. Impacto en la respuesta al tratamiento y relevancia pronóstica.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI19/00925
Duration: 01/01/2019-31/12/2022

5.14 Biomedical epigenomics

LOCATION
CEK building, floor 2

KEYWORDS
1. **Epigenomics**
2. **Chromatin**
3. **DNA methylation**
4. **Bioinformatics**
5. **Epigenetic biomarkers**
6 **Leukemia**
7. **Lymphoma**
8 **Single cell omics**

RELATED DISEASES
1. **Chronic lymphocytic leukemia**
2. **Mantle cell lymphoma**
3. **Multiple myeloma**
4. **Diffuse large B cell lymphoma**

GROUP INVOLVED IN
AGAUR_SGR17: 736
CIBERONC

AWARDS
Best CIBERONC Young Leader Researcher 2019
Institution: CIBERONC
Awardee/s: José Ignacio Martín-Subero

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	7	51,73	7,39	86%	43%



GROUP LEADER
José Ignacio Martín-Subero (IDIBAPS)
T. 93 227 54 00 (Ext.: 2946)
alopezg@clinic.cat

RESEARCHERS
Renée Beekman (IDIBAPS)

POST-DOCTORAL RESEARCHERS
Marta Kulis (IDIBAPS)
Alba Maiques (IDIBAPS)
Cecilia Rosales (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Vicente Chapaprieta (UB-IDIBAPS)
Martí Duran (IDIBAPS)
Beatriz García Torre (IDIBAPS)
Judith Mateos (IDIBAPS)
Roser Vilarrasa (IDIBAPS)

TECHNICIANS
Eleni Styliani Charalampopoulou (IDIBAPS)
Oscar Recasens (IDIBAPS)
Nuria Russiñol (FCRB-IDIBAPS)

PROBLEM

Neoplasms that originate in the lymph nodes represent a heterogeneous group of diseases with very different biological and clinical characteristics. Understanding the underlying mechanisms of the development and evolution of these neoplasms is essential in order to gradually improve their diagnosis, estimate their prognosis and treat patients.

APPROACH

The group studies lymphoid neoplasms such as chronic lymphocytic leukemia or mantle cell lymphoma from the perspective of epigenetics, which is the science that analyses the way in which gene expression is regulated.

Its aim is to discover and evaluate the keys to the transcriptional alterations found in samples from patients with lymphoid cancer. To achieve this, the group studies different epigenetic markers such as DNA methylation, histone modifications, chromatin accessibility, and 3D genome structure.

IMPACT

The group's research has resulted in different findings, such as: knowledge of how lymphoid neoplasms maintain an epigenetic signature from their cell of origin; that the activity of regulatory sites at a distance from the genes, so-called enhancers, are deregulated by epigenetic alterations and mutations; and that certain transcription factors appear to be the main elements responsible for altering the activity of the regulatory sites.

Apart from helping to understand how lymphoid neoplasms function, these studies have enabled the group to better calculate the clinical outcome of patients and identify new therapeutic targets.

RESEARCH LINES

- Decipher the clinical impact of epigenomics in lymphoid neoplasms.

- Functional analysis of deregulated transcriptional networks in lymphoid neoplasms.

- Integrative epigenomic characterization of normal and neoplastic B cells.

- Study the origin and evolution of intraclonal heterogeneity in B cell tumors through single cell technologies.

PUBLICATIONS

Originals / I.F.: 51.726

1. Speedy HE, Beekman R, Chapaprieta V, Orlando G, Law PJ, Martín-García D, Gutiérrez-Abril J, Catovsky D, Beà S, Clot G, Puiggròs M, Torrents D, Puente XS, Allan JM, López-Otín C, Campo E, Houlston RS, Martín-Subero JI. **Insight into genetic predisposition to chronic lymphocytic leukemia from integrative epigenomics.**

NATURE COMMUNICATIONS. 10(1):3615-3615. I.F.: 11.878

2. Agirre X, Meydan C, Jiang Y, Garate L, Doane AS, Li Z, Verma A, Paiva B, Martín-Subero JI, Elemento O, Mason CE, Prosper F, Melnick A. **Long non-coding RNAs discriminate the stages and gene regulatory states of human humoral immune response.** *NATURE COMMUNICATIONS.* 10(1):821. I.F.: 11.878

3. Martínez-Calle N, Pascual M, Ordoñez R, Enériz ESJ, Kulis M, Miranda E, Guruceaga E, Segura V, Larráyoz MJ, Bellosillo B, Calasanz MJ, Besses C, Rifón J, Martín-Subero JI, Agirre X, Prosper F. **Epigenomic profiling of myelofibrosis reveals widespread DNA methylation changes in enhancer elements and ZFP36L1 as a potential tumor suppressor gene epigenetically regulated.** *HAEMATOLOGICA.* 104(8):1572-1579. I.F.: 7.570

4. Tsagiopoulou M, Papakonstantinou N, Moysiadis T, Mansouri L, Ljungström V, Duran-Ferrer M, Malousi A, Queirós AC, Plevova K, Bhoi S, Kollia P, Oscier D, Anagnostopoulos A, Trentin L, Ritgen M, Pospisilova S, Stavroyianni N, Ghia P, Martin-Subero JI, Pott C, Rosenquist R, Stamatopoulos K. **DNA methylation profiles in chronic lymphocytic leukemia patients treated with chemoimmunotherapy.** *CLINICAL EPIGENETICS.* 11(1):177-177. I.F.: 5.496

5. Paczkowska J, Soloch N, Bodnar M, Kiwerska K, Janiszewska J, Vogt J, Domanowska E, Martin-Subero JI, Ammerpohl O, Klapper W, Marszalek A, Siebert R, Giefing M . **Expression of ELF1, a lymphoid ETS domain-containing transcription factor, is recurrently lost in classical Hodgkin lymphoma.** *BRITISH JOURNAL OF HAEMATOLOGY.* 185(1):79-88. I.F.: 5.206

6. Papakonstantinou N, Ntoufa S, Tsagiopoulou M, Moysiadis T, Bhoi S, Malousi A, Psomopoulos F, Mansouri L, Laidou S, Papazoglou D, Gounari M, Pasentsis K, Plevova K, Kuci-Emruli V, Duran-Ferrer M, Davis Z, Ek S, Rossi D, Gaidano G, Ritgen M, Oscier D, Stavroyianni N, Pospisilova S, Davi F, Ghia P, Hadzidimitriou A, Belessi C, Martin-Subero JI, Pott C, Rosenquist R, Stamatopoulos K. **Integrated epigenomic and transcriptomic analysis reveals TP63 as a novel player in clinically aggressive chronic lymphocytic leukemia.** *INTERNATIONAL JOURNAL OF CANCER.* 144(11):2695-2706. I.F.: 4.982

7. Del Pino-Molina, Lucia; Rodriguez-Ubreva, Javier; Torres Canizales, Juan; Coronet-Diaz, Maria; Kulis, Marta; Martin-Subero, Jose, I; van der Burg, Miriam; Ballestar, Esteban; Lopez-Granados, Eduardo. **Impaired CpG Demethylation in Common Variable Immunodeficiency Associates With B Cell Phenotype and Proliferation Rate.** *FRONTIERS IN IMMUNOLOGY.* 10(APR):878. I.F.: 4.716

Letters / I.F.: 12.776

1. Bergmann AK, Fataccioli V, Castellano G, Martin-Garcia N, Pelletier L, Ammerpohl O, Bergmann J, Bhat J, Pau ECS, Martín-Subero JI, Moffitt AB, Valencia A, Oberg HH, Wesch D, Jayne S, Dyer MJS, Kabelitz D, Gaulard P, Siebert R. **DNA methylation profiling of hepatosplenic T-cell lymphoma.** *HAEMATOLOGICA.* 104(3):e104-e107. I.F.: 7.570

2. Bomben R, Roisman A, D'Agaro T, Castellano G, Baumann T, Delgado J, López-Guillermo A, Zucchetto A, Dal-Bo M, Bravin V, Slavutsky I, Vlasova A, Guigó R, Martin-Subero JI, Chapaprieta V, Beekman R, Martin-García D, Beà S, Salaverria I, Aymerich M, Campo E, Gattei V, Hernández L . **Expression of the transcribed ultraconserved region 70 and the related long non-coding RNA AC092652.2-202 has prognostic value in Chronic Lymphocytic Leukaemia.** *BRITISH JOURNAL OF HAEMATOLOGY.* 184(6):1045-1050. I.F.: 5.206

GRANTS FOR RESEARCH IN PROGRESS

Maiques A. **Role of Transcription Factors as drivers of chronic lymphocytic leukemia.**
Sponsored by: Tata Ltd. INT_Lady_TATA_19 (2664)
Duration: 10/01/2019-30/09/2020

Martín-Subero JI. **Biomedical Epigenomics. Sponsored by: Generalitat de Catalunya.**
AGAUR_SGR17_00736
Duration: 01/01/2017-31/12/2020

Martín-Subero JI. **Characterization of oncogenic (epi)genetically deregulated in chronic lymphocytic leukemia.**
Sponsored by: Asociación Española Contra el Cáncer. AECC_Contratos16
Duration: 01/10/2016-30.09.2021

Martín-Subero JI. **ChromMCL: Análisis a escala genómica de la estructura de la cromatina en el linfoma de las células del manto: Impacto biológico y clínico.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
SAF2017-86126-R
Duration: 01/01/2018-31/12/2020

Martín-Subero JI. **Early detection and intervention: Understanding the mechanisms of transformation and hidden resistance of incurable haematological malignancies.**
Sponsored by: Asociación Española Contra el Cáncer. AECC_Accelerator Award17
Duration: 01/12/2018-30/11/2023

Martín-Subero I. **Single-cell genomics to comprehensively understand healthy B-cell maturation and transformation.**
Sponsored by: European Comission.
CE_H2020-ERC-2018_Sy (810287_JIMS)
Duration: 01/04/2019-31/03/2024

5.15 Genetics

LOCATION
HCB building

KEYWORDS
1. **Intellectual disability**
2. **Next generation sequencing**
3. **Cryptic chromosomal imbalances**
4. **FMR1 premutation associated pathologies**
5. **Porphyria**
6. **Prostate cancer**

GROUP INVOLVED IN
CIBERER

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	11	52,08	4,73	55%	9%



GROUP LEADER
Montserrat Milà (HCB)
T. 93 227 54 00 (Ext.: 2784)
mmila@clinic.cat

RESEARCHERS
Anna Carrió (HCB)
Xavier Filella (HCB)
Irene Madrigal (HCB)
Ester Margarit (HCB)
Laia Rodríguez Revenga (HCB)
Aurora Sanchez Diaz (HCB)
Jordi To Figueras (HCB)

POST-DOCTORAL RESEARCHERS
Maria Isabel Álvarez (CIBER)

TECHNICIANS
Maria Dolores Jiménez (HCB)

PROBLEM

To clinically, cytogenetic and molecular characterize rare genetic diseases. The main research lines are:

1) Study of molecular basis of intellectual disability using high throughput technologies.

2) Identification of a biological marker for FXTAS.

3) Genotype–phenotype correlation of porphyrias; and iv) discovery of new biomarkers that might help the diagnosis and prognosis of prostate cancer.

MAIN LINES OF RESEARCH

1. Identification of genetic bases of ID. The application of high throughput sequencing to different groups of clinically well characterized ID patients will allow us to identify new genes and to establish new molecular causes of ID.

2. Fragile X syndrome: Study and better characterization of FMR1 premutation associated pathologies. Identification of a susceptibility risk factor for FXTAS.

3. Detection of cryptic chromosomal imbalances and identification of new phenotypes based on cytogenetic – molecular techniques in a prenatal and postnatal diagnostic setting.

4. Study of the genotype-phenotype correlation and expression mechanisms of porphyria.

• *Advance in the study of the alterations in iron regulation and metabolism in skin and erythropoietic porphyria.*

• *Investigate the role of modifier genes that modulate the clinical expression of erythropoietic porphyria.*

• *Study of new serum and urine biomarkers of acute porphyria severity of use in clinical practice.*

5. Prostate cancer:

• *To study the value of miRNAs in urine for the detection and prognosis of prostate cancer.*

• *To isolate exosomes as a source of new biomarkers of prostate cancer.*

PUBLICATIONS

Originals / I.F.: 52.075

1. Huelin P, Solà E, Elia C, Solé C, Risso A, Moreira R, Carol M, Fabrellas N, Bassegoda O, Juanola A, de Prada G, Albertos S, Piano S, Graupera I, Ariza X, Napoleone L, Pose E, Filella X, Morales-Ruiz M, Rios J, Fernández J, Jiménez W, Poch E, Torres F, Ginès P. **Neutrophil gelatinase-associated lipocalin for assessment of acute kidney injury in cirrhosis.** *HEPATOLOGY.* 70(1):319-333. I.F.: 14.971

2. Puigdevall P, Piccari L, Blanco I, Barberà JA, Geiger D, Badenas C, Milà M, Castelo R, Madrigal I. **Genetic linkage analysis of a large family identifies FIGN as a candidate modulator of reduced penetrance in heritable pulmonary arterial hypertension.** *JOURNAL OF MEDICAL GENETICS.* 56(7):481-490. I.F.: 5.899

3. Escoda O, Reverter E, To-Figueras J, Casals G, Fernández J, Nogué S. **Potential value of urinary amatoxin quantification in patients with hepatotoxic mushroom poisoning.** *LIVER INTERNATIONAL.* 39(6):1128-1135. I.F.: 5.542

4. Krzyzewska I, Maas S, Henneman P, Lip K, Venema A, Baranano K, Chassevent A, Aref-Eshghi E, van Essen A, Fukuda T, Ikeda H, Jacquemont M, Kim H, Labalme A, Lewis S, Lesca G, Madrigal I, Mahida S, Matsumoto N, Rabionet R, Rajcan-Separovic E, Qiao Y, Sadikovic B, Saitsu H, Sweetser D, Alders M, Mannens M. **A genome-wide DNA methylation signature for SETD1B-related syndrome.** *CLINICAL EPIGENETICS.* 11(1):156. I.F.: 5.496

5. Guañabens N., Filella X., Florez H., Ruiz-Gaspá S., Conesa A., Peris P., Monegal A., Torres F. **Tartrate-resistant acid phosphatase 5b, but not periostin, is useful for assessing Paget's disease of bone.** *BONE.* 124:132-136. I.F.: 4.360

6. Veloza L, Teixido C, Castrejon N, Climent F, Carrió A, Marginet M, Soldini D, González-Farré B, Ribera-Cortada I, Lopez-Guillermo A, González-Barca E, Sierra A, Herrera M, Gómez C, Garcia A, Balagué O, Campo E, Martinez A . **Clinicopathological evaluation of the programmed cell death 1 (PD1)/programmed cell death-ligand 1 (PD-L1) axis in post-transplant lymphoproliferative disorders: association with Epstein-Barr virus, PD-L1 copy number alterations, and outcome.** *HISTOPATHOLOGY.* 75(6):799-812. I.F.: 3.294

7. Alvarez-Mora MI, Podlesniy P, Gelpi E, Hukema R, Madrigal I, Pagonabarraga J, Trullas R, Mila M, Rodriguez-Revenga L. **FXTAS: regional decrease of mitochondrial DNA copy number relates to clinical manifestations.** *GENES BRAIN AND BEHAVIOR.* 18(5):e12565. I.F.: 3.157

8. Foj L, Filella X. **Identification of Potential miRNAs Biomarkers for High-Grade Prostate Cancer by Integrated Bioinformatics Analysis.** *PATHOLOGY ONCOLOGY RESEARCH.* 25(4):1445-1456. I.F.: 2.433

9. Ojeda R, Arias-Guillén M, Gómez M, Vera M, Fontseré N, Rodas L, Filella X, Reverter J, Lozano F, Villamor N, Maduell F. **Study of Biocompatibility of Membranes in Online Hemodiafiltration.** *BLOOD PURIFICATION.* 19:1-9. I.F.: 2.363

10. Xipell M, Montagud-Marrahi E, Rubio M, Ojeda R, Arias-Guillén M, Fontseré N, Rodas L, Vera M, Broseta J, Torregrosa V, Filella X, Maduell F. **Improved Control of Secondary Hyperparathyroidism in Hemodialysis Patients Switching from Oral Cinacalcet to Intravenous Etelcalcetide, Especially in Nonadherent Patients**. *BLOOD PURIFICATION.* 48(2):106-114. I.F.: 2.363

11. Nolin SL, Glicksman A, Tortora N, Allen E, Macpherson J, Mila M, Vianna-Morgante AM, Sherman SL, Dobkin C, Latham GJ, Hadd AG. **Expansions and contractions of the FMR1 CGG repeat in 5,508 transmissions of normal, intermediate, and premutation alleles.** *AMERICAN JOURNAL OF MEDICAL GENETICS, PART A.* 179(7):1148-1156. I.F.: 2.197

Review / I.F.: 9.233

1. Martinez-Portilla RJ, Pauta M, Hawkins-Villarreal A, Rial-Crestelo M, Paz Y Miño F, Madrigal I, Figueras F, Borrell A. **Added value of chromosomal microarray analysis above conventional karyotyping in stillbirth work-up: a systematic review and meta-analysis.** *ULTRASOUND IN OBSTETRICS AND GYNECOLOGY.* 53(5):590-597. I.F.: 5.595

2. Filella X, Albaladejo M, Allué J, Castaño M, Morell-Garcia D, Ruiz M, Santamaría M, Torrejón M, Giménez N. **Prostate cancer screening: Guidelines review and laboratory issues.** *CLINICAL CHEMISTRY AND LABORATORY MEDICINE.* 57(10):1474-1487. I.F.: 3.638

Clinical Guidelines / I.F.: 8.683

1. Chen B, Whatley S, Badminton M, Aarsand A, Anderson K, Bissell D, Bonkovsky H, Cappellini M, Floderus Y, Friesema E, Gouya L, Harper P, Kauppinen R, Loskove Y, Martásek P, Phillips J, Puy H, Sandberg S, Schmitt C, To-Figueras J, Weiss Y, Yasuda M, Deybach J, Desnick R. **International Porphyria Molecular Diagnostic Collaborative: an evidence-based database of verified pathogenic and benign variants for the porphyrias.** *GENETICS IN MEDICINE.* 21(11):2605-2613. I.F.: 8.683

GRANTS FOR RESEARCH IN PROGRESS

Madrigal I. **Identificación de genes modificadores de penetrancia en enfermedades raras hereditatias mediante secuenciación masiva.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00483
Duration: 01/01/2016-30/06/2020

Rodríguez-Revenga L. **Estudio de la RAN translation en FXTAS y C9ALS/FTD: correlación clínica y molecular.**
Sponsored by: Instituto de salud Carlos III (ISCIII). PI17/01067
Duration: 01/01/2018-31/12/2020

Rodríguez-Revenga L. **Estudio de las bases moleculares de los transtornos del neurodesarrollo.**
Sponsored by: Fundacion Alicia Koplowitz. AKOPLOWITZ18_001
Duration: 01/11/2018-

Rodríguez-Revenga L. **Evaluacion del efecto de la expansion del gen FMR1 sobre la reserva ovarica en mujeres jovenes portadoras de premutacion.**
Sponsored by: Fundación Merck Salud. FSalud_19Serono19 (19-FE-011)
Duration: 01/07/2019-30/06/2021

Rodríguez-Revenga L. **Caracterización del gen REPS2 como nuevo gen candidato para los trastornos del neurodesarrollo.**
Sponsored by: Fundacion de Investigacion Medica Mutua Madrileña. FundMM_19 (AP171442019)
Duration: 24/09/2019-23/09/2022

5.16 Molecular biology of reproduction and development

LOCATION
UB School of Medicine

KEYWORDS
1. **Germinal cell line**
2. **Male infertility**
3. **Proteomics**
4. **Epigenetics**
5. **Cancer**
6. **Endocrine system**
7. **iPSC**

RELATED DISEASES
1. **Male sterility/infertility**
2. **Cancer**

GROUP INVOLVED IN
AGAUR_SGR17: 01555

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**9**	**39,75**	**4,42**	**78%**	**33%**



GROUP LEADER
Rafael Oliva (HCB-UB)
T. 93 402 18 77 / 93 227 55 10
roliva@ub.edu / roliva@clinic.cat

RESEARCHERS
Cristóbal Mezquita (UB)
Jovita Mezquita (UB)
Josep Oriola (HCB-UB)

POST-DOCTORAL RESEARCHERS
Judit Castillo (IDIBAPS)
Michael Edel (UB)
Meritxell Jodar (FCRB-UB)
Betlem Mezquita (UB)

PRE-DOCTORAL RESEARCHERS
Ferran Barrachina (IDIBAPS)
Alberto de la Iglesia (IDIBAPS)
Jose Manuel Mayorga (UB)
Ada Soler (UB)

TECHNICIANS
Montserrat Pau (UB)

ADMINISTRATIVE STAFF
Nuria Roman (UB)

COLLABORATOR
Josep Lluís Ballescà (HCB)
Salvadora Civico (HCB)
Montserrat Codina (UB)
Juan Manuel Corral (HCB)
Marta Guimerà (HCB)

PROBLEM

Sterility, and alterations in cellular development and differentiation, are very common medical problems that affect 1 in 5 couples of reproductive age and a very large proportion of the adult population. Most causes are still unknown, a fact which has a negative effect on the success of reproduction treatments.

The group is investigating the molecular causes of male sterility and alterations in the differentiation of germ cells, embryonic development, and the transmission of information to subsequent generations. Thus, it will be possible to obtain a correct diagnosis and prognosis, as well as open the door to new strategies for prevention and treatment.

APPROACH

The group applies genetic, genomic, epigenomic, transcriptomic and proteomic description strategies to the study of the male germinal line.

Its objective is to identify both normal molecular mechanisms and alterations in the reproductive function, embryonic development, and the transmission of information, that can affect the health of the following generations.

IMPACT

The group has been a pioneer group in the molecular description of the normal male germinal line and of the alterations associated with sterility and reproductive failures. Its research has enabled it to identify embryo proteins exclusively from the father.

The group is currently investigating parental contribution to embryogenesis (embryo formation and development), the health of offspring from the perspective of RNA, proteins and epigenetic information – which could explain many of the alterations associated with reproductive failure – to metabolic problems or cell differentiation in adulthood.

RESEARCH LINES

- Characterization of epigenetic signatures in the sperm chromatin.

- Characterization of exosomes isolated from seminal fluid and development of clinically relevant diagnostic and prognostic biomarkers.

- Characterization of genes involved in the familial non-syndromic differentiated thyroid carcinoma.

- Functional validation of paternally-derived embryo proteins during early embryogenesis.

- Genetics of endocrine disorders.

- Mechanisms involved in redifferentiation of cancer cells.

- Molecular alterations in semen from couples with idiopathic infertility.

PUBLICATIONS

Originals / I.F.: 39.745

1. Grande, Giuseppe; Vincenzoni, Federica; Mancini, Francesca; Barrachina, Ferran; Giampietro, Antonella; Castagnola, Massimo; Urbani, Andrea; Oliva, Rafael; Milardi, Domenico; Pontecorvi, Alfredo. **Quantitative Analysis of the Seminal Plasma Proteome in Secondary Hypogonadism.** *JOURNAL OF CLINICAL MEDICINE.* 8(12). I.F.: 5.688

2. Requena J, Alvarez-Palomo AB, Codina-Pascual M, Delgado-Morales R, Moran S, Esteller M, Sal M, Juan M, Boronat Barado A, Consiglio A, Bogle OA, Wolvetang E, Ovchinnikov D, Alvarez I, Jaraquemada D, Mezquita-Pla J, Oliva R, Edel MJ. **Global Proteomic and Methylome Analysis in Human Induced Pluripotent Stem Cells Reveals Overexpression of a Human TLR3 Affecting Proper Innate Immune Response Signaling.** *STEM CELLS.* 37(4):476-488. I.F.: 5.614

3. Torra-Massana M; Cornet-Bartolomé D; Barragán M; Durban M; Ferrer-Vaquer A; Zambelli F; Rodriguez A; Oliva R; Vassena R. **Novel phospholipase C zeta 1 mutations associated with fertilization failures after ICSI.** *HUMAN REPRODUCTION.* 34(8):1494-1504. I.F.: 5.506

4. Castillo J, Bogle OA, Jodar M, Torabi F, Delgado-Dueñas D, Estanyol JM, Ballescà JL, Miller D, Oliva R. **Proteomic Changes in Human Sperm During Sequential in vitro Capacitation and Acrosome Reaction.** *FRONTIERS IN CELL AND DEVELOPMENTAL BIOLOGY.* 7(295):295. I.F.: 5.206

5. Barrachina F, Jodar M, Delgado-Dueñas D, Soler-Ventura A, Estanyol JM, Mallofré C, Ballesca JL, Oliva R. **Stable-protein Pair Analysis as A Novel Strategy to Identify Proteomic Signatures: Application To Seminal Plasma From Infertile Patients.** *MOLECULAR & CELLULAR PROTEOMICS.* 18(Suppl 1):S77-S90. I.F.: 4.828

6. Borrego-Ecija, Sergi; Antonell, Anna; Anton Puig-Butille, Joan; Pericot, Inmaculada; Prat-Bravot, Carme; Teresa Abellan-Vidal, Maria; Mallada, Javier; Olives, Jaume; Falgas, Neus; Oliva, Rafael; Llado, Albert; Sanchez-Valle, Raquel. **Novel P397S MAPT variant associated with late onset and slow progressive frontotemporal dementia.** *ANNALS OF CLINICAL AND TRANSLATIONAL NEUROLOGY.* 6(8):1559-1565. I.F.: 4.656

7. Orois A; Gara SK; Mora M; Halperin I; Martínez S; Alfayate R; Kebebew E; Oriola J. **NOP53 as A Candidate Modifier Locus for Familial Non-Medullary Thyroid Cancer.** *GENES.* 10(11):899. I.F.: 3.759

8. Lamas C; Navarro E; Casterás A; Portillo P; Alcázar V; Calatayud M; Álvarez-Escolá C; Sastre J; Boix E; Forga L; Vicente A; Oriola J; Mesa J; Valdés N. **MEN1-associated primary hyperparathyroidism in the spanish registry: Clinical characterictics and surgical outcomes.** *ENDOCRINE CONNECTIONS.* 8(10):1416-1424. I.F.: 2.474

9. Bernardo-Castiñeira C, Sáenz-de-Santa-María I, Valdés N, Astudillo A, Balbín M, Pitiot AS, Jiménez-Fonseca P, Scola B, Tena I, Molina-Garrido MJ, Sevilla MA, Beristein E, Forga L, Villabona C, Oriola J, Halperin I, Suarez C, Chiara MD. **Clinical significance and peculiarities of succinate dehydrogenase B and hypoxia inducible factor 1α expression in parasympathetic versus sympathetic paragangliomas.** *HEAD AND NECK.* 41(1):79-91. I.F.: 2.442

Review / I.F.: 7.819

1. Mezquita B, Mezquita C. **Two Opposing Faces of Retinoic Acid: Induction of Stemness or Induction of Differentiation Depending on Cell-Type.** *BIOMOLECULES.* 9(10). I.F.: 4.694

2. Jodar, Meritxell. **Sperm and seminal plasma RNAs: what roles do they play beyond fertilization?** *REPRODUCTION.* 158(4):R113-R123. I.F.: 3.125

Clinical Guidelines / I.F.: 1.277

1. Oriola J; Carrasco P; Díez O; Ezquieta B; en representación de la Comisión de Genética de la SEQC; Artículo revisado y aprobado por Cristina González e Ignacio Blanco (en representación de la AEGH)Miembros adicionales de la Comisión de Genética de la SEQC en representación de la Comisión de Genética de la SEQC; Artículo revisado y aprobado por Cristina González e Ignacio Blanco (en representación de la AEGH)-Miembros adicionales de la Comisión de Genética de la SEQC. **Recommendations for the elaboration of diagnostic genetic reports in the clinical setting**. *MEDICINA CLINICA.* 153(7):293-297. I.F.: 1.277

GRANTS FOR RESEARCH IN PROGRESS

Oliva R. **Análisis proteómico y transcriptómico del semen e identificación de biomarcadores capaces de evaluar la contribución paterna a la fertilización y la embriogénesis.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00346
Duration: 01/01/2017-31/12/2020

DOCTORAL THESES

Oliva R, Vassena R. **Molecular and cellular mechanisms of fertilization failure after ICSI.**
PhD student: Marc Torra Massana

5.17 Microenvironment in lymphoma pathogenesis and therapy

LOCATION
CEK building, floor 2

KEYWORDS
1. **Non Hodgkin lymphoma**
2. **Microenvironment**
3. **Immunotherapy**
4. **Targeted therapy**

RELATED DISEASES
1. **Lymphoma**
2. **Leukemia**

GROUP INVOLVED IN
CIBERONC
AGAUR_SGR17: 1009

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	5	27,97	5,59	60%	20%



GROUP LEADER
Patricia Pérez Galán (IDIBAPS)
pperez@clinic.cat

POST-DOCTORAL RESEARCHERS
Juan García Valero (IDIBAPS)
Neus Serrat (IDIBAPS)
Anna Vidal (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Celia Dobaño (IDIBAPS)

ADMINISTRATIVE STAFF
Patricia Carvajal (IDIBAPS)

PROBLEM

B-cell non-Hodgkin lymphomas (B-NHL) are haematological cancers. Their origin lies in a close cooperation between the genetic alterations of the lymphoma and the support of surrounding cells, which is known as the tumour microenvironment.

For a treatment to be effective, it is mandatory to attack the lymphoma cells using targeted therapies, and to dismantle this protective lymphoma-microenvironment network.

APPROACH

The group studies the crosstalk between lymphoma cells and its immune microenvironment. This knowledge may allow establishing the basis to manipulate these interactions and the design of novel, targeted and personalised therapies.

For this purpose, the group has generated next - generation ex vivo 3D cultures composed of cells from patients diagnosed of B-NHL at HCB with associated genetic information, including tumour microenvironment cells. These systems constitute robust lymphoma models to test novel targeted therapies, immunotherapies and combinations.

IMPACT

The group's objective is unquestionably to conduct basic research in order to improve the treating options for lymphoma patients, characterising their mechanisms of action and resistance.

The group has a privileged organisation working in a multidisciplinary setting, where collaborations among basic researchers, haematologists and pathologists facilitates bench-to bedside translation

RESEARCH LINES

- 3D lymphoma patient derived primary cultures: a superior in vitro system for personalized medicine.

- Follicular lymphoma crosstalk with its immune microenvironment as a source novel targeted therapies.

- Novel immunotherapeutic approaches in non-Hodgkin lymphoma (NHL).

PUBLICATIONS

Originals / I.F.: 27.966

1. Recasens-Zorzo C, Cardesa-Salzmann T, Petazzi P, Ros-Blanco L, Esteve-Arenys A, Clot G, Guerrero-Hernández M, Rodríguez V, Soldini D, Valera A, Moros A, Climent F, González-Barca E, Mercadal S, Arenillas L, Calvo X, Mate JL, Gutiérrez-García G, Casanova I, Mangues R, Sanjuan-Pla A, Bueno C, Menéndez P, Martínez A, Colomer D, Tejedor RE, Teixidó J, Campo E, López-Guillermo A, Borrell JI, Colomo L, Pérez-Galán P, Roué G. **Pharmacological modulation of CXCR4 cooperates with BET bromodomain inhibition in diffuse large B-cell lymphoma.** *HAEMATOLOGICA.* 104(4):778-788. I.F.: 7.570

2. Rossi C; Gravelle P; Decaup E; Bordenave J; Poupot M; Tosolini M; Franchini DM;

Laurent C; Morin R; Lagarde JM; Ysebaert L; Ligat L; Jean C; Savina A; Klein C; Céspedes AM; Perez-Galan P; Fournié JJ; Bezombes C. **Boosting γδ T cell-mediated antibody-dependent cellular cytotoxicity by PD-1 blockade in follicular lymphoma.** *ONCOIMMUNOLOGY.* 8(3):1554175. I.F.: 5.333

3. Roisman A, Castellano G, Navarro A, Gonzalez-Farre B, Pérez-Galan P, Esteve-Codina A, Dabad M, Heath S, Gut M, Bosio M, Bellot P, Salembier P, Oliveras A, Slavutsky I, Magnano L, Horn H, Rosenwald A, Ott G, Aymerich M, López-Guillermo A, Jares P, Martín-Subero JI, Campo E, Hernández L. **Differential expression of long non-coding RNAs are related to proliferation and histological diversity in follicular lymphomas.** *BRITISH JOURNAL OF HAEMATOLOGY.* 184(3):373-383. I.F.: 5.206

4. Lee-Vergés E, Hanna BS, Yazdanparast H, Rodríguez V, Rodríguez ML, Giró A, Vidal-Crespo A, Rosich L, Amador V, Aymerich M, Villamor N, Delgado J, Lichter P, Pérez-Galán P, López-Guerra M, Campo E, Seiffert M, Colomer D. **Selective BTK inhibition improves bendamustine therapy response and normalizes immune effector functions in chronic lymphocytic leukemia.** *INTERNATIONAL JOURNAL OF CANCER.* 144(11):2762-2773. I.F.: 4.982

5. Castella M, Boronat A, Martín-Ibáñez R, Rodríguez V, Suñé G, Caballero M, Marzal B, Pérez-Amill L, Martín-Antonio B, Castaño J, Bueno C, Balagué O, González-Navarro EA, Serra-Pages C, Engel P, Vilella R, Benitez-Ribas D, Ortiz-Maldonado V, Cid J, Tabera J, Canals JM, Lozano M, Baumann T, Vilarrodona A, Trias E, Campo E, Menendez P, Urbano-Ispizua Á, Yagüe J, Pérez-Galán P, Rives S, Delgado J, Juan M. **Development of a Novel Anti-CD19 Chimeric Antigen Receptor: A Paradigm for an Affordable CAR T Cell Production at Academic Institutions.** *MOLECULAR THERAPY-METHODS & CLINICAL DEVELOPMENT.* 12:134-144. I.F.: 4.875

GRANTS FOR RESEARCH IN PROGRESS

Pérez-Galán P. **Multi-cellular interactions in the progression of chronic inflammatory diseases and lymphoproliferative disorders: 3D models to investigate targeted immune therapies -3DIMMUNE-TARGET.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
SAF2017-88275-R
Duration: 01/01/2018-31/12/2020

Pérez-Galán P. **IMLINFO: Red transfonteriza de immunoterapias personalizadas para linfomas no Hodgkin.**
Sponsoredby: European Commission.
Interreg-16_INTERREG--POCTEFA (EFA281/16)
Duration: 01/01/2018-31/12/2021

5.18 Lipid trafficking and disease

LOCATION
CELLEX building, floor 1A
UB School of Medicine

KEYWORDS
1. **Lipid droplets**
2. **Mitochondria**
3. **Metabolism**
4. **Immunity**

RELATED DISEASES
1. **Obesity**
2. **Diabetes**
3. **Metabolic syndrome**
4. **Immunity**

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**1**	**7,01**	**7,01**	**100%**	**-**



GROUP LEADER
Albert Pol (ICREA-IDIBAPS)
T. 93 227 54 00 (Ext.: 3337)
apols@ub.edu

POST-DOCTORAL RESEARCHERS
Marta Bosch (IDIBAPS)
Olivia Tort (IDIBAPS)

PRE-DOCTORAL RESEARCHERS
Frederic Morales (IDIBAPS)

TECHNICIANS
Alba Fajardo (IDIBAPS)

PROBLEM

The human body has 200 different types of cells that are exquisitely coordinated. The failure of one or more components of this orchestra gives rise to disease.

One of the most common causes of disease is lipotoxicity. Lipids such as cholesterol or fatty acids are basic elements in building cells and keeping them active, but when they are present in excess, they damage them.

Lipotoxicity gives rise to, or aggravates, obesity, diabetes, atherosclerosis, cancer and neurodegeneration. Statistics show that 100% of Europeans will develop at least one of these diseases during their lifetime.

APPROACH

Lipotoxicity can affect any type of cell and the first step to prevent it is to adopt a healthy lifestyle. This does not mean eliminating lipids from one's diet, as they are essential for life and account for 10% of a cell's weight and 50% of the cell membranes.

The group strives to understand the molecular mechanisms of lipotoxicity and find out why some lipids are toxic and others, beneficial, studying the way in which cells store, use and eliminate fat. This knowledge leads to the establishment of correct therapeutic targets and effective medicines to treat the different aspects of lipotoxicity.

IMPACT

Since 2001 the group has studied the cell biology and physiology of lipid bodies (lipid droplets, LDs). LDs are intracellular organs specifically designed during the evolution of diverse forms of life to prevent lipotoxicity.

The group has studied them from the time they are formed to the time they are used and is also evaluating the role they play in different situations such as obesity, liver regeneration and immune response.

RESEARCH LINES

- Caveolins in the endoplasmic reticulum: homeostatic cholesterol sensors?

- Exploring new functions for lipid droplets: from immunity to cancer.

- The role of hepatic endosomes in the regulation of systemic cholesterol: the why, the where and the how of arteriosclerosis.

- Understanding the biogenesis and consumption of lipid droplets: decoding the metabolic syndrome?

PUBLICATIONS

Originals / I.F.: 7.014

1. Meneses-Salas E., García-Melero A., Kanerva K., Blanco-Muñoz P., Morales-Paytuvi F., Bonjoch J., Casas J., Egert A., Beevi S., Jose J., Llorente-Cortés V., Rye K., Heeren J., Lu A., Pol A., Tebar F., Ikonen E., Grewal T., Enrich C., Rentero C. **Annexin A6 modulates TBC1D15/Rab7/StARD3 axis to control endosomal cholesterol export in NPC1 cells.** *CELLULAR AND MOLECULAR LIFE SCIENCES*. I.F.: 7.014

GRANTS FOR RESEARCH IN PROGRESS

Pol A. **Lipid Droplet Overloading Promotes Pathogenesis and Progression of Type 2 Diabetes: Identifying New Therapeutic Targets and Applying Upgraded Therapies.**
Sponsored by: Fundació la Marató de TV3.
Diabet_16
Duration: 24/02/2017-23/02/2020

Pol A. **Nuevas funciones de ACSL3, CAV1 y colesterol en el retículo endoplásmico: sensores homeostáticos que determinan la supervivencia o la muerte de las células.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
BFU2015-66401-R
Duration: 01/01/2016-30/06/2019

Pol A. **Cuerpos Lipídicos y Mitocondrias: centros inmunes que controlan la defensa del huésped y el inmunometabolismo.**
Sponsored by: Ministerio de Ciencia Innovacion y Universidades (MCIU).
RTI2018-098593-B-I00
Duration: 01/01/2019-31/12/2021

Pol A. **Discovering the Partners of PCSK9 in Hepatic Endosomes: The Where, How, and Why of PCSK9 in Atherosclerosis.**
Sponsored by: AMGEN. PCSK9_18
Duration: 01/09/2018-31/08/2020

5.19 Diagnosis and therapy in oncology

LOCATION
HCB building

KEYWORDS
1. **Oncology molecular studies**
2. **Radiotherapy**
3. **Breast cancer diagnosis**
4. **Sentinel lymph node**
5. **Positron emission tomography**

RELATED DISEASES
1. **Breast cancer**
2. **Malignant melanoma**
3. **Lymphoma**
4. **Head and neck tumours**
5. **Gynecological carcinoma**

GROUP INVOLVED IN
AGAUR_SGR17: 00682, 01150
CIBER-BNN

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**14**	**58,67**	**4,19**	**64%**	**14%**



GROUP LEADER
Francesca Pons (HCB)
T. 93 227 5773
fpons@clinic.cat

RESEARCHERS
Albert Biete (HCB-UB)
Carlos Conill (HCB)
David Fuster (HCB-UB)
Fernando Gómez Muñoz (HCB)
Marià Monzó (UB)
María Africa Muxí (HCB)
Laura Oleaga (HCB-UB)
Pilar Paredes (HCB-UB)
Xavier Setoain (HCB-UB)
Sergi Vidal Sicart (HCB)

COLLABORATORS
Xavier Bargalló (HCB-UB)
Francisco Campos (HCB)
Sebastián Capurro (HCB)
Francesc Casas (HCB)
Lluís Donoso (HCB-UB)
Meritxell Molla (HCB-UB)
Alfons Navarro (UB)
Mario Pagés (HCB-UB)
Andres Perissinotti (HCB)
Teresa Pujol (HCB)
Sonia Rodríguez (HCB)
Angels Rovirosa (HCB-UB)
Marcelo Sánchez (HCB-UB)
Izaskun Valduvieco (HCB)

PROBLEM

Cancer is the second leading cause of death in Europe and the first among people aged under 65. Its incidence increases as the population ages and it is calculated that by 2030, one new case of cancer will develop in Spain every 1.8 minutes, with one death every 3.8 minutes.

Increasing and optimising efforts to prevent, diagnose and treat cancer is of the utmost importance. The group's opinion is that the best way to do this is to promote translational research and incorporate clinical practice as quickly as possible into the ground-breaking advances made by laboratories.

APPROACH

The arsenal of diagnostic and therapeutic tools available for cancer patients includes molecular studies, diverse diagnostic imaging techniques and radiation therapy. The research conducted by the group is focused on these areas, with the aim of developing techniques to improve diagnosis, prognostic assessment and evaluation of the response to treatment in these diseases.

In addition, work is being carried out on new cancer therapies based on the use of encapsulated and non-encapsulated ionising radiation.

IMPACT

The group's intention is for molecular studies to provide information to enable doctors to offer patients more specific treatments.

Furthermore, in relation to diagnostic imaging techniques, magnetic resonance imaging (MRI) makes it possible to better establish the state of certain tumours and improve the prediction of the pathological response; positron emission tomography/computed tomography (PET/CT) has proven to be extremely useful in evaluating the response to treatment in diverse neoplasms; sentinel lymph node detection prevents a large number of unnecessary lymph node extractions, and radiation therapy studies comparing conventional radiation to new types of radiation show promising results.

RESEARCH LINES

- Breast magnetic resonance imaging (MRI).

- Effects of synchrotron radiation upon the neoplastic cell.

- Functional magnetic resonance imaging (fMRI) techniques.

- Molecular studies in embryonic and tumor cells: applications to pharmacogenomics.

- Positron emission tomography/computed tomography (PET/CT).

- Scintigraphic detection of the sentinel node and hybrid tracers in radioguided surgery.

- Study of bacterial radiosensitivity.

PUBLICATIONS

Originals / I.F.: 58.672

1. Riquelme-Mc Loughlin C, Podlipnik S, Bosch-Amate X, Riera-Monroig J, Barreiro A, Espinosa N, Moreno-Ramírez D, Giavedoni P, Vilana R, Sánchez M, Vidal-Sicart S, Carrera C, Malvehy J, Puig S. **Diagnostic accuracy of imaging studies for initial staging of T2b-T4b melanoma patients.** *JOURNAL OF THE AMERICAN ACADEMY OF DERMATOLOGY.* 81(6):1330-1338. I.F.: 7.102

2. Podlipnik S, Moreno-Ramírez D, Carrera C, Barreiro A, Manubens E, Ferrandiz-Pulido L, Sánchez M, Vidal-Sicart S, Malvehy J, Puig S. **Cost-effectiveness analysis of imaging strategy for an intensive follow-up of patients with AJCC stage IIB, IIC and III malignant melanoma.** *BRITISH JOURNAL OF DERMATOLOGY.* 180(5):1190-1197. I.F.: 6.714

3. Navarro A, Molins L, Marrades RM, Moises J, Viñolas N, Morales S, Canals J, Castellano JJ, Ramírez J, Monzo M. **Exosome Analysis in Tumor-Draining Pulmonary Vein Identifies NSCLC Patients with Higher Risk of Relapse after Curative Surgery.** *CANCERS.* 11(2):E249. I.F.: 6.162

4. Gil F, Padilla N, Soria-Pastor S, Setoain X, Boget T, Rumiá J, Roldán P, Reyes D, Bargalló N, Conde E, Pintor L, Vernet O, Manzanares I, Åden U, Carreño M, Donaire A. **Beyond the Epileptic Focus: Functional Epileptic Networks in Focal Epilepsy.** *CEREBRAL CORTEX.* 30(4):2338-2357. I.F.: 5.437

5. Magnano L, Alonso-Alvarez S, Alcoceba M, Rivas-Delgado A, Muntañola A, Nadeu F, Setoain X, Rodríguez S, Andrade-Campos M, Espinosa-Lara N, Rodríguez G, Sancho JM, Moreno M, Mercadal S, Carro I, Salar A, Garcia-Pallarols F, Arranz R, Cannata J, Terol MJ, Teruel AI, Jiménez-Ubieto A, Rodriguez A, González de Villambrosía S, Bello JL, López L, Novelli S, de Cabo E, Infante ME, Pardal E, Monsalvo S, González M, Martín A, Caballero MD, López-Guillermo A, Grupo Español de Linfomas y Trasplante Autólogo de Médula Ósea (GELTAMO). **Life expectancy of follicular lymphoma patients in complete response at 30 months is similar to that of the Spanish general population.** *BRITISH JOURNAL OF HAEMATOLOGY.* 185(3):480-491. I.F.: 5.206

6. Martín-Solé O, Soria-Gondek A, Pérez-Bertólez S, Paredes P, Tarrado X, García-Aparicio L. **Value of supranormal function on 99m Tc-mercaptoacetyltriglycine renal scan in paediatric patients with obstructive hydronephrosis.** *BJU INTERNATIONAL.* 124(5):842-848. I.F.: 4.524

7. Renu, Arturo; Blasco, Jordi; Millan, Monica; Marti-Fabregas, Joan; Cardona, Pere; Oleaga, Laura; Macho, Juan; Molina, Carlos; Roquer, Jaume; Amaro, Sergio; Davalos, Antonio; Zarco, Federico; Laredo, Carlos; Tomasello, Alejandro; Guimaraens, Leopoldo; Barranco, Roger; Castano, Carlos; Vivas, Elio; Ramos, Anna; Lopez-Rueda, Antonio; Urra, Xabier; Muchada, Marian; Cuadrado-Godia, Elisa; Camps-Renom, Pol; Roman, Luis S.; Rios, Jose; Leira, Enrique C.; Jovin, Tudor; Torres, Ferran; Chamorro, Angel;CHOICE Investigators. **The Chemical Optimization of Cerebral Embolectomy trial: Study protocol.** *INTERNATIONAL JOURNAL OF STROKE.* 1747493019895656. I.F.: 4.466

8. Mestres CA, Quintana E, Kopjar T, Ambrosioni J, Almela M, Fuster D, Ninot S, Miró JM, Hospital Clinic Infective Endocarditis Investigators. **Twenty-year experience with cryopreserved arterial allografts for vascular infections.** *EUROPEAN JOURNAL OF CARDIO-THORACIC SURGERY.* 55(2):358-365. I.F.: 3.847

9. Tejera-Vaquerizo A, Ribero S, Puig S, Boada A, Paradela S, Moreno-Ramírez D, Cañueto J, de Unamuno B, Brinca A, Descalzo-Gallego MA, Osella-Abate S, Cassoni P, Carrera C, Vidal-Sicart S, Bennássar A, Rull R, Alos L, Requena C, Bolumar I, Traves V, Pla Á, Fernández-Orland A, Jaka A, Fernández-Figueres MT, Hilari JM, Giménez-Xavier P, Vieira R, Botella-Estrada R, Román-Curto C, Ferrándiz L, Iglesias-Pena N, Ferrándiz C, Malvehy J, Quaglino P, Nagore E, SENTIMEL group. **Survival analysis and sentinel lymph node status in thin cutaneous melanoma: A multicenter observational study.** *CANCER MEDICINE.* 8(9):4235-4244. I.F.: 3.357

10. Mayoral, Maria; Ninerola-Baizan, Aida; Marti-Fuster, Berta; Donaire, Antonio; Perissinotti, Andres; Rumia, Jordi; Bargallo, Nuria; Sala-Llonch, Roser; Pavia, Javier; Ros, Domenec; Carreno, Mar; Pons, Francesca; Setoain, Xavier. **Epileptogenic Zone Localization With (18)FDG PET Using a New Dynamic Parametric Analysis.** *FRONTIERS IN NEUROLOGY.* 10:380. I.F.: 2.635

11. Vilaseca I, Nogués-Sabaté A, Avilés-Jurado FX, Berenguer J, Grau JJ, Verger E, Nadal A, Muxí A, Bernal-Sprekelsen M, Blanch JL. **Factors of local recurrence and organ preservation with transoral laser microsurgery in laryngeal carcinomas; CHAID decision-tree analysis.** *HEAD AND NECK.* 41(3):756-764. I.F.: 2.442

12. Holub, K.; Biete, A. **Impact of systemic inflammation biomarkers on the survival outcomes of cervical cancer patients.** *CLINICAL AND TRANSLATIONAL ONCOLOGY.* 21(7):836-844. I.F.: 2.441

13. Navarro A, Moises J, Santasusagna S, Marrades RM, Viñolas N, Castellano JJ, Canals J, Muñoz C, Ramírez J, Molins L, Monzo M. **Clinical significance of long non-coding RNA HOTTIP in early-stage non-small-cell lung cancer.** *BMC PULMONARY MEDICINE.* 19(1):55. I.F.: 2.184

14. Vidal-Sicart S., Seva A., Campos F., Sánchez N., Alonso I., Pahisa J., Caparrós X., Perissinotti A., Paredes P., van Leeuwen F. **Clinical use of an opto-nuclear probe for hybrid sentinel node biopsy guidance: first results.** *INTERNATIONAL JOURNAL OF COMPUTER ASSISTED RADIOLOGY AND SURGERY.* 14(2):409-416. I.F.: 2.155

Review / I.F.: 3.923

1. Canedo-Antelo M; Baleato-González S; Mosqueira AJ; Casas-Martínez J; Oleaga L; Vilanova JC; Luna-Alcalá A; García-Figueiras R. **Radiologic Clues to Cerebral Venous Thrombosis.** *RADIOGRAPHICS.* 39(6):1611-1628. I.F.: 3.923

Case Reports / I.F.: 8.272

1. Carreño M., Martí M., Aldecoa I., Painous C., Conde E., Valldeoriola F., Valls-Solé J., Bargalló N., Gil F., Manzanares I., Setoain X., Donaire A., Muñoz E., Roldán P., Boget T., Pintor L., Bailles E., Rumià J. **Unilateral pallidal stimulation for disabling dystonia due to Rasmussen's disease.** *JOURNAL OF NEUROLOGY NEUROSURGERY AND PSYCHIATRY*. 90(1):108-110. I.F.: 8.272

GRANTS FOR RESEARCH IN PROGRESS

Oleaga A. **Predictive geometrical model for personalized flow diverter sizing and interventional planning (PoroVIEW).**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
RTC-2016-5073-1.
Duration: 01/11/2016-31/10/2019

Paredes P. **Ganglio centinela en el cáncer de endometrio mediante detección híbrida (99mTc-nanocoloide de albúmina-ICG). Mapa linfático de la punción cervical versus miometrial.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00728
Duration: 01/01/2019-31/12/2021

DOCTORAL THESES

Biete A. **Impact of host-immune inflammatory response on survival outcomes of patients diagnosed with endometrial or cervical cancer.**
PhD student: Katarzyna Holub

Pons F, Setoain FJ. **Utilidad de la SPECT de perfusión y la PET-FDG en la valoración prequirúrgica de pacientes con epilepsia.**
PhD student: Andrés Perissinotti

Setoain X, Pons F. **Tomografía por Emisión de Positrones cuantificada en la evaluación prequirúrgica de la Epilepsia.**
PhD student: Maria Mayoral Peñalva

Vidal Sicart S, Vidal Perez O. **Utilidad del ganglio centinela en el cáncer papilar de tiroides.**
PhD student: Eduardo Delgado Oliver

5.20 Transcriptional regulation of gene expression

LOCATION
CELLEX building, floor 1B

KEYWORDS
1. **Stem cells**
2. **Cancer**
3. **Inflammation**
4. **Cellular plasticity and differentiation**
5. **Tissue regeneration**

RELATED DISEASES
1. **Cancer**
2. **Inflammation**
3. **Muscle dystrophies and muscle pathology**

GROUP INVOLVED IN
CIBEREHD

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**2**	**29,82**	**14,91**	**100%**	**100%**

GROUP LEADER
Antonio Postigo (ICREA-IDIBAPS)
Tel: 93 227 9170
idib412@clinic.cat

POST-DOCTORAL RESEARCHERS
Marlies Cortes (FCRB)
Laura Siles (FCRB)

PRE-DOCTORAL RESEARCHERS
Yoandy Jose Cabrera (IDIBAPS)
M Carmen Martínez Campanario (IDIBAPS)
Sergio Mera (IDIBAPS)
Chiara Ninfali (IDIBAPS)
Núria Profitós (IDIBAPS)
Lidia Sanchez Moral (IDIBAPS)

PROBLEM

Organisms are comprised of hundreds of different types of cells, each with a specific attribute and function. This diversity of cell traits and roles is determined by a particular 'gene expression signature'.

This gene expression signature defines each cell type but also evolves as cells change during differentiation, development, and disease. Gene expression is regulated at multiple levels, including by some proteins (known as "transcription factors") that bind to the regulatory regions in the DNA to switch on/off gene expression.

Understanding how genes are regulated is critical for designing tools to maintain health and to prevent and cure diseases.

APPROACH

The ability of cells to change their identity (phenotype) and function along a spectrum is referred to as cellular plasticity. Cellular plasticity serves as a mechanism through which cells and tissues adapt to environmental changes and occurs not only during embryonic development but also in adult tissues both under physiological conditions as well as in disease. For instance, cellular plasticity allows cells to respond to stress or injury (e.g., tissue regeneration by adult stem cells). But cellular plasticity also allows cells to adopt a pathological phenotype and function in response to some cues (e.g., tumor initiation by cancerous stem cells).

The group studies gene regulation of cell plasticity during normal cell differentiation (the process through which cells, tissues and organs change structure and shape to carry out specific functions) and in disease, with ongoing projects in inflammation, cancer, stem cell differentiation, and muscle injury and regeneration.

Cellular plasticity is orchestrated by a number of transcription factors and epigenetic modifications. Our group focuses on the ZEB1 and ZEB2 cell plasticity factors that play key roles in all of these physiological and pathological processes.

Our research uses multiple technical approaches ranging from unique conditional transgenic mice, ex vivo cultures and manipulation of stem cells to high-throughput techniques (OMICs: RNAseq, single cell-RNAseq, etc) and differentiation of human embryonic stem cells.

IMPACT

By understanding the mechanisms that regulate gene expression and how gene expression is regulated under physiological conditions and altered in disease, our group aims to: a) define markers that trace the initiation and progression of diseases and b) inform the design of new and personalized therapies that restore normal gene expression and function.

RESEARCH LINES

- Cancer Stem Cells and Cell Plasticity in Cancer.

- Stem Cells, Cell Differentiation and Tissue Regeneration.

- Cell Plasticity in Immune Cells during Inflammation in Tissue Regeneration and Cancer.

PUBLICATIONS

Originals / I.F.: 29.821

1. De Barrios, Oriol; Sanchez-Moral, Lidia; Cortes, Marlies; Ninfali, Chiara; Profitos-Peleja, Nuria; Martinez-Campanario, M. C.; Siles, Laura; del Campo, Rosa; Jesus Fernandez-Acenero, Maria; Darling, Douglas S.; Castells, Antoni; Maurel, Joan; Salas, Azucena; Dean, Douglas C.; Postigo, Antonio. **ZEB1 promotes inflammation and progression towards inflammation-driven carcinoma through repression of the DNA repair glycosylase MPG in epithelial cells.** *GUT.* 68(12):2129-2141I.F.: 17.943

2. Siles, Laura Ninfali, Chiara Cortes, Marlies Darling, Douglas S. Postigo, Antonio. **ZEB1 protects skeletal muscle from damage and is required for its regeneration.** *NATURE COMMUNICATIONS.* 10(1):1364. I.F.: 11.878

GRANTS FOR RESEARCH IN PROGRESS

Postigo A. **Group of Regulation in Cell Differentiation and Cancer. Prognostic and predictive biomarkers and therapeutic targets in cáncer.**
Sponsored by: Generalitat de Catalunya.
AGAUR_SGR17_01174
Duration: 01/01/2017-31/12/2020

Postigo A. **Metabolismo e interacción tumor-microambiente: Papel de los factores ZEB en la reprogramación metabólica de las células tumorales y estromales y de su interacción mutua.**
Sponsored by: Ministerio de Economía y Competitividad (MINECO).
SAF2017-84918-R
Duration: 01/01/2018-30/06/2021

Postigo A. **Validación del factor ZEB2 como biomarcador pronóstico predictivo y potencial objetivo terapéutico en la distrofia muscular de Duchenne.**
Sponsored by: Asociación Duchenne Parent Project España. DPP_18_01
Duration: 15/12/2018-14/02/2021

Postigo A. **Validation of ZEB factors as prognostic and predictive biomarkers, and therapeutic targets in colorectal carcinomas.**
Sponsored by: Fundación Cientifica Asociación Española Contra el Cancer.
AECC_Proyectos19
Duration: 01/11/2019-30/04/2023

Postigo A. **Identificación de perfiles de expresión génica regulados por la vía microRNA /ZEB 1-ZEB 2 y su papel en la capacidad invasiva y metastásica de carcinomas de mama y la respuesta al tratamiento.I Beca en Investigación en Cáncer de Mama.**
Sponsored by: Avon Cosmetics S.A. (12/259)
Duration: 01/09/2012-31/12/2020

DOCTORAL THESES

Postigo A. **Regulation of skeletal muscle atrophy by the ZEB1 transcription factor.**
PhD student: Chiara Ninfali

Postigo A, Castells A. **Role of ZEB1 in adenoma formation, inflammation and inflammation-driven carcinoma.**
PhD student: Lidia Sanchez Moral

5.21 Translational genomics and targeted therapies in solid tumours

LOCATION
CEK building, floor 2

KEYWORDS
1. **Breast cancer**
2. **Intrinsic subtypes**
3. **Biomarkers**
4. **Genomics**
5. **Solid tumors**
6. **Immunotherapy**

RELATED DISEASES
1. **Breast cancer**
2. **Gynecological cancer**
3. **Urological cancer**
4. **Lung cancer**
5. **Melanoma**
6. **Central nervous system**
7. **Colorectal cancer**
8. **Upper gastrointestinal cancer**
9. **Solid tumors**

GROUP INVOLVED IN
AGAUR_SGR17: 01554

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**55**	**595,16**	**10,82**	**67%**	**40%**



GROUP LEADER
Aleix Prat (HCB)
T. 93 227 54 00 (Ext.: 2203)
alprat@clinic.cat

RESEARCHERS
Barbara Adamo (HCB)
Ana Arance (HCB)
Carles Gomà (HCB)
Joan Maurel (HCB)
Begoña Mellado (HCB)
Montserrat Muñoz (HCB)
Noemí Reguart (HCB-IDIBAPS)
Maria Jesús Vidal (HCB)
Nuria Viñolas (HCB)

POST-DOCTORAL RESEARCHERS
Fara Brasó (FCRB)
Carme Font (HCB)
Mercedes Marin (IDIBAPS)
Esther Sanfeliu (HCB)
Cristina Teixidó (HCB)

PRE-DOCTORAL RESEARCHERS
Nuria Chic (IDIBAPS)
Benedetta Conte (IDIBAPS)
Javier Garcia Corbacho (FCRB)
Elba Marín (FCRB)
Olga Martínez Sáez (FCRB)
Tomas Pascual (FCRB)
Leire Pedrosa (FCRB)
Estela Pineda (HCB)
Oscar Reig (FCRB)
Francesco Schettini (IDIBAPS)
Margarita Viladot (HCB)

TECHNICIANS
Patricia Galván (FCRB)
Natalia Jiménez (FCRB)
Debora Martínez (FCRB)

ADMINISTRATIVE STAFF
Eva Paradell (FCRB)

COLLABORATORS
Blanca González (HCB)

PROBLEM

Cancer is a very heterogeneous disease, both clinically and biologically. Over the last decade, the survival of patients suffering cancer has improved thanks, among many things, to a better diagnosis and the introduction of new targeted therapies. However, many patients do not respond to current treatments and many of those who do, their tumors become resistant.

Therefore, there is a need to **1)** better understand the underline biology of each cancer-type, **2)** classify cancers into clinically relevant subgroups, **3)** identify predictive and prognostic biomarkers and, finally, **4)** identify new drugs and therapeutic targets.

APPROACH

Our approach starts from clinically relevant questions obtained from clinical practice at the Medical Oncology Department or clinical trials from SOLTI or other collaborators. We then transfer these questions or observations to the laboratory.

Tumors and blood samples are molecularly analyzed and new biomarkers and therapies are discovered. In addition, we use preclinical models to study the molecular mechanisms of sensitivity and resistance to targeted therapies.

Our most promising translational results give rise to new hypothesis that we test in patients´ samples from prospective and retrospective clinical trials. Thus, our translational approach is from bedside-to-bench and back to the clinic.

IMPACT

Our group uses genomic and molecular data from patients with cancer to guide the design of novel clinical trials and discover new prognostic and predictive biomarkers.

Overall, we hope to obtain more personalized diagnoses and treatments in the field of oncology.

RESEARCH LINES

- To establish a molecular screening program for our Phase 1 Clinical Trial Unit.

- Identification of new prognostic or predictive biomarkers using tumors and blood samples.

- Understand the molecular mechanisms of treatment resistance and sensitivity, with a special focus on immunotherapy and tumor cell targeted therapy.

- Develop novel immunotherapies for cancer patients, such as selective adoptive T-cell and CAR T-cell therapies.

PUBLICATIONS

Originals / I.F.: 595.158

1. Loriot Y., Necchi A., Park S.H., Garcia-Donas J., Huddart R., Burgess E., Fleming M., Rezazadeh A., Mellado B., Varlamov S., Joshi M., Duran I., Tagawa S.T., Zakharia Y., Zhong B., Stuyckens K., Santiago-Walker A., De Porre P., O'Hagan A., Avadhani A., Siefker-Radtke A.O. **Erdafitinib in locally advanced or metastatic urothelial carcinoma.** *NEW ENGLAND JOURNAL OF MEDICINE.* 381(4):338-348. I.F.: 70.670

2. Rini BI, Powles T, Atkins MB, Escudier B, McDermott DF, Suarez C, Bracarda S, Stadler WM, Donskov F, Lee JL, Hawkins R, Ravaud A, Alekseev B, Staehler M, Uemura M, De Giorgi U, Mellado B, Porta C, Melichar B, Gurney H, Bedke J, Choueiri TK, Parnis F, Khaznadar T, Thobhani A, Li S, Piault-Louis E, Frantz G, Huseni M, Schiff C, Green MC, Motzer RJ, IMmotion151 Study Group. **Atezolizumab plus bevacizumab versus sunitinib in patients with previously untreated metastatic renal cell carcinoma (IMmotion151): a multicentre, open-label, phase 3, randomised controlled trial.** *LANCET.* 393(10189):2404-2415. I.F.: 59.102

3. Long G., Dummer R., Hamid O., Gajewski T., Caglevic C., Dalle S., Arance A., Carlino M., Grob J., Kim T., Demidov L., Robert C., Larkin J., Anderson J., Maleski J., Jones M., Diede S., Mitchell T. **Epacadostat plus pembrolizumab versus placebo plus pembrolizumab in patients with unresectable or metastatic melanoma (ECHO-301/KEYNOTE-252): a phase 3, randomised, double-blind study.** *LANCET ONCOLOGY.* 20(8):1083-1097. I.F.: 35.386

4. Robert C., Ribas A., Schachter J., Arance A., Grob J., Mortier L., Daud A., Carlino M., McNeil C., Lotem M., Larkin J., Lorigan P., Neyns B., Blank C., Petrella T., Hamid O., Su S., Krepler C., Ibrahim N., Long G. **Pembrolizumab versus ipilimumab in advanced melanoma (KEYNOTE-006): post-hoc 5-year results from an open-label, multicentre, randomised, controlled, phase 3 study.** *LANCET ONCOLOGY.* 20(9):1239-1251. I.F.: 35.386

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GRANTS FOR RESEARCH IN PROGRESS

Goma C. **kQ factors in modern external beam radiotherapy applications to update IAEA TRS-398.**
Sponsored by: European Comission.
CE_EMPIR_16 (16NRM03)
Duration: 01/04/2019-31/10/2019

Maurel J. **Estudio observacional para evaluar la estrategia de uso de las terapias dirigidas, en cáncer de colon metastásico.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI13/01728
Duration: 01/01/2014-30/06/2019

Mellado B. **Caracterización molecular del cáncer de próstata en función de la expresión de TMPRSS2-ERG: implicaciones terapéuticas.**
Sponsored by: Instituto de Salud Carlos III (ISCIII) PI15/00676
Duration: 01/01/2016-21/05/2019

Mellado B. **Plasticidad celular y perfil asociados al tratamiento en cáncer de próstata metastásico.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00714
Duration: 01/01/2019-31/12/2021

Pineda E. **Study of the molecular mechanisms involved in primary (glioblastoma) and secondary (metastasis) brain tumors to identify novel therapeutic targets and anti-cancer agents, biomarkers to select treatments and novel non-invasive methods for molecular diagnos.**
Sponsored by: Fundación Científica Asociación Española Contra el Cancer (AECC). GCTRA16015SEDA
Duration: 15/11/2017-14/11/2022

Prat A. **Translational Genomics and Targeted Therapeutics in Solid Tumors.**
Sponsored by: Generalitat de Catalunya.
AGAUR_SGR17_01554
Duration: 01/01/2017-31/12/2020

Prat A. **Construcción y evaluación de linfocitos T con un receptor quimérico antigénico CART anti-HER2 para el tratamiento de tumores sólido HER2-positivos.**
Sponsored by: Fundación Eugenio Rodriguez Pascual. FERP15-12
Duration: 22/12/2015-21/12/2019

Prat A. **Identificación y validación de una firma genómica predictiva de beneficio a fármacos anti-PD1 en múltiples tumores sólidos.**
Sponsored by: Fundación Sociedad Española de Oncología Médica. (SEOM_16)
Duration: 01/11/2016-30/04/2020

Prat A. **Doble bloque HER2 sin quimioterapia en cáncer de mama precoz HER2+.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00904
Duration: 01/01/2017-30/06/2021

Prat A. **Estudio de los mecanismos de sensibilidad y resistencia al doble bloqueo HER2 y a las combinaciones con enzaluatamida o palbociclib en modelos preclínicos de cáncer de mama HER2-positivo.**
Sponsored by: Fundación Cientifica Asociación Española Contra el Cancer.
AECC_Postdoctoral17.
Duration: 01/11/2017-

Prat A. **Estudio prospectivo exploratorio para la determinación de DNA circulante tumoral (ctDNA) en muestras sanguíneas de pacientes tratadas por cáncer de mama en seguimiento y sin evidencia de recidiva: ESTUDIO B-CRONOS.**
Sponsored by: Fundación de Investigación Médica Mútua Madrileña (FundMM).
AP168952018
Duration: 06/07/2018-05/07/2021

Prat A. **Prospective exploratory study for determination of circulating tumor DNA (ctDNA) in blood samples from patients treated for breast cancer in follow-up and without evidence of relapse (B-CRONOS).**
Sponsored by: Fundación Quirón Salud.
TERAPIA_AMIGOS_18_01
Duration: 11/02/2019-10/02/2022

Prat A. **Caracterizacion de los linfocitos T CD8+/PD1+ en cancer de mama avanzado receptor hormonal-positivo con un fenotivo agresivo HER2-enriched.**
Sponsored by: Fundación Merck Salud.
FSalud_19Serono19
Duration: 01/07/2019-30/06/2021

Prat A. **Terapia celular adoptiva mediante transferencia de linfocitos CD3+/PD1+ infiltrantes de tumor en pacientes con cáncer de mama avanzado.**
Sponsored by: Fundación Cientifica Asociación Española Contra el Cancer.
AECC_GruposCoord19
Duration: 01/12/2019-30/11/2024

Prat A. **Estudio del fenotipo HER2-enriquecido en cáncer de mama HER2-negativo.**
Sponsored by: Fundación Astrazeneca.
JOVINV17_003
Duration: 12/12/2017-

Prat A. **Financial Support for the Breast Cancer Intergroup Correlative Science Studies.**
Sponsored by: Regents of the University of Michigan. BCRF_2015
Duration: 01/10/2014-30/09/2019

Prat A. **Targeting the HER2-enriched phenotype in hormone receptor-positive breast cancer.**
Sponsored by: Breast Cancer Now.
INT_BCN_Catalyst_18
Duration: 01/03/2019-28/02/2022

Prat A. **Tailoring systemic treatment of Luminal B breast cancer.**
Sponsored by: American Association for Cancer Research. INT_BCRF_AACR_18
Duration: 01/07/2019-30/06/2021

Reguart N. **Validación de un ensayo multiplex personalizado para la detección de oncogenes y firmas inmunes en Cáncer de Pulmón (CP): estudio observacional, prospectivo y multicéntrico.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI16/00890
Duration: 01/01/2017-31/12/2020

DOCTORAL THESIS

Mellado B. **Biomarcadors i resistència a la quimioteràpia en càncer de pròstata.**
PhD student: Oscar Reig Torras

5.22 Melanoma: imaging, genetics and immunology

LOCATION
CEK building, floor 2

KEYWORDS
1. **Melanoma**
2. **Genetics**
3. **Dermoscopy**
4. **Confocal microscopy**
5. **Susceptibility**

RELATED KEYWORDS
1. **Melanoma**
2. **Giant congenital melanocytic nevi (GCMN)**
3. **Squamous cell carcinoma (SCC)**
4. **Basal cell carcinoma (BCC)**
5. **Xeroderma pigmentosum (XP)**
6. **Kindler syndrome (KS)**
7. **Recessive dystrophic Epidermolysis bullosa (RDEB)**

GROUP INVOLVED IN
AGAUR_SGR17: 01134
ERANET

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	28	189,15	6,76	89%	54%



GROUP LEADER
Susana Puig (HCB)
T. 93 2275400 (Ext.: 5692)
spuig@clinic.cat

RESEARCHERS
Celia Badenas (HCB)
Cristina Carrera (HCB)
Josep Malvehy (HCB)
Joan Anton Puig (HCB)
Agustí Toll (HCB)

POST-DOCTORAL RESEARCHERS
Paula Aguilera (HCB)
Melinda González Concepción (FCRB)
Vanessa Martin (FCRB)
Miriam Potrony (FCRB-HCB)
Gemma Tell (CIBER)

PRE-DOCTORAL RESEARCHERS
Alicia Ines Barreiro (IDIBAPS)
Neus Calbet (IDIBAPS)
Natalia Espinosa (FCRB)
Priscila Giavedoni (HCB)
Daniel Morgado (FCRB)
Javiera Perez Anker (FCRB)
Sebastian Podlipnik (UB)
Carolina Sanchez Marcos (FCRB)
Oriol Yélamos (IDIBAPS)

TECHNICIANS
Beatriz Alejo (FCRB)
Marc Combalia (FCRB)
Alexandra Franco (FCRB)
Judit Mateu (FCRB)

NURSING STAFF
Mireia Dominguez (FCRB)
Daniel Gabriel (FCRB)
Angels Herrero (FCRB)
Pablo Iglesias (FCRB)
Silvia Riera (FCRB)

ADMINISTRATIVE STAFF
Lilian Roca (FCRB)

PROBLEM

Skin cancer is the most common cancer in humans and, among the various common skin tumours, melanoma is the most aggressive and has the worst prognosis. Sun exposure habits and the ageing population are, nowadays, a growing problem in western societies. The group focuses on the study of melanoma and non-melanoma skin cancer, as well as other skin conditions related to the risk of developing these cancers. The purpose is to improve prevention, early diagnosis and the achievement of a more personalised treatment of melanoma and non-melanoma skin cancer.

APPROACH

The group's research is multidisciplinary and its members include dermatologists, pathologists, nurses, biologists, biotechnologists, engineers, physicists, technicians and other specialists. Its research is translational. In other words, it combines clinical studies with more molecular studies and projects that combine the two aspects, with the aim of identifying improvements both in prevention and in patient diagnosis, management, monitoring and treatment. These improvements are transferred directly to patients, improving their quality of life and that of their families. The group uses a combination of new imaging technologies, molecular studies and artificial intelligence tools.

IMPACT

Thanks to the studies the group has carried out, it has been able to improve early diagnosis of skin cancer, reducing the number of benign lesions removed and diagnosing melanomas that are not very thick and have a good prognosis. In addition, it has described the main melanoma susceptibility genes in the population and it has identified several molecular prognostic markers useful in clinical practice. With the group's new research lines, it intends to improve the classification of patients into specific prognosis groups to improve their management and treatment. The group is aiming to identify prognostic and predictive biomarkers.

RESEARCH LINES

- Analysis of the influence of the microbiota in skin cancer.

- Dermoscopy, digital dermoscopy, confocal microscopy and new photonic and physic technologies.

- Development of new treatment strategies for melanoma and other skin tumors.

- Evaluation of immune response in melanoma.

- Genetic epidemiology in melanoma and non-melanoma skin cancer.

- Giant congenital nevi.

- Identification of biomarkers for melanoma.

- Identification of genetic prognostic profiles in melanoma.

- Study of the mechanisms involved in carcinogenesis and photocarcinogenesis in melanoma and non-melanoma skin cancer.

- Artificial Intelligence for skin cancer diagnosis, prognosis and management.

PUBLICATIONS

Originals / I.F.: 189.145

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8. Chacón-Solano E, León C, Díaz F, García-García F, García M, Escámez MJ, Guerrero-Aspizua S, Conti CJ, Mencía Á, Martínez-Santamaría L, Llames S, Pévida M, Carbonell-Caballero J, Puig-Butillé JA, Maseda R, Puig S, de Lucas R, Baselga E, Larcher F, Dopazo J, Del Río M. **Fibroblasts activation and abnormal extracellular matrix remodelling as common hallmarks in three cancer-prone genodermatoses.** *BRITISH JOURNAL OF DERMATOLOGY.* 181(3):512-522. I.F.: 6.714

9. Podlipnik S, Moreno-Ramírez D, Carrera C, Barreiro A, Manubens E, Ferrandiz-Pulido L, Sánchez M, Vidal-Sicart S, Malvehy J, Puig S. **Cost-effectiveness analysis of imaging strategy for an intensive follow-up of patients with AJCC stage IIB, IIC and III malignant melanoma.** *BRITISH JOURNAL OF DERMATOLOGY.* 180(5):1190-1197. I.F.: 6.714

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12. Peris K., Fargnoli M.C., Garbe C., Kaufmann R., Bastholt L., Seguin N.B., Bataille V., Marmol V.d., Dummer R., Harwood C.A., Hauschild A., Höller C., Haedersdal M., Malvehy J., Middleton M.R., Morton C.A., Nagore E., Stratigos A.J., Szeimies R.M., Tagliaferri L., Trakatelli M., Zalaudek I., Eggermont A., Grob J.J. **Diagnosis and treatment of basal cell carcinoma:**

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14. Martins da Silva V, Martinez-Barrios E, Tell-Martí G, Dabad M, Carrera C, Aguilera P, Brualla D, Esteve-Codina A, Vicente A, Puig S, Puig-Butillé JA, Malvehy J. **Genetic Abnormalities in Large to Giant Congenital Nevi: Beyond NRAS mutations.** *JOURNAL OF INVESTIGATIVE DERMATOLOGY.* 139(4):900-908. I.F.: 6.290

15. Osella-Abate S, Bertero L, Senetta R, Mariani S, Lisa F, Coppola V, Metovic J, Pasini B, Puig S S, Fierro MT, Manrique-Silva E, Kumar R, Nagore E, Cassoni P, Ribero S. **TERT Promoter Mutations are Associated with Visceral Spreading in Melanoma of the Trunk.** *CANCERS.* 11(4):452. I.F.: 6.162

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17. Schlafly A, Pfeiffer RM, Nagore E, Puig S, Calista D, Ghiorzo P, Menin C, Fargnoli MC, Peris K, Song L, Zhang T, Shi J, Landi MT, Sampson JN. **Contribution of Common Genetic Variants to Familial Aggregation of Disease and Implications for Sequencing Studies.** *PLOS GENETICS.* 15(11):e1008490. I.F.: 5.224

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Carrera C. **Caracterización fenotípica-molecular de síndrome de nevus congénito gigante y su impacto psicoemocional. Identificación de patrones clínicos y genéticos relacionados con melanoma.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/00959
Duration: 01/01/2019-31/12/2021

Malvehy J. **Identificación de factores genéticos en individuos con nevus melanocíticos y su influencia en la determinacón de la mutación BRAF (V600E) en plasma.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00956
Duration: 01/01/2016-30/11/2020

Malvehy J. **El metabolismo de los esfingolípidos como diana terapéutica para mejorar la inmunoterapia del melanoma.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). FIS_AC16/00081 – ERANET_TRANSC2_16
Duration: 01/01/2017-30/06/2021

Puig JA. **Utilidad del ADN libre en el seguimiento de pacientes con melanoma: identificación de factores clave y relevancia clínica.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI18/01077
Duration: 01/01/2019-31/12/2021

Puig S. **Vías de diseminación metastásica en distintos subtipos del melanoma malign: nuevos biomarcadores tumorales y dianas terapéuticas.**
Sponsored by: Asociación Española Contra el Cáncer. AECC_Grupo Estable15 (CB1515297850EN)
Duration: 01/07/2015-31/12/2020

Puig S. **Evaluación de las alteraciones inmunológicas subyacentes en el desarrollo, progresión y respuesta a las terapias inmunológicas en melanoma. Implicaión de la microbiota en la inducción de tolerancia y efectos secundarios de las terapias inmunológicas.**
Sponsored by: Instituto de Salud Carlos III. PI15/00716
Duration: 01/01/2016-30/11/2020

Puig S. **Implicación del perfil inmunológico específico cutáneo determinado en sangre periférica en el pronóstico y respuesta a tratamiento del melanoma.**
Sponsored by: Instituto de Salud Carlos III. PI15/00716. PI18/00419
Duration: 01/01/2019-31/12/2021

Puig S. **Melanoma Survival Model of genetic variant involved in naevus count. Sponsored by: European Academy of Dermatology and Venereology.**
PPRC-2017-19
Duration: 01/01/2018-31/12/2019

DOCTORAL THESES

Puig S, Malvehy J**. Phenotype and Molecular Characterization of Large to Giant Congenital Melanocytic Nevi.**
PhD student: Vanessa Martins Da Silva

Puig S. **Influencia de la genética en la dermatoscopia del melanoma.**
PhD student: Flavia Pozzobon Torres

5.23 Hematopoietic progenitor cell transplantation

LOCATION
CEK building, floor 2

KEYWORDS
1. **Allogeneic transplantation**
2. **Immunotherapy**
3. **Veno-oclussive disease**
4. **Graft versus host disease**
5. **Infectious diseases**

RELATED DISEASES
1. **Hematology malignancies**

GROUP INVOLVED IN
RTICC_2012

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	19	92,85	4,89	58%	16%



GROUP LEADER
Álvaro Urbano-Ispizua (HCB)
T. 93 227 57 76
aurbano@clinic.cat

RESEARCHERS
Enrique Carreras (HCB)
Francesc Fernández-Avilés (HCB)
Sònia Guedan (FCRB)
Gonzalo Gutiérrez García (HCB)
Pedro José Marín (HCB)
Araceli Beatriz Martín (FCRB)
Carmen Martínez Muñoz (HCB)
Montserrat Rovira (HCB)

POST-DOCTORAL RESEARCHERS
Anthony Battram (FCRB)
Hugo Calderon (FCRB)
Maria Castella (FCRB)
María Suarez-Lledó (HCB)
Guillermo Suñé (FCRB)

PRE-DOCTORAL RESEARCHERS
Mireia Bachiller (FCRB)
Lorena Perez Amill (FCRB)

ADMINISTRATIVE STAFF
Mª José Sánchez Melero (HCB)

PROBLEM

Patients with advanced malignant haemopathies have a very short life expectancy. The group devotes its efforts to modifying the patient's immune system, thus making it possible to generate a more specific and powerful anti-tumour response.

APPROACH

The group performs the genetic modification of the patient's lymphocytes (CAR T cells), causing them to express a receptor that identifies leukaemia cells and that, once recognised, has high capacity to proliferate and to attack them.

IMPACT

The group has already used this procedure to treat 40 patients diagnosed with acute lymphoblastic leukaemia, with excellent results. It is currently preparing a modification to extend the use of procedure to multiple myeloma patients.

RESEARCH LINES

- CAR-T and CAR-NK therapy for the treatment of hematological malignancies.

- CAR-T cell therapies for solid tumours.

- Mechanisms of antitumor cytotoxicity of immune cells (NK and T lymphocytes).

- Allogeneic stem cell transplantation: graft versus host disease (GVHD) and infectious complications.

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1. Guedan, Sonia; Delgado, Julio. **Immobilizing A Moving Target: CAR T Cells Hit CD22.** *CLINICAL CANCER RESEARCH.* 25(17):5188-5190. I.F.: 8.911

Clinical Guidelines / I.F.: 1.685

1. Garcia-Vidal C, Alastruey-Izquierdo A, Aguilar-Guisado M, Carratalà J, Castro C, Fernández-Ruiz M, Aguado JM, Fernández JM, Fortún J, Garnacho-Montero J, Gavaldà J, Gudiol C, Guinea J, Gómez-López A, Muñoz P, Pemán J, Rovira M, Ruiz-Camps I, Cuenca-Estrella M. **Executive summary of clinical practice guideline for the management of invasive diseases caused by Aspergillus: 2018 Update by the GEMICOMED-SEIMC/REIPI.** *ENFERMEDADES INFECCIOSAS Y MICROBIOLOGIA CLINICA.* 37(8):535-541. I.F.: 1.685

Consortium Publications / I.F.: 4.674

1. Bondanza, Attilio; Ruggeri, Loredana; Noviello, Maddalena; Eikema, Dirk-Jan; Bonini, Chiara; Chabannon, Christian; van der Werf, Steffie; van Biezen, Anja; de Wreede, Liesbeth C.; Crucitti, Lara; Vago, Luca; Merluzzi, Mara; Massei, Maria Speranza; Veelken, Hendrik; Koc, Yener; Bader, Peter; Gruhn, Bernd; Locatelli, Franco; Ciceri, Fabio; Toubert, Antoine; Velardi, Andrea; Bernardo, Maria Ester; Dazzi, Francesco; Ellard, Rose; Fleischhauer, Katharina; Greco, Rafaella; Hudecek, Michael; Koehl, Ulrike; Kuball, Jurgen; Malard, Florent; Pedrazzoli, Paolo; Rocha, Vanderson; Ruggeri, Annalisa; Urbano-Ispizua, Alvaro; Wang, Junfeng; Wieten, Lotte;EBMT Cell Therapy Immunobiol Worki. **Beneficial role of CD8+T-cell reconstitution after HLA-haploidentical stem cell transplantation for high-risk acute leukaemias: results from a clinico-biological EBMT registry study mostly in the T-cell-depleted setting.** *BONE MARROW TRANSPLANTATION.* 54(6):867-876. I.F.: 4.674

GRANTS FOR RESEARCH IN PROGRESS

Martín B. **Modificación de la comunicación intercelular entre células inmunes y de mieloma para mejorar la sensibilidad a inmunoterapia y tratamientos convencionales.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/01043
Duration: 01/01/2018-31/12/2020

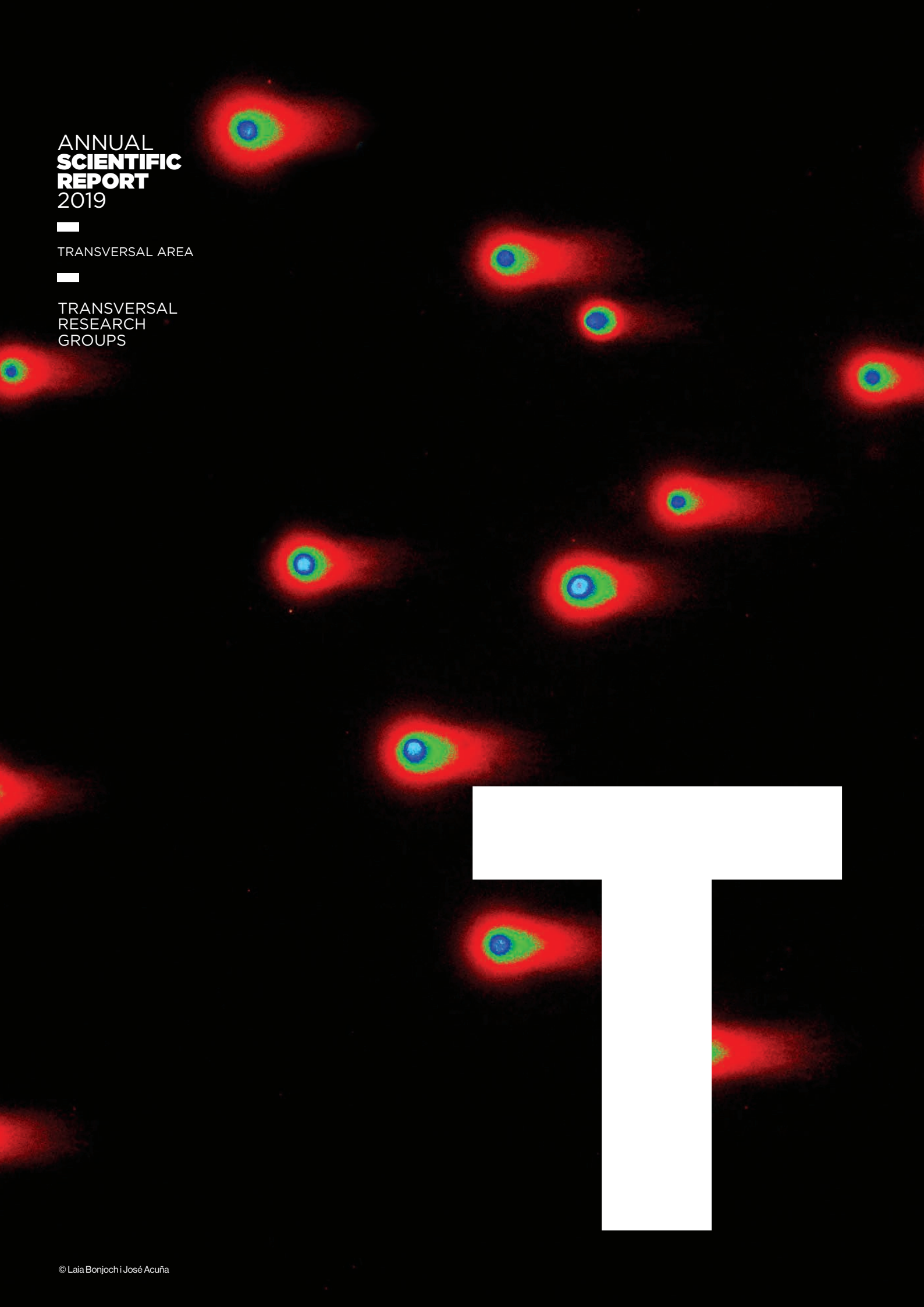
DOCTORAL THESIS

Urbano A, Rovira M. **Infección por Citomegalovirus en el trasplante alogénico de progenitores hematopoyéticos en la era del tratamiento anticipado: consideraciones actuales sobre la definición de grupos de riesgo y el diagnòstico.**
PhD student: María Suárez-Lledó Grande

ANNUAL **SCIENTIFIC REPORT** 2019

TRANSVERSAL AREA

TRANSVERSAL RESEARCH GROUPS



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TRANSVERSAL RESEARCH GROUPS

T.1 **Clinical pharmacology**
Gonzalo Calvo

T.2 **Primary healthcare transversal research group**
Antoni Sisó

T.3 **Research in nursing**
Adelaida Zabalegui

T.1 Clinical pharmacology

LOCATION

Casanova 150 (floor 2)
Mallorca 183
(rooms 3, 10, 78, 86, 89, 90, 91)

KEYWORDS

1. **Clinical trials, design and methodology**
2. **Ethics in clinical research**
3. **Drug regulation**
4. **Pharmacoepidemiology**

GROUP INVOLVED IN

SCReN
ECRIN

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**3**	**11,68**	**3,89**	**33%**	**0%**



TEAM LEADER
Gonzalo Calvo (HCB)
T. 93 227 93 28
gcalvo@clinic.cat

RESEARCHERS
Joan Albert Arnaiz (HCB)

PROBLEM, APPROACH & IMPACT

- Ethics in clinical research: Search for quality and the extent and context of application of current ethical principles in clinical research projects. It is developed in group studies and as support to researchers offered by the CEIm Technical Secretary, integrated within the Drug Research Ethics Committee (Àrea del Medicament of Hospital Clínic of Barcelona).

- Clinical trials, design, methodology and statistical support for clinical research: Optimization of methodological and statistical support for clinical research, both in an academic scope and in studies promoted by the pharmaceutical industry. It is developed within the framework of the Clinical Trials Unit (CTU) and the IDIBAPS Medical Statistics Platform.

- Active collaboration in national clinical research networks, such as SCReN, or international networks, such as ECRIN, to carry out multicenter clinical research projects on a national and international scale.

- Pharmacovigilance: Research on the molecular and pathophysiological mechanisms of adverse drug reactions and implementation of active pharmacovigilance systems that allow optimizing the detection of adverse drug reactions in a context of real clinical practice.

- Pharmacogenetics and pharmacogenomics: Development of studies to relate genetics with the activity and response to the action of drugs.

- Advanced Therapies: Coordination of the transfer of basic research in advanced therapies from the Hospital Clínic to its clinical application, through the scientific evaluation of the projects, the alignment of efforts and the evaluation and distribution of available resources.

RESEARCH LINES

- CEIm - Ethics in clinical research.

- CTU - Clinical trials, design and methodology.

- MedStats - Statistical support of clinical research.

- FV - Pharmacovigilance and pharmacoepidemiology.

- Pharmacogenetics and pharmacogenomics.

- CTA - Advanced therapies.

PUBLICATIONS

Originals / I.F.: 11.684

1. Couto E, Diaz-Brito V, Mothe B, Guardo AC, Fernandez I, Ugarte A, Etcheverry F, Gómez CE, Esteban M, Pich J, Arnaiz JA, López Bernaldo de Quirós JC, Brander C, Plana M, García F, Leal L. **Comparison of Safety and Vector-Specific Immune Responses in Healthy and HIV-Infected Populations Vaccinated with MVA-B.** *VACCINES.* 7(4):178. I.F.: 4.76

2. Gratacos, Jordi; Pontes, Caridad; Juanola, Xavier; Sanz, Jesus; Torres, Ferran; Avendano, Cristina; Vallano, Antoni; Calvo, Gonzalo; de Miguel, Eugenio; Sanmarti, Raimon; Almirall, Miriam; Aparicio, Maria; Sellas, Agusti; Vives, Roser; Albinana, Nestor; Moreno, Mireia; Clavaguera, Teresa; Carlos Torre-Alonso, Juan; Veroz, Raul; Rodriguez-Lozano, Carlos; Francisco Linares, Luis; Urruticoechea, Ana; Collantes, Eduardo; Maria Morla, Rosa; Reina, Delia; Cuende, Eduardo; Zarco, Pedro; Cruz Fernandez-Espartero, Maria; Garcia-Vicuna, Rosario; Alberto Montilla, Carlos; Villalba, Alejandro; Pascual, Dora; Campos, Cristina;

Juan, Antonio; Ariza, Rafael; Diaz-Miguel, Consuelo; Maqueda, Manuel; Pilar Fernandez-Dapica, Maria; Fernandez-Prada, Manuel; Batlle, Enrique; Gonzalez-Fernandez, Carlos; Queiro, Ruben;REDES-TNF Investigators. **Non-inferiority of dose reduction versus standard dosing of TNF-inhibitors in axial spondyloarthritis.** *ARTHRITIS RESEARCH & THERAPY.* 21(1):11. I.F.: 4.148

3. Barroso S, Morén C, González-Segura À, Riba N, Arnaiz JA, Manriquez M, Santana G, Blanco JL, Larousse M, Loncà M, Lazzari E, Llopis J, Mallolas J, Miró O, Carné X, Gatell JM, Garrabou G, Martínez E. **Metabolic, mitochondrial, renal and hepatic safety of enfuvirtide and raltegravir antiretroviral administration: Randomized crossover clinical trial in healthy volunteers.** *PLOS ONE.* 14(5):e0216712. I.F.: 2.776

Consortium Publications / I.F.: 1.975

1. De Jong W, Aerts J, Allard S, Brander C, Buyze J, Florence E, van Gorp E, Vanham G, Leal L, Mothe B, Thielemans K, Plana M, Garcia F, Gruters R; iHIVARNA consortium. **iHIVARNA phase IIa, a randomized, placebo-controlled, double-blinded trial to evaluate the safety and immunogenicity of iHIVARNA-01 in chronically HIV-infected patients under stable combined antiretroviral therapy.** *TRIALS.* 20(1):361. I.F.: 1.975

GRANTS FOR RESEARCH IN PROGRESS

Arnaiz J. **Plataforma de unidades de investigación clínica y ensayos clínicos. Spanish Clinical Research Network (SCReN).**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PT17/0017/0031
Duration: 01/01/2018-31/12/2020

Arnaiz JA. **Evaluating a combination of immune-based therapies to achieve a functional cure of HIV infection (HIVACAR).**
Sponsored by: European Commission. H2020-SC1
Duration: 01/01/2017-31/12/2021

Arnaiz JA. **Simvastatin and Rifaximin as new therapy for patients with decompensated cirrhosis (LIVERHOPE).**
Sponsored by: European Commission. H2020-SC1
Duration: 01/01/2017-31/12/2021

Arnaiz J. **Optimizing response to Li treatment through personalized evaluation of individuals with bipolar I disorder: the R-LiNK initiative.**
Sponsored by: European Commission. H2020-SC1
Duration: 01/01/2018-31/12/2022

Calvo G. **Plataforma de unidades de investigación clínica y ensayos clínicos.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PT13/0002/0009
Duration: 01/01/2014-31/12/2019

Calvo G. **Coste-efectividad y coste utilidad de una estrategia de transfusión de hematíes "liberal" vs. otra "restrictiva" en pacientes con infarto agudo de miocardio y anemia. Estudio REALITY.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI15/00915
Duration: 01/01/2016-31/12/2019

Calvo G. **Plataforma de unidades de investigación clínica y ensayos clínicos. Spanish Clinical Research Network (SCReN).**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PT17/0017/0031
Duration: 01/01/2018-31/12/2020

Calvo G. **ORTHOpedic randomized clinical trial with expanded bone marrow MSC and bioceramics versus autograpt in long bone nonUNIONs (ORTHOUNION).**
Sponsored by: European Commission. H2020-SC1
Duration: 01/01/2017-31/12/2021

Calvo G. **A testing bed for the development of high-risk medical devices.**
Sponsored by: European Commission. H2020-NMBP-IND-20
Duration: 01/01/2019-28/02/2023

T.2 Primary healthcare transversal research group

LOCATION
EAP Les Corts
EAP Comte Borrell
EAP Casanova

KEYWORDS
1. **Primary healthcare**
2. **Chronic diseases**
3. **Cardiovascular diseases & Cardiovascular risk factors**
4. **Health technology assessment**
5. **Autoimmune & Rheumatic diseases**

RELATED DISEASES
1. **Chronic diseases**
2. **Cardiovascular diseases**
3. **Autoimmune diseases**
4. **Digestive and liver diseases**
5. **Infectious diseases**

AWARDS
Instrumental action to intensify health professionals
Institution: PERIS 2016 2020 Pla estratègic de recerca i innovació en salut
Awardee/s: Mª Carme Alvira

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**6**	**16,032**	**2,67**	**33%**	**0%**



GROUP LEADER
Antoni Sisó Almirall (CAPSBE)
T. 93 227 99 24
asiso@clinic.cat

RESEARCHERS
Belchin Kostov (IDIBAPS)
Mª Carmen Alvira (CAPSBE)
Lluisa Benito (CAPSBE)
Marta Catalán (CAPSBE)
Joan Gené (CAPSBE)
Lluís González de Paz (CAPSBE)
Mireia Sans (CAPSBE)
Josep Miquel Sotoca (HCB)

PRE-DOCTORAL RESEARCHERS
Maria Antonieta Also (CAPSBE)
Laia Cayuelas (CAPSBE)
Laia Gené (CAPSBE)
Carmen Herranz (CAPSBE)
Angela Martínez Perez (CAPSBE)
Sònia Moreno (UB)
Aina Perelló (UB)

COLLABORATORS
Diana Diaz Rizzolo (IDIBAPS)
Imma Grau (HCB)
Manel Ramos Casals (HCB)

PROBLEM

Primary care is the patient's gateway to the healthcare system, and primary care centres are the areas where most of the population's health problems are solved.

It is an area where the relationship between patient, family doctor and reference nurse is crucial to preventing and curing diseases and promoting healthy habits.

APPROACH

The group conducts multidisciplinary and interdisciplinary research, essential for primary care professionals, since the daily life in their professional field requires a biological, psychological and social approach towards patients and their illnesses, both at the clinic and at home.

A comprehensive approach to the patient and long-term care throughout the patient's life allow the group to develop its own and/or collaborative studies to improve the knowledge of the population's characteristics and of diseases.

IMPACT

The research projects that the group has led have shown, among other things, that an abdominal aortic aneurysm (AAA) screening programme is viable, safe and feasible for early detection.

It has also proposed a new, one-hour blood pressure monitoring method to diagnose hypertension and classify sub-populations of hypertension. And it has found that an interdisciplinary and multifactorial intervention (with physical exercise, nutrition, polypharmacy review and social assessment) helps prevent fragility in pre-fragile patients and improves functional capacity, quality of life and adherence to the Mediterranean diet.

RESEARCH LINES

- 2.0. Health.
- Atherogenesis, risk factors and cardiovascular diseases.
- Chronic pain.
- Digestive and liver diseases.
- HIV infection-AIDS and other infectious diseases.
- Healthcare continuity and management of chronic diseases.
- Mental health, smoking and other addictions.
- The fragility-geriatrics-dependency-home care axis.

- Use of healthcare services.

- Use of medicines.

PUBLICATIONS

Originals / I.F.: 16.032

1. Cayuelas Redondo L, Ruíz M, Kostov B, Sequeira E, Noguera P, Herrero MA, Menacho I, Barba O, Clusa T, Rifa B, González de la Fuente EM, González Redondo E, García F, Sisó Almirall A, León A. **Indicator condition-guided HIV testing with an electronic prompt in primary healthcare: a before and after evaluation of an intervention.** *SEXUALLY TRANSMITTED INFECTIONS.* 95(4):238-243. I.F.: 3.365

2. Santesmases-Masana R, González-de Paz L, Hernández-Martínez-Esparza E, Kostov B, Navarro-Rubio M. **Self-Care Practices of Primary Health Care Patients Diagnosed with Chronic Heart Failure: A Cross-Sectional Survey.** *INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH.* 16(9):E1625. I.F.: 2.468

3. González-de Paz L, Kostov B, Alvira-Balada MDC, Colungo C, García N, Roura S, Blat E, Sierra-Benito C, Sotoca-Momblona JM, Benavent-Areu J, Sánchez E, Sisó-Almirall A, Eva Sanchez on behalf of the OMBP Group. **Effectiveness of a new one-hour blood pressure monitoring method to diagnose hypertension: a diagnostic accuracy clinical trial protocol.** *BMJ OPEN.* 9(5):e029268. I.F.: 2.376

4. Ramos-Casals M, Kostov B, Brito-Zerón P, Sisó-Almirall A, Baughman RP, Autoimmune Big Data Study Group. **How the Frequency and Phenotype of Sarcoidosis is Driven by Environmental Determinants.** *LUNG.* 197(4):427-436. I.F.: 2.231

5. Pérez-Alvarez R, Brito-Zerón P, Kostov B, Feijoo-Massó C, Fraile G, Gómez-de-la-Torre R, De-Escalante B, López-Dupla M, Alguacil A, Chara-Cervantes J, Pérez-Conesa M, Rascón J, Garcia-Morillo JS, Perez-Guerrero P, Fonseca-Aizpuru E, Akasbi M, Bonet M, Callejas JL, Pallarés L, Ramos-Casals M, SarcoGEAS-SEMI Registry. **Systemic phenotype of sarcoidosis associated with radiological stages. Analysis of 1230 patients.** *EUROPEAN JOURNAL OF INTERNAL MEDICINE.* 69:77-85. I.F.: 3.66

6. Baltaxe E, Cano I, Herranz C, Barberan-Garcia A, Hernandez C, Alonso A, Arguis MJ, Bescos C, Burgos F, Cleries M, Contel JC, de Batlle J, Islam K, Kaye R, Lahr M, Martinez-Palli G, Miralles F, Moharra M, Monterde D, Piera J, Ríos J, Rodriguez N, Ron R, Rutten-van Mölken M, Salas T, Santaeugenia S, Schonenberg H, Solans O, Torres G, Vargiu E, Vela E, Roca J. **Evaluation of integrated care services in Catalonia: population-based and service-based real-life deployment protocols.** *BMC Health Services Research.* 19(1):370. I.F.: 1.932

Review / I.F.: 7.145

1. Ramos-Casals M, Retamozo S, Sisó-Almirall A, Pérez-Alvarez R, Pallarés L, Brito-Zerón P. **Clinically-useful serum biomarkers for diagnosis and prognosis of sarcoidosis.** *EXPERT REVIEW OF CLINICAL IMMUNOLOGY.* 15(4):391-405. I.F.: 3.907

2. Brito-Zerón P, Kostov B, Superville D, Baughman RP, Ramos-Casals M, Autoimmune Big Data Study Group. **Geoepidemiological big data approach to sarcoidosis: geographical and ethnic determinants.** *CLINICAL AND EXPERIMENTAL RHEUMATOLOGY.* 37(6):1052-1064. I.F.: 3.238

Editorial / I.F.: 4.584

1. Acar-Denizli N, Kostov B, Ramos-Casals M, Sjögren Big Data Consortium. **The Big Data Sjögren consortium: A project for a new data science era**. *CLINICAL AND EXPERIMENTAL RHEUMATOLOGY.* 37 Suppl 118(3):19-23. I.F.: 3.238

2. Gené-Badia J. **Primary care: Change needed to maintain quality.** *ATENCIÓN PRIMARIA.* 51(5):266-268. I.F.: 1.346

Clinical guidelines / I.F.: 1.277

1. Caballeria L, Augustin S, Broquetas T, Morillas RM, Vergara M, Virolés S, Hernández MR, Serra I, Goday A, Vila L, Siso-Almirall A, Solans R, Fernández-Real JM, Carrión JA, Graupera I, Ginès P. **Recommendations for the detection, diagnosis and follow-up of patients with non-alcoholic fatty liver disease in primary and hospital care.** *MEDICINA CLINICA.* 153(4):169-177. I.F.: 1.277

Consortium Publications / I.F.: 3.66

1. Retamozo S, Acar-Denizli N, Rasmussen A, Horváth IF, Baldini C, Priori R, Sandhya P, Hernandez-Molina G, Armagan B, Praprotnik S, Kvarnstrom M, Gerli R, Sebastian A, Solans R, Rischmueller M, Pasoto SG, Valim V, Nordmark G, Kruize A, Nakamura H, Hofauer B, Giacomelli R, Fernandes Moça Trevisani V, Devauchelle-Pensec V, Atzeni F, Gheita TA, Consani-Fernández S, Szántó A, Sivils K, Gattamelata A, Danda D, Kilic L, Bartoloni E, Bombardieri S, Sánchez-Guerrero J, Wahren-Herlenius M, Mariette X, Ramos-Casals M, Brito-Zerón P; Sjögren Big Data Consortium. **Systemic manifestations of primary Sjögren's syndrome out of the ESSDAI classification: prevalence and clinical relevance in a large international, multi-ethnic cohort of patients.** *CLINICAL AND EXPERIMENTAL RHEUMATOLOGY.* 37 Suppl 118(3):97-106. I.F.: 3.66

GRANTS FOR RESEARCH IN PROGRESS

Sequeira E. **CRIB-MI: cribado en pacientes inmigrantes mediante Herramienta informática adaptada a la historia Clínica en Atención Primaria**
Sponsored by: Generalitat de Catalunya (PERIS).
Duration: 01/01/2017-31/12/2019

Sisó A. **Validez de un método de monitorización de la Presión Arterial de 1 hora frente a los métodos habituales: estudio de evaluación de tecnología diagnóstica.**
Sponsored by: Instituto de Salud Carlos III (ISCIII).
Duration: 01/01/2017-31/12/2019

T.3 Research in nursing

LOCATION
HCB building

KEYWORDS
1. **Older people**
2. **Chronic-care/Long-term care**
3. **Dementia**
4. **Best practice**
5. **Advance nursing practice**

RELATED DISEASES
1. **Dementia**
2. **Chronic diseases and ageing**

GROUP INVOLVED IN
AGAUR_SGR17: 01114

Original publications

YEAR	TOTAL	I.F.	Mean I.F.	Q1	D1
2019	**2**	**5,36**	**2,68**	**100%**	**50%**



GROUP LEADER
Adelaida Zabalegui (HCB)
T. 93 227 54 00 (Ext.: 3055)
azabaleg@clinic.cat

POST-DOCTORAL RESEARCHERS
Maria Carmen Alvira (HCB)
Teresa Faura (HCB)
Cindy Esther Frías (HCB)
Ester Risco (HCB)
Sonia Sevilla (HCB)

PRE-DOCTORAL RESEARCHERS
Claudia Casafont (HCB)
Marta García Pascual (HCB)
Miguel Ángel Giménez Lajara (HCB)
Mercedes Montoro (HCB)
Sara Pedregosa (HCB)

NURSING STAFF
Marta Farré (HCB)
Sandra Herranz (HCB)
Mercè Piazuelo (HCB)

ADMINISTRATIVE STAFF
Paula Rivera (HCB)

PROBLEM

The complexity and demands of caring for patients and their families require increased nursing research, to improve the medical care provided and solve problems.

APPROACH

The group's research is aimed at improving the quality of care for patients and their families at Hospital Clínic de Barcelona. The research lines are: quality/safety, prevention, pain management, therapeutic education, training of carers and the empowerment of patients and their families.

The above lines also include physical exercise and rehabilitation, maternity, mental health, care of cancer patients, transitions, chronic illness, and the care of elderly patients.

IMPACT

Thanks to the application of daily practice with scientific evidence to research, clinical nursing research brings improvements in quality of patient care, the health of the population, the experience of patients and their family carers, and professional satisfaction to staff.

The group has published national and international articles in prestigious journals and is cooperating in projects funded by the European Union and the Spanish Ministry of Economy and Competitiveness.

RESEARCH LINES

- Best practices
- Cronicity
- Dementia
- Empowerment
- Management (advanced practice)
- Safety

PUBLICATIONS

Originals / I.F.: 5.358

1. Lethin, Connie Hallberg, Ingalill Rahm Guiteras, Anna Renom Verbeek, Hilde Saks, Kai Stolt, Minna Zabalegui, Adelaida Soto-Martin, Maria Nilsson, Christer. **Prevalence of dementia diagnoses not otherwise specified in eight European countries: a cross-sectional cohort study.** *BMC GERIATRICS*. 19(1):172. I.F.: 2.818

2. Jean E, Sevilla Guerra S, Contandriopoulos D, Perroux M, Kilpatrick K, Zabalegui A. **Context and implementation of advanced nursing practice in two countries; an exploratory qualitative comparative study.** *NURSING OUTLOOK*. 67(4):365-380. I.F.: 2.540

GRANTS FOR RESEARCH IN PROGRESS

Risco E. **La coordinació de l'atenció social i sanitària en persones grans amb comorbiditat.**
Sponsored by: Fundació Infermeria i Societat. COIB_Projectes18
Duration: 01/01/2019-31/12/2019

Zabalegui A. **Cuidado de personas mayores con alteración cognitiva o demencia hospitalizadas en unidades de traumatologia.**
Sponsored by: Instituto de Salud Carlos III (ISCIII). PI17/01049
Duration: 01/01/2018-31/12/2020

DOCTORAL THESES

Zabalegui A, Cabrera E. **Els costos i els recursos utilitzats en l'atenció de les persones amb demència des d'una perspectiva social.**
PhD student: Marta Farré Almacellas

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Z Adelaida Zabalegui 428

CLÍNIC
BARCELONA
Hospital Universitari

UNIVERSITAT DE BARCELONA

CSIC
Consejo Superior de Investigaciones Científicas

Generalitat de Catalunya

Rosselló, 149-153
08036 Barcelona

www.idibaps.org
info@idibaps.org
www.facebook.com/idibaps
@idibaps

IDIBAPS

FUNDACIÓ CLÍNIC BARCELONA