

ANNUAL SCIENTIFIC REPORT 2020

**IdIB
Gi**

Institut
d'Investigació
Biomèdica
de Girona
Dr. Josep Trueta

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With the collaboration of:



Diputació de Girona

IdiB[®]
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About us

The Girona Biomedical Research Institute (IDIBGI) is a CERCA research center of the Generalitat de Catalunya whose purpose is to promote, develop, transfer, manage and disseminate biomedical research, scientific and technological knowledge, teaching and training in the areas of life and health sciences, mainly in the Girona area.

Despite having its origins in 1995 as Fundació Privada Dr. Josep Trueta the institute was founded as a public institution in 2005, when the Generalitat de Catalunya (Catalan Government) entered into its governing bodies. IDIBGI became formally a research institution from the public sector and CERCA center in 2010.

IDIBGI is structured with own research groups and research personnel in the field of health and biomedical research, and researchers from the Dr. Josep Trueta University Hospital (HUIT), the Institut Català de la Salut (ICS), the Institut d'Assistència Sanitària (IAS), the Institut de Diagnòstic per la Imatge (IDI), the Institut Català d'Oncologia (ICO), the Banc de Sang i Teixits (BST), the Universitat de Girona (UdG), the Escola Universitària de la Salut i Esports (EUSES) and the Institut d'Investigació en Atenció Primària (IDIAP) Jordi Gol in Girona.

The IDIBGI facilities at the Parc Hospitalari Martí i Julià in Salt host part of the research laboratories and personnel who, along with the rest of the researchers from the associated institutions, form multidisciplinary teams with different expertise, focused on finding synergies and solutions to the societal health challenges through translational research.

Organization

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SECRETARY

Míriam Gironès

IDIBGI Deputy Director

Research areas and groups

IDIBGI is composed of 21 research groups organized in 6 different areas.

AREA 1

CARDIOVASCULAR AND RESPIRATORY

- Cardiovascular genetics
- Research in vascular health
- Respiratory

AREA 2

MEDICAL IMAGING

- Medical imaging

AREA 3

MENTAL HEALTH

- Mental health and addictions
- Neurodevelopment disorders

AREA 4

METABOLISM AND INFLAMMATION

- Digestive disorders and microbiota
- Infections, sepsia and multiorgan dysfunction of the patient
- Internal medicine
- Metabolic and maternofetal
- Nephrology
- Nutrition, eumetabolism and health
- Obesity and cardiovascular risk in paediatrics

AREA 5

NEUROSCIENCE

- Aging, disability and health
- Cerebrovascular pathology
- Neurodegeneration and neuroinflammation

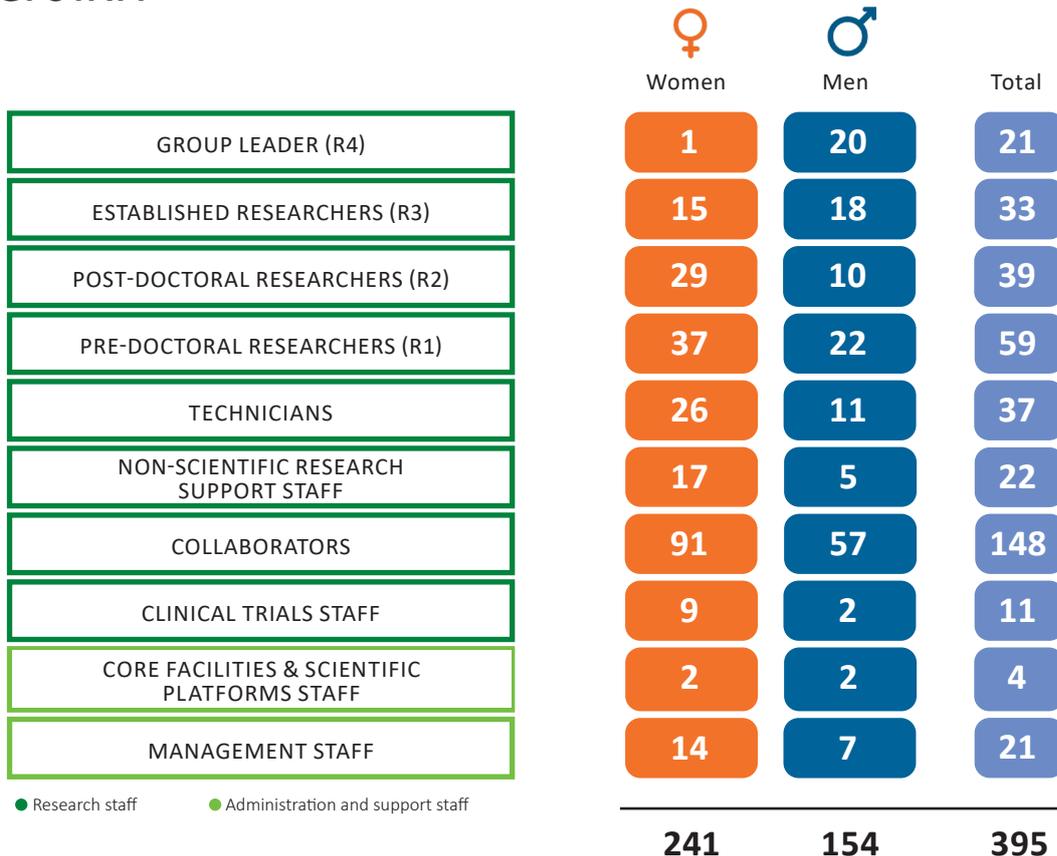
AREA 6

ONCO-HAEMATOLOGY

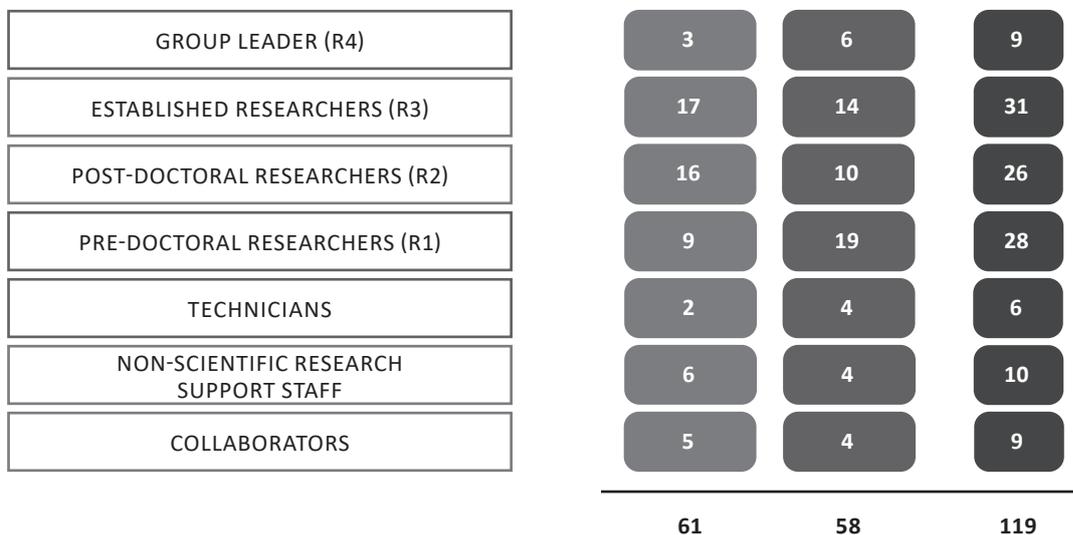
- Chromosomal replication
- Descriptive epidemiology, genetics and cancer prevention
- General and digestive surgery
- Haematology
- Metabolism and Cancer

Staff

IDIBGI STAFF

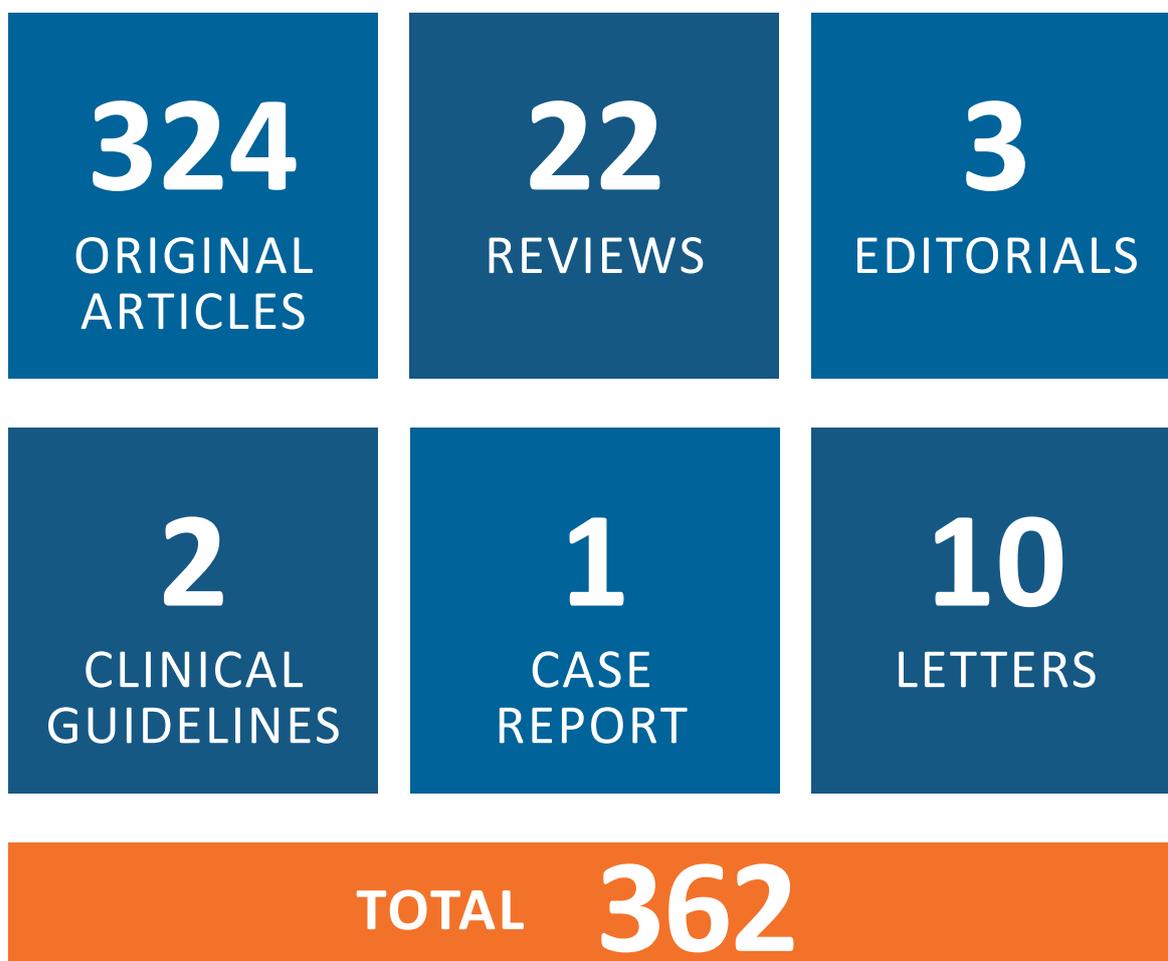


UNIVERSITY OF GIRONA STAFF



SCIENTIFIC OUTPUTS

Scientific publications



INDICATORS OF TOTAL PUBLICATIONS

	NUMBER	TOTAL IF	MEAN IF	%Q1	%D1
TOTAL	362	2128.77	5.9	57%	20%

Total publications: Total number of documents published in scholarly journals indexed in the ISI Web of Science

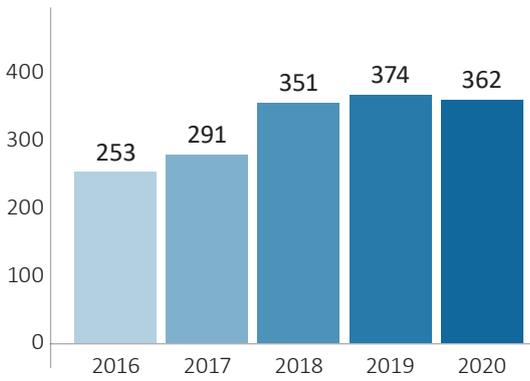
%Q1: % of publications published in journals ranked in the first quartile (top 25%) of their category as ranked by the 2019 Journal Citation Reports.

Mean IF: Mean impact factor (2019 Journal Citation Reports) of all the scientific publications

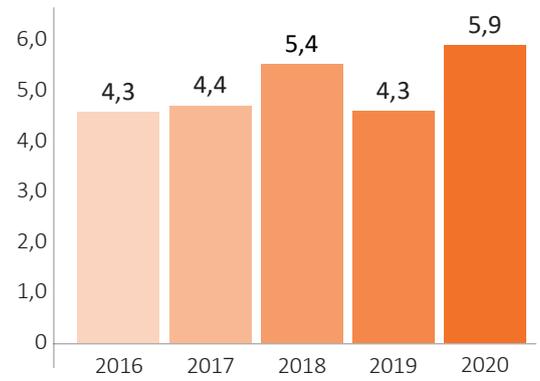
%D1: % of publications published in journals ranked in the first decile (top 10%) of their category as ranked by the 2019 Journal Citation Reports.

EVOLUTION OF NUMBER, MEAN IF, %Q1 AND %D1 OF TOTAL PUBLICATIONS

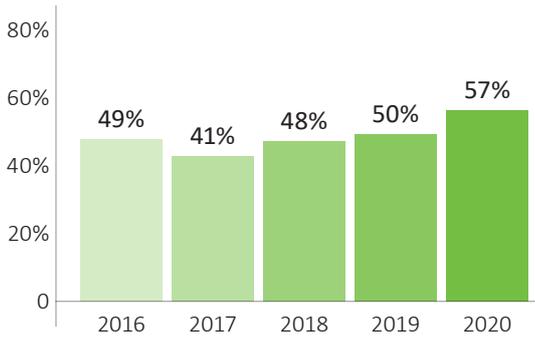
Number of total publications:



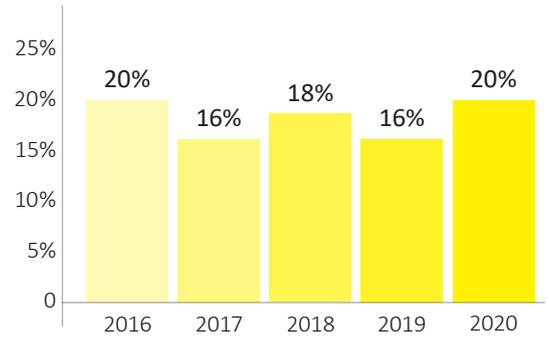
Mean IF:



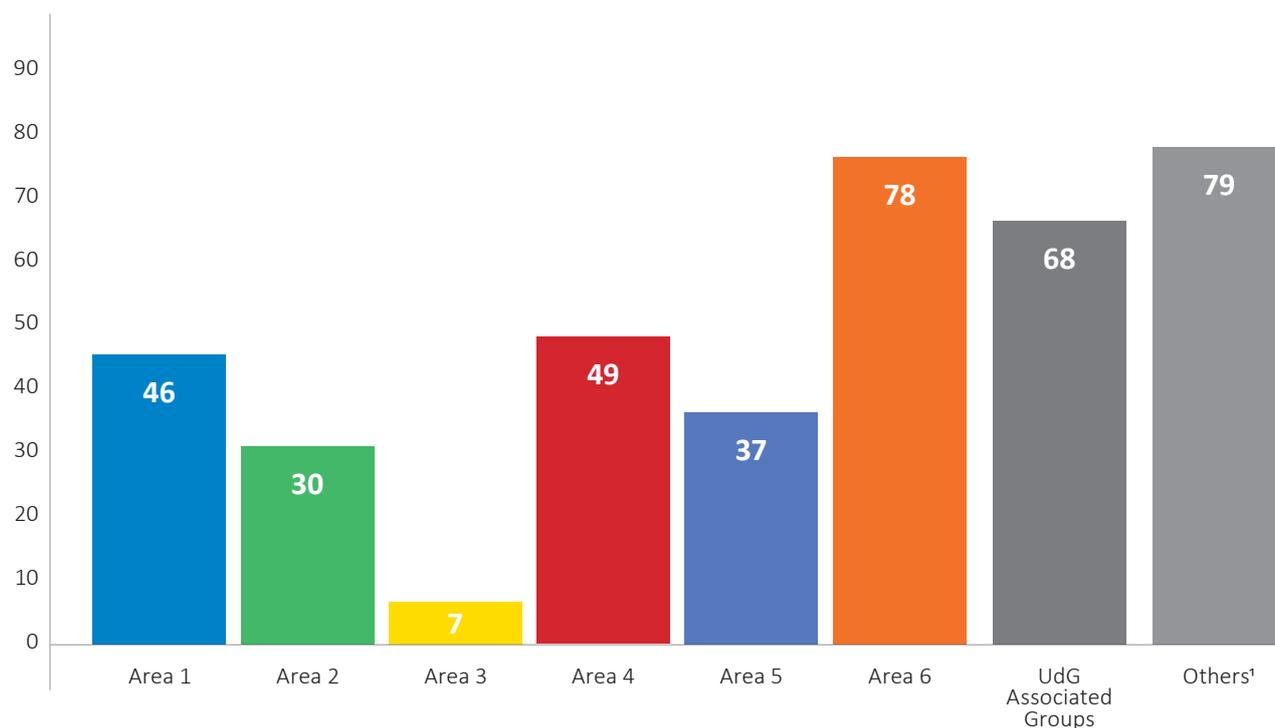
%Q1:



%D1:



NUMBER OF ORIGINAL ARTICLES, REVIEWS AND CLINICAL GUIDELINES BY AREA



Original articles, Clinical Guidelines and Reviews 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.

¹ Other publications from IDIBGI researchers not belonging to IDIBGI research groups or UdG associated groups.

ORIGINAL ARTICLES IN THE HIGHEST IMPACT FACTOR JOURNALS (IF>10)

27

JOURNAL	IF	TOTAL ORIGINAL ARTICLES
New England Journal of medicine	74,699	4
Lancet	60,392	2
Nature	42,778	1
Nature Genetics	27,603	1
The Lancet Diabetes and Endocrinology	25,340	1
JAMA Oncology	24,799	1
Circulation	23,603	1
Cell metabolism	21,567	1
Journal of the american college of cardiology	20,589	2
Journal of hepatology	20,582	1
Annals of oncology	18,274	3
Alzheimer's & Dementia	17,127	1
The Lancet Gastroenterology and Hepatology	14,781	1
Journal of Thoracic Oncology	13,357	1
Microbiome	11,607	2
Genome medicine	10,675	1
Neuro-Oncology	10,247	1
Annals of Surgery	10,130	1
Clinical cancer research	10,107	1
TOTAL		27

6

Number of Originals with
IDIBGI main contribution

AUTHORS	TITLE	REFERENCE	IF
Fort R, Carmona C, Osca G, Marcos R, Puigdemont M, Biarnes J, Lopez S, Garcia A, Guardeno R	Incidence and survival of pancreatic neuroendocrine tumours in Girona, Spain.	Ann Oncol. 2020. 31. p. 169-169.	32,976
Garcia A, Quintana M, Puigdemont M, Carbajal W, Sanchez RG, Anna V, Nica A, Villavicencio A, Vilardell L, Marcos R	Incidence and trends of biliary tract cancer in Girona: A population-based study from the Girona Cancer Registry (1994-2016).	Ann Oncol. 2020. 31. p. 160-161.	32,976
Solans M, Chan DSM, Mitrou P, Norat T, Romaguera D.	A systematic review and meta-analysis of the 2007 WCRF/AICR score in relation to cancer-related health outcomes.	Ann Oncol. 2020. 31. (3):p. 352-368.	32,976
Arnoriaga M, Mayneris J, Burokas A, Contreras O, Blasco G, Coll C, Biarnés C, Miranda R, Latorre J, Moreno JM, Castells A, Sabater M, Palomo ME, Puig J, Pedraza S, Gich J, Pérez V, Ricart W, Moya A, Fernández X, Ramió L, Pamplona R, Sol J, Jové M, Portero M, Maldonado R, Fernández JM.	Obesity Impairs Short-Term and Working Memory through Gut Microbial Metabolism of Aromatic Amino Acids.	CELL METAB. 2020. 32. (4):p. 548-548.	27,287
Arnoriaga M, Mayneris J, Burokas A, Pérez V, Moya A, Portero M, Ricart W, Maldonado R, Fernández JM.	Incidence and trends of biliary tract cancer in Girona: A population-based study from the Girona Cancer Registry (1994-2016).	Microbiome. 2020. 8. (1):p. 59-59.	14,650
Mayneris J, Arnoriaga M, Luque D, Priego F, Pérez V, Moya A, Burokas A, Maldonado R, Fernández JM.	Gut microbiota steroid sexual dimorphism and its impact on gonadal steroids: influences of obesity and menopausal status.	Microbiome. 2020. 8. (1):p. 136-136.	14,650.

DOCTORAL THESES

17

DOCTORAL THESES DEFENDED IN 2020

3

THESES WITH EUROPEAN MENTION

THESIS AUTHOR	TITLE	THESIS DIRECTORS
 Èric Cortada Almar	Trafficking and Function of the Voltage-Gated Sodium Channel Beta2 Subunit	Ramon Brugada, Marcel Vergés
 Pedro Enrique Guerrero Barrado	Altered glycosylation in pancreatic cancer: development of new tumor markers and therapeutic strategies	Esther Llop, Rosa Peracaula
 Jèssica Latorre Luque	Relevance of the epigenetic regulation exercised by hepatic micrnas in the fatty liver arena: from the bedside to the bench	José Manuel Fernández-Real, Francisco José Ortega
Jaime Aboal Viñas	Creació i validació d'un model de predicció per al càlcul del temps d'antigoplàstica primària en pacients amb infart agut miocardi que són traslladats a un hospital amb disponibilitat d'hemodinàmic	Rafel Ramos, Ramon Brugada
Mostafa Abobakr Abdelmajed Salem	Deep learning methods for automated detection of new multiple sclerosis lesions in longitudinal magnetic resonance images	Joaquim Salvi, Xavier Lladó
Omar Aitor Andrés Navarro	Indicació selectiva de "shunt" en l'endoarteriectomia carotídia, un nou mètode	Joaquín Serena, Yolanda Silva
Ma. del Carmen Auñón Sanz	Estudi epidemiològic poblacional de la incidència, tendència i supervivència de les neoplàsies limfoides a la província de Girona durant un període de 20 anys (1996-2015)	Rafael Fuentes, Rafael Marcos, Maria Aranzazu
Elisabet Balló Peña	Validesa del Sistema d'Informació pel Desenvolupament de la Investigació a Atenció Primària (SIDIAP) en l'estudi de malalties vasculars i estudi de la efectivitat de les estatinen en la reducció de mortalitat i malalties vasculars en la població major de 74 anys	Rafael Ramos
Aleix Beneyto Tantiña	Robust and fault-tolerant strategies for controlling blood glucose in patients with type 1 diabetes	Josep Vehí
Jose Bernal Moyano	Deep learning for atrophy quantification in brain magnetic resonance imaging	Xavier Lladó, Arnau Oliver
Pablo de Loma-Osorio Ricón	Projecte "Girona Territori Cardioprotegit": Avaluació del funcionament dels desfibril·ladors públics	Ramon Brugada
Iván Galván Femenía	Compositional methodology and statistical inference of family relationships using genetic markers	Jan Graffelman, Carles Barceló
Jordi Hernández Suriñach	Efectes d'un programa d'intervenció psicoeducativa en les actituds i coneixements. Sexuals i afectius de persones amb discapacitat intel·lectual que assisteixen a un servei de teràpia ocupacional	Montserrat Planes, Ana Belén Gómez, Esther Sánchez
Kaisar Kushibar	Automatic segmentation of brain structures in magnetic resonance images using deep learning techniques	Arnau Oliver, Xavier Lladó, Sergi Valverde
Eduardo Maldonado Manzano	Depresión, ansiedad y calidad de vida percibida en pacientes fumadores con ictus agudo	Rosa Suñer, Joaquín Serena, Maria Eugènia Gras
Cristina Planella Farrugia	Efectes de l'exercici de resistència de baixa intensitat i del suport nutricional sobre la sarcopènia i la inflamació crònica de baix grau en persones de 60- 75 anys	José Manuel Fernández-Real, Wifredo Ricart
Mireia Vila Currius	Avaluació de la utilitat del monitoratge farmacocinètic dels fàrmacs anti-TNF en pacients amb malaltia inflamatòria intestinal en dos hospitals amb diferent grau d'especialització.	Xavier Aldeguer

Knowledge transfer and innovation

CLINICAL GUIDELINES



AUTHOR	TITLE	REFERENCE	IF	Q/D1
Estella Á, Saralegui I, Rubio O, Hernández A, López V, Martín MC, Cabré L, Masnou N, Recuerda M, Monzón JL.	Update and recommendations in decision making referred to limitation of advanced life support treatment	MED INTENSIVA. 2020. 44. (2):p. 101-112	2,491	Q3
Ballesteros MÁ, Hernández A, Estella Á, Jiménez JJ, González de Molina Ortiz FJ, Sandiumenge A, Vidal P, de Haro C, Aguilar E, Bordejé L, García I, Bodí M, García M, Párraga MJ, Alcaraz RM, Amézaga R, Burgueño P, Grupos de Trabajo de la Sociedad Española de Medicina Intensiva CYU, Grupos de Trabajo de la Sociedad Española de Medicina Intensiva CYU, Grupo de Trabajo de Cuidados Intensivos Cardiológicos YRCP, Grupo de Trabajo de Cuidados Intensivos N, Grupo de Trabajo de Donación Trasplantes Y, Grupo de Trabajo de Enfermedades Infecciosas Sepsis Y, Grupo de Trabajo de Evaluación de Tecnologías Metodología de la Investigación Y, Grupo de Trabajo de Insuficiencia Respiratoria A, Grupo de Trabajo de Metabolismo Nutrición Y, Grupo de Trabajo de Neurointensivismo Trauma Y, Grupo de Trabajo de Planificación OYG, Grupo de Trabajo de Sedación AYD, Grupo de Trabajo de S, Grupo de Trabajo de T, Grupo de Trabajo de Transfusiones Hemoderivados Y, Grupo de Trabajo de Transporte C, Junta D, Rubio O, Rodríguez MÁ, Fraile V, Fuset MP, Zapata L, Montesinos de la Peña MG, Ortega A, Navas A, Arias MD, Pont T, Maraví E, Rubio JJ, Del Río F, Catalán M, Díaz E, Iglesias D, Riera M, Vera C, Lorencio C, González C, Riveiro M, Enríquez P, Igeño JC, Cruz M, Trenado J, Riera M, Carlos J, Sánchez M, Giménez C, Priego J, Broch MJ, de la Fuente MV, Martín MC, Palacios D, Fernández A, Socías A, Baldirà J, Gero M, Quintana M, Marcos P, Serrano A, Argudo E, Ferrer R, Castellanos Á, Trenado J, Fraile V, Herrera M, Ramírez P, Rascado P, de la Oliva LL, Martín MC	Recommendations of the Working Groups from the Spanish Society of Intensive and Critical Care Medicine and Coronary Units (SEMICYUC) for the management of adult critically ill patients in the coronavirus disease (COVID-19)	MED INTENSIVA. 2020. 44. (6):p. 371-388	2,491	Q3

NON-INDEXED

ICO-ICS PRAXIS. Para el tratamiento médico y con irradiación de cancer colorrectal. Marga Osorio. 2020 junio

ICO-ICS PRAXIS. Para el tratamiento de la mielofibrosis. Montserrat Negre. 2020 abril.

Guies mèdiques de la Societat Catalana de Neurologia: Diagnòstic i tractament de l'Esclerosi Múltiple. Societat Catalana de Neurologia. Autors: Lluís Ramió-Torrentà, René Robles, Gary Alvarez, etc. 2020

Merchan-Ruiz M, González-del-Río M, Ramió-Torrentà L, Del Olmo M, Vilalta T. Guia Sala de tractaments UNIEM-TG. Institut d'Assistència Sanitària. 2020

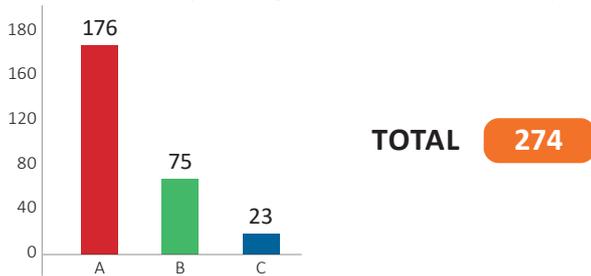
CLINICAL TRIALS

Clinical trials performed at the IDIBGI-associated hospitals are an example of translation and return to the patient, in terms of improved patient care and access to cutting-edge therapies or technologies.

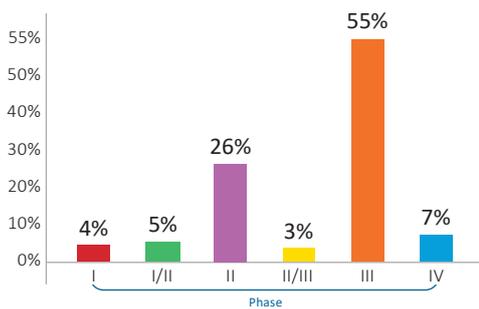
In 2020, 65 new clinical trials were opened and 274 clinical trials were active, all promoted either a) by the pharmaceutical industry, b) non-profit organizations or c) internally. Most of the active trials correspond to phase III (55%).

The data below summarize the number of active clinical trials in 2020.

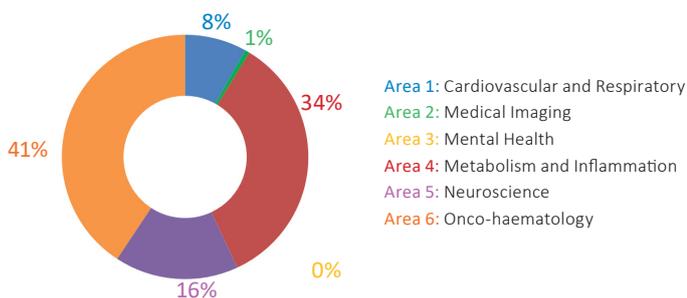
Active clinical trials promoted by the (A) pharmaceutical industry, (B) non-profit organisations and (C) internally.



Active clinical trials by phase¹



By scientific areas most of the active trials¹ are performed in the area of onco-haematology (41%)



¹ Clinical Trials promoted by the pharmaceutical industry, by non-profit organizations and internally

PATENTS AND LICENSE AGREEMENTS



IDIBGI currently manages 9 patent families, which represent about 40 patents, 2 of which are utility models.

During 2020, 4 new patent applications were filed: 2 PCT, 1 EP, 1 US patents. The total number of license agreements in 2020 was 3.

SPIN-OFF PORTFOLIO

IDIBGI researchers have founded 2 spin-offs since the foundation of the institute, 1 of which is still active.

Spin-off from IDIBGI researchers where IDIBGI participates as shareholder:

GOODGUT

<https://www.goodgut.eu/>

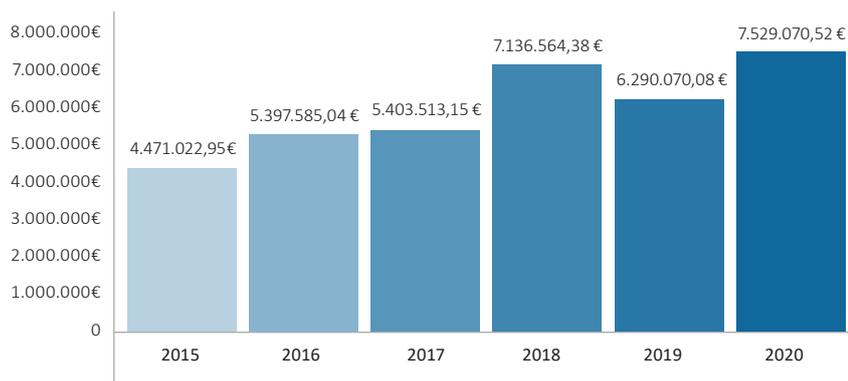
Dr. Xavier Aldeguer



GoodGut is a biotechnology start-up that emerged from the IDIBGI Digestive Diseases and Microbiota research group led by Dr. Xavier Aldeguer and the Universitat de Girona (UdG). GoodGut is engaged in the research and development of non-invasive systems that support the diagnosis and treatment of digestive diseases based on intestinal microbiota as a determining factor.

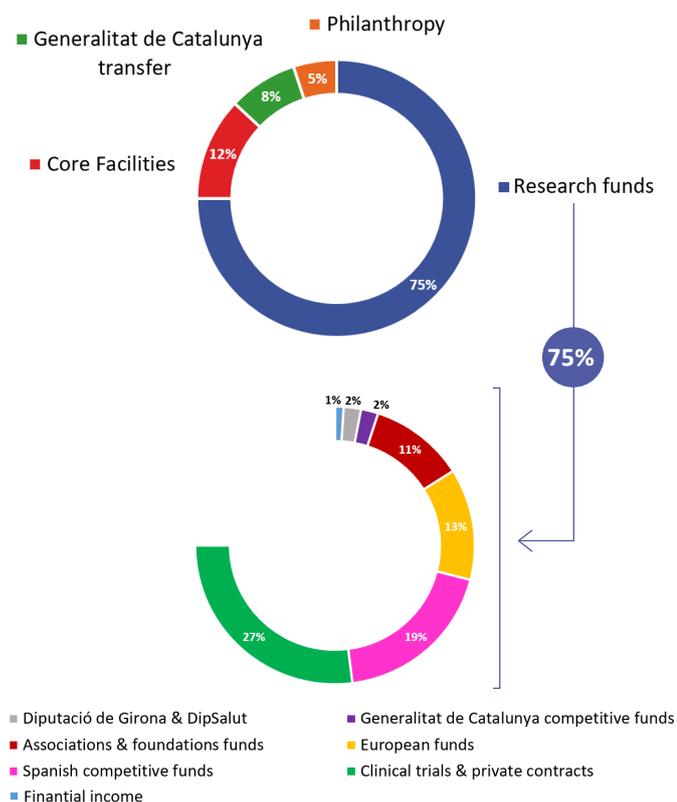
Funding

ANNUAL BUDGET

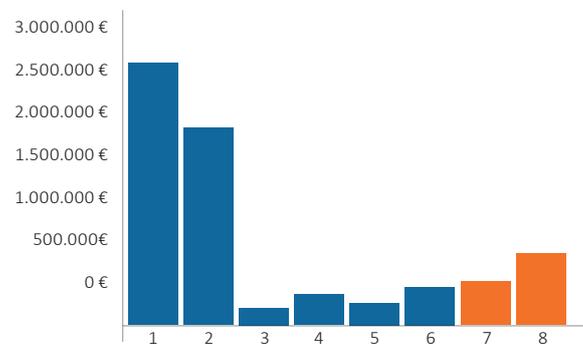


FUNDING SOURCES AND EXPENSES

FUNDING SOURCES



EXPENSES



- Projects**
- 1 Research Staff
 - 2 Research Consumables & external works
 - 3 Research Publications & academic training
 - 4 Research Travelling costs & others services
 - 5 Research Transfers to other public institutions
 - 6 Research Equipment
- Support**
- 7 Administration Running costs
 - 8 Administration & Research support Staff

Projects

COMPETITIVE PROJECTS

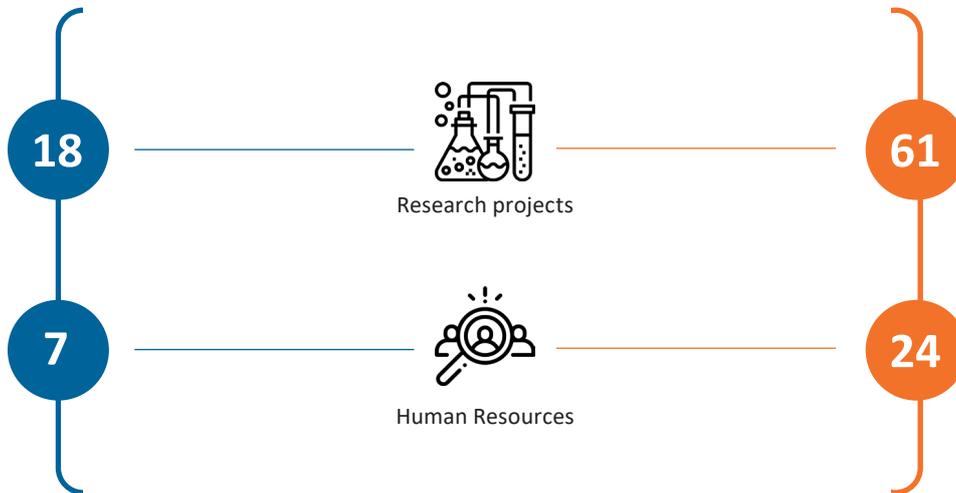
25

NEW COMPETITIVE PROJECTS IN 2020

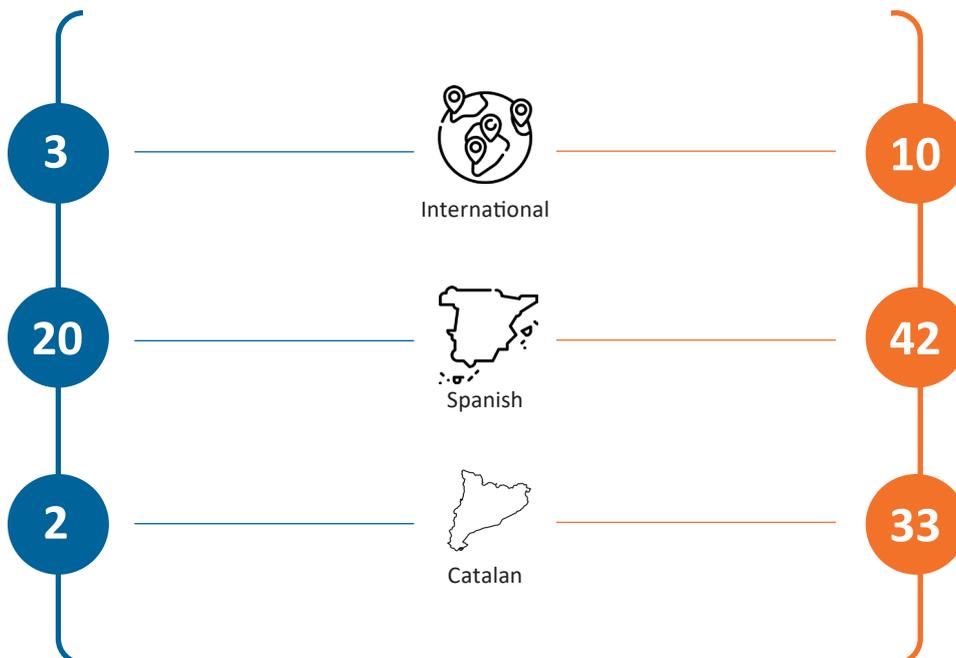
ACTIVE COMPETITIVE PROJECTS IN 2020

85

TYPE OF FUNDING:



FUNDING ORIGIN:



INSTITUTIONAL PROJECTS

HUMAN RESOURCES STRATEGY FOR RESEARCHERS



<https://idibgi.org/hr-excellence-in-research/>

On the 31st of March 2015 the Girona Biomedical Research Institute (IDIBGI) received the "HR Excellence in Research Award". This award and its logo reflect the IDIBGI's commitment to continuously improve its human resources policies and practices in line with the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers (Charter & Code).

The Girona Biomedical Research Institute endorsed the Charter and Code in May 2011, and joined the Fourth Cohort of the Institutional Human Resources Strategy Group in 2012. Thereon the IDIBGI started implementing their own Human Resources Strategy for Researchers (HRS4R).

In 2019 the Action Plan 2014-2018 concluded and a new gap analysis and Action Plan for 2020-2023 was developed by the HRS4R Working Group. The OTM-R checklist was reviewed as well. The Action Plan 2020-2023 was sent to the European Commission on November 2020 for their revision and renewal of the "HR Excellence in Research Award".

During 2020 some actions were concluded such as:

1. The document 'Award renewal: interim assessment & Action Plan 2020-2023' was designed and implemented
2. The drafting of the document "IDIBGI Training plan" was initiated
3. The document 'IDIBGI's biosafety manual' was designed and implemented
4. IDIBGI recruited a Laboratory and Operations Manager
5. The document 'Labour Risks Documentation and Plan' was designed and implemented
6. A survey on training needs among IDIBGI's personnel was performed

Most of these actions were possible thanks to the engagement of many researchers and other IDIBGI staff belonging to specific working groups or committees.

GO-HERO

<https://goherohealth.com/>



Internationalization is a strategic and transversal goal of the IDIBGI present in the current IDIBGI's strategic plan.

In 2019, the International Projects Office, along with the respective units of the Biomedical Research Institutes of Tarragona (IISPV) and Lleida (IRBLleida), joined forces on the GO-HERO project (Health European Research Offices). GO-HERO consortium priorities:

- Reinforce international project departments
- Design and implement a training plan for the internationalization of research
- Increase the international visibility of the institutes.

Highlighted 2020 activities:

- Organization of the 4-day training "Step-by-step strategies for developing successful grant applications for European Research and Innovation Collaborative Projects" by Nikolaos Floratos, international coach and expert on Horizon 2020
- CrowdHelix membership (Open Innovation platform with international researchers and innovating companies, focused on Horizon Europe partnerships)
- "Introduction to EU calls" and "Impact in European Projects" by Sara Hurst and "Open Science" by Ignasi Labastida workshops.

ISO 9001:2015 CERTIFICATION



The ISO 9001 Standard is the most widespread quality management tool in the world. Its main goal is to increase customer satisfaction through continuous improvement processes. It is designed to ensure that organizations guarantee their ability to offer services that meet the demands of their clients. This international standard promotes the adoption of a process-based approach when developing, implementing, and improving the effectiveness of a quality management system. The main benefits derived from the ISO 9001 certification for organizations are: systematization of operations, improvement of the internal organization, generation of a greater level of confidence internally and externally, an increase in competitiveness and compliance with legislation and regulations related to products and services, among others. In 2019 IDIBGI obtained the ISO 9001:2015 certification for a) Research support services: Quality policy and Quality procedures and b) Biobank's Quality policy. In 2020 IDIBGI passed the first follow-up audit successfully.

Networks

SPANISH BIOMEDICAL NETWORKS

ISCIII NETWORKS

CIBER



3 IDIBGI researchers are group leaders within CIBER networks:

CIBER-OBN: Obesity and nutrition	1
CIBER-CV: Cardiovascular	1
CIBER-ESP: Public Health and Epidemiology	1

RETICS

3 IDIBGI researchers are group leaders within RETICS networks:

INVICTUS + ISCIII: Cerebral Vascular Diseases	1
REEM ISCIII: Multiple Sclerosis	1
REDIAPP ISCIII: Prevention actions and health promotion	1

Core facilities

BIOBANK

<https://idibgi.org/en/biobanc/>
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José Manuel Fernández-Real, MD, PhD
 Scientific director

Luís Gallart, PhD
 Coordinator

Bio Banc

The IDIBGI Biobank is the research core facility responsible for the management of human biological samples and associated data for research. This management includes collection, processing, storage, and transfer of samples to promote quality biomedical research. It is managed by the Institut d'Investigació Biomèdica de Girona Dr Josep Trueta (IDIBGI) and is linked to two hospitals: the University Hospital of Girona Dr. Josep Trueta (HUGJT) and the Santa Caterina Hospital at Institut d'Assistència Sanitària (IAS).

Its goal is to contribute to the development of biomedical research of excellence, making available to the scientific community biological samples under certain legal, technical, organizational guarantees and respecting the rights of the donors.

The IDIBGI Biobank was authorized by the Department of Health in October 2013 and is enrolled in the Carlos III Health Institute National Register of Biobanks. All the procedures performed at the Biobank are carried out under ISO 9001:2015 certification.

The IDIBGI Biobank Catalogue of samples comprises the samples organized into two nodes:

- **Central Node**, which contains several sample collections collected by IDIBGI researchers and HUJT and Santa Caterina Hospital services, as well as a COVID collection
- **Tumour bank Node**, which contains tumour tissue and non-peripheral tumour tissue samples

A summary of IDIBGI's 2020 Biobank activities and indicators is shown in the table below:

TOTAL:

BIOBANK SAMPLES	SAMPLE TRANSFERS	NR. COLLECTIONS
250.653	3.347	49

2020:

NR. DONATIONS TO BIOBANK	NEW COLLECTIONS	NEW DONORS
2.367	4	1.477
NEW INTERNAL USERS	NEW EXTERNAL USERS	COVID-19: DONORS AND DONATIONS
4	3	502 / 842

Activity during 2020 was severely affected by the health crisis caused by the SARS-CoV-2 pandemic. In March and April 2020 the Biobank adapted its facilities and equipment to Biosafety level-2 requirements and became IDIBGI's reference laboratory for the processing of human primary samples and COVID samples. Staff was trained and biosafety protocols were implemented to safely handle all human samples.

The COVID collection was created and approved by the Clinical Ethics Committee in April 2020 in collaboration with the Clinical Laboratory of the Girona Health Region. The first samples were collected in May 2020. In June 2020 the Biobank resumed its usual activity.



OUTREACH ACTIVITIES

Courses, conferences and seminars

COURSES ORGANIZED BY IDIBGI DURING 2020:

Curso de Ecocardiografía Básica para médicos no Cardiólogos
Dr. Sergio Moral
December, 18 - March, 6

Programa docente de ruta asistencial de un paciente con insuficiencia cardíaca
Dr. Aleix Fort
February, 2

Jornades Actualització Malaltia Inflamatòria i Fetge
Dr. Xavier Aldeguer
February, 10

Masterclass: Keys for entrepreneurship in life sciences life beyond postgraduate
Dr. Jordi Naval
February, 18

XVII Curso de Formación en Cirugía Esofagogastrica para Médicos Residentes de CGAD 4º y 5º año
Dr. Marcel Pujadas
March, 25-26-27

III Jornada Immunoteràpia i Teràpies del Càncer
Dr. Joaquim Bosch
June, 11 to 25 and July 2

Jornada Webinar Esclerosi múltiple i COVID19: on estem i què podem esperar?
Dr. Lluís Ramió
July, 2

Jornada Cirurgia Tiroides
Drs. Jordi Gironès and José Ignacio Rodríguez
September, 15

Curs actualització en farmàcia hospitalaria 2020
Dr. Rosa Sacrest
October - December

Jornada Cirugía Hepática
Dr. Santiago López Ben
December, 14

Jornades Gironines del Mediterrani en EM Virtual 2020
Dr. Lluís Ramió
December, 15-16-17

Webinar dirigit a persones i famílies amb esclerosi múltiple: "Esclerosi Múltiple progressiva: on estem i cap a on anem?"
Dr. Lluís Ramió
December, 18

Programa para la coordinación en el manejo de la insuficiencia cardíaca entre la atención primaria y especializada
Dr. Marco Paz Bermejo
December 2020 - March 2021

Programa adaptació de la Unitat de Insuficiència Cardíaca al Momentum Digital.
Dr. Aleix Fort
December, 14

Formació Continuada Hematologia
Dr. David Gallardo and Dr. Tuset

CONFERENCES ORGANIZED BY IDIBGI DURING 2020:

How is the UE fostering a higher impact for our research?
Dr. Rosina Malagrida
January, 14

Dominant ataxias: a paradigm of the impact of genetics on neurodegenerative diseases.
Dr. David Genís
March, 3

Communication and public engagement

MEDIA RELATIONS

- 24** Press releases
- 9** Interviews scheduled

SOCIAL MEDIA

-  Twitter
1604 followers
-  Instagram
679 followers
-  LinkedIn
1625 followers
-  Youtube
52 subscribers

FEATURED NEWS

- February
Launch of an IDIBGI study on the lifestyle of 1,000 Girona residents to identify risk factors and healthy habits
- Having breast cancer predisposes you to developing gynaecological cancer
- March
The company HIPRA (Amer) hands over biotechnology laboratories and equipment to the health authorities
- May
IDIBGI research discovers antibodies that block virus infection in cells
- June
The Girona Biomedical Research Institute, an European reference against obesity
- Development of a system to improve prediction of breast cancer survival
- July
ICO Girona and IDIBGI investigate whether a substance from milk thistle is useful against the coronavirus
- October
IDIBGI researchers demonstrate the link between intestinal microbes and recent memory

VISITS

- 3** Secondary Schools
96 students
- 8** Meetings and donors
32 people
- 6** Institutions
- 8** IDIBGI Friends

ACTIVITIES ORGANISED

- 2** Fundraising events
500 visitors
- 6** Solidarity campaigns

FUNDRAISING

- 6** Agreement signatures
- 2** Material donations

IDIBGI FRIENDS



PUBLIC INSTITUTIONS



MEDIA PARTNERS



RESEARCH AREAS AND GROUPS

CARDIO- VASCULAR AND RESPIRATORY

CARDIOVASCULAR GENETICS
RESEARCH IN VASCULAR HEALTH
RESPIRATORY GROUP

Cardiovascular genetics



Recognised as a consolidated research group by AGAUR (Generalitat de Catalunya) - 2017SGR804.

MEMBER OF
CIBER-CV

KEYWORDS

Sudden Cardiac Death; Arrhythmia; Ion channels, Genetics; Cell Biology; Cell Biology; Epigenomics; iPSCs

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Laia Nogué
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OVERVIEW

The aim of this point is to explain briefly the research group Cardiovascular

Genetics Centre (www.gencardio.org)

The CGC is a research laboratory created in 2008 and dedicated to the investigation of sudden cardiac death. The CGC is hosted by the Institute of Biomedical Research of Girona (IDIBGI, Spain), which embraces all the biomedical research groups at the University of Girona and Trueta and Santa Caterina Hospitals.

CGC's research aims to improve understanding of the basic mechanisms associated factors and causes of heart disease and sudden death and improve diagnostic tools, prevention and treatment.

This scientific area is divided into an area of research in an area of clinical and basic research.

CLINICAL RESEARCH

The clinical research program leverages collaboration of hospitals and health centers to study the risk factors, possible treatments and prevention methods.

BASIC RESEARCH

Studies to better understand the biological basis of diseases associated with sudden death. The laboratory is involved in several projects to understand the pathophysiological basis of sudden death from six major areas: genetics, epigenetics, histology, electrophysiology, membrane traffic and proteomics.

DIAGNOSIS

The diagnostic laboratory of cardiovascular genetics is the reference laboratory in its field in Catalonia, since 2015. The laboratory provides tools to help clinicians in the diagnosis of inherited cardiovascular diseases

RESEARCH TOPICS

INHERITED CARDIOVASCULAR DISEASES

1. GenCardio has several projects involving the identification of genetic causative and modulating factors associated with the risk of inherited cardiac diseases. Several of these diseases are associated with sudden cardiac death in the young. We work both with structural heart disease (cardiomyopathies), as well as pure electrical diseases (channelopathies). At present we are also investigating the genetic factors associated with predisposition to myocarditis, to myocardial infarction, to thrombosis as well as to predisposition to cardiac insufficiency

from chemotherapy. The group has developed several genetic panels to performs these studies.

2. MOSCAT. Sudden death in Catalonia. Since 2012 we are performing the genetic analyses in all sudden cardiac deaths before the age of 50, in collaboration with the Institute of Legal Medicine. This project, a systematic approach to diagnosis of unexplained sudden death, is unique in the world.
3. Sudden death in the neonate. In collaboration with Sant Joan de Deu Hospital we aim at unravelling the genetic basis of sudden infant death syndrome.
4. Sudden death in epilepsy. In collaboration with the Catholic University of Rome, we work on the identification of the genetic basis of sudden death in patients with epilepsy.

GENETIC VARIABILITY IN REGULATORY REGIONS

6. We are characterizing the genetic variability in regulatory regions in genes associated with Brugada syndrome. This work will provide important information in causality as well as modulation of symptoms in this lethal disease.

FUNCTIONAL STUDIES

7. Animal model of arrhythmogenic cardiomyopathy. We have developed a mouse model of AC in order to understand the role of exercise and age in the progression of the disease.
8. Cardiomyocyte-derived IPs for the study of inherited arrhythmias. The basic electrophysiology team is currently using CM-IPs to investigate the functional effects of genetic variation in sudden cardiac death in several genetic diseases (Brugada syndrome, Catecholaminergic polymorphic ventricular tachycardia, etc)
9. Molecular biology of AC. Using CRISPR technology we are investigating the role of several desmosomal variants in the development of the disease, as well as the pathophysiological mechanisms which cause the cascade of events towards fibrofatty replacement of myocardial tissue.
10. Protein trafficking to membrane. Some of the genetic variants will not enable the ion channel to reach the membrane. This trafficking defect has been associated with sudden cardiac death. We are investigating the role of channel beta subunits in the trafficking of the ion channels.

CLINICAL PROJECTS

11. Girona Vital Project. We have developed one of the most important public access defibrillation programs in Europe to evaluate the benefits of this program in the prevention of sudden cardiac death. Cardiac rehabilitation Projects. We have several projects evaluating the role of cardiac rehabilitation in the prevention of further cardiac events.
12. Resuscitated cardiac arrest: we investigate the pathophysiology of post cardiac arrest syndrome including, temperature management, acute hemodynamic features and factors associated to neurological outcome.

13. Acute coronary syndromes. Since 2012 we study the clinical characteristics, risk profile and outcomes of patients presenting to ER with acute chest pain, and evaluate the safety and diagnostic accuracy of an early discharge protocol based on high sensitivity troponins.
14. ST elevation acute myocardial infarction (STEMI): we have developed a predictive model to calculate STEMI diagnosis-guire cross time.
15. Non ST elevation acute coronary syndrome: a registry to evaluate the bleeding risk related with antithrombotic therapy in these patients.
16. New technologies applied to the acute myocardial infarction (AMI) network: we are working to improve the AMI network with new technologies. Valvular heart disease. The imaging group is investigating several parameters associated with the progression of valvular heart disease, in order to better identify preventive mechanisms.
17. Cardiac insufficiency associated with chemo and radiotherapy. We are investigating imaging parameters which can predict development of cardiac failure in its early stages to adopt preventive therapies Handgrid manoeuvres in SVT: We use a simplified protocol to induce SVT and to perform a differential diagnosis of the arrhythmia.
18. Leadless pacemaker and tricuspid function: We analysed tricuspid valve function pre and post pacemaker implant.
19. Anticoagulation in flutter: We ablate typical flutter and perform follow up of trombo embolics events in patient with and without atrial fibrillation.

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INDEXED/ I.F: 191.52

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GRANTS

Project: Muerte Súbita Inexplicada en población joven: estudio genético, traslación clínica y prevención familiar

Funding agency: Instituto de Salud Carlos III (PI17/01690)

Duration: 01/01/2018 to 31/05/2020

Coordinator: Ramon Brugada / Oscar Campuzano

Principal Investigator: Ramon Brugada / Oscar Campuzano

Project: Ajuda de personal FI AGAUR

Funding agency: AGAUR

Duration: 01/03/2018 to 15/07/2021

Coordinator: Ramon Brugada

Principal Investigator: Ramon Brugada

Project: Paper de les variants desmosòmiques en la predisposició a miocarditis

Funding agency: PERIS (SLT006/17/00192)

Duration: 26/02/2018 to 31/12/2020

Coordinator: Ramon Brugada

Principal Investigator: Ramon Brugada

Project: Ayuda de personal PFIS
Funding agency: Instituto de Salud Carlos III
Duration: 01/01/2019 to 31/12/2022
Coordinator: Ramón Brugada
Principal Investigator: Ramón Brugada

Project: Estudio de expresión del ARN en pacientes con miocardiopatía arritmogénica para la determinación del sustrato fisiopatológico inductor de arritmias
Funding agency: SEC- Sociedad Española de Cardiología
Duration: 28/10/2020 to 31/12/2024
Coordinator: Oscar Campuzano
Principal Investigator: Oscar Campuzano

Project: "Investigació Cardiovascular"
Funding agency: Obra Social la Caixa
Duration: 2017 to 2022
Coordinator: Ramon Brugada Terradellas
Principal Investigator: Ramon Brugada Terradellas

Project: "CARDiovascular GENetic risk score for Risk Stratification of patients positive for SARS-CoV-2 (COvid 19) virus" FONDO SUPERA COVID19 CoInvestigator.
Funding agency: Fondo Supera COVID19 CoInvestigator.
Duration: 2020 to 2021
Coordinator: Ramon Brugada Terradellas
Principal Investigator: Ramon Brugada Terradellas

MEMBERSHIP OF COLLABORATIVE RESEARCH STRUCTURES (NATIONAL & INTERNATIONAL)

SPANISH

- CIBER-CV (Enfermedades Cardiovasculares) - CB16/11/00329

DOCTORAL THESIS

Title: Trafficking and Function of the Voltage-Gated Sodium Channel Beta2 Subunit
Student: Eric Cortada Almar
University: Universitat de Girona
Directors: Dr. Ramon Brugada Tarradellas, Marcel Verges Aiguaviva.
Date: 24/11/2020

Title: Creació i validació d'un model de predicció per al càlcul del temps d'antigio plàstica primària en pacients amb infart agut miocardi que són traslladats a un hospital amb disponibilitat d'hemodinàmic
Student: Jaime Aboal Viñas
University: Universitat de Girona

Directors: Dr. Ramon Brugada, Dr. Rafel Ramos
Date: 26/06/2020

Title: Projecte "Girona Territori Cardio protegit": Avaluació del funcionament dels desfibril·ladors públics
Student: Pablo de Loma-Osorio Ricón
University: Universitat de Girona
Directors: Dr. Ramon Brugada
Date: 03/07/2020

AWARDS / RECOGNITION

- Medalla Narcís Monturiol al mèrit científic i tecnològic. Generalitat de Catalunya
- Premi Joan Codina Altés, Societat Catalana de Cardiologia
- Best Oral communication. Societat Catalana de Cardiologia "Mort sobtada arritmogènica en població juvenil. Autopsia molecular i transformació familiar"

Research in vascular health



Recognised as a consolidated research group by AGAUR (Generalitat de Catalunya) - 2017SGR1146

MEMBER OF redIAPP ISCIII

KEYWORDS
Atherosclerosis, cardiovascular risk, primary prevention

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OVERVIEW

The group *Investigació en Salut Vascular (ISV)* of Girona is multidisciplinary and encompasses all perspectives of the proposed research lines. In this group, experts in epidemiology and methodology of research work along with physicians and clinical researchers. Thus, interpretation and discussion of the projects are grounded and take into account the needs and considerations of clinical practice. The group is linked with three institutions: Institut de Recerca Biomèdica de Girona (IDIBGI), Institut d'Investigació en Atenció Primària (IDIAP), and Universitat de Girona (UdG). The group consists of family physicians (M.Quesada, D.Parramon, P.Solanas, C. Cerezo, R.Ramos), an epidemiologist (M.García), mathematicians (J.Blanch, M.Comas), a laboratory medicine specialist (L.Alves-Cabratosa), nurses (L.Camos) and biologists (A.Ponjoan, R.Martí).

The multidisciplinary of the team has been key to achieve the results obtained so far, and will be crucial to keep such trend in the future. Expertise areas in our group are related to primary care, disease prevention, epidemiology, study of lipids, cardiovascular diseases, statistics, and analysis of large clinical databases.

Research in ISV group is focused on the study of the epidemiology of vascular diseases, detection of cardiovascular disease in its asymptomatic stage, mathematical modelling of risk prediction (construction of prediction tools to be applied in Primary Care), and evaluation of interventions to prevent vascular disease, particularly the effectiveness of lipid-lowering drugs.

The group is organised to adapt to its strategic objectives. The leading researcher and general coordinator of the group is Dr Rafel Ramos, who is a Family Physician. There is a scientific group supervised by Dr Ramos and by Dr Maria García -who is an expert in research methodology and statistics. Both coordinate the supervision of the projects, the prioritisation of the objectives, and the analyses performed by the postdoctoral researchers. They are also responsible, along with Dr Ruth Martí, for the supervision of the PhD students' works. To accomplish the scientific and strategic objectives of the group, three platforms have been organised:

1. The platform for tuition, coordinated by Maria García, Ruth Martí, and Rafel Ramos, is in charge of the internal tuition for the group members (proposing and selecting courses for the researchers and technicians, organising the internal instruction of the researchers particularly of the PhD students, and the group sessions). They also organise the lectures in research methodology that the group members address to other health professionals. Currently, this platform is directing 10 doctoral theses in primary care and cardiovascular epidemiology. There are 4 members in the group who are associate teachers within the Departament de Ciències Mèdiques in Universitat de Girona (UdG), and they lecture

in the Medical Degree, in the Master in Health Promotion, and in the Master in Molecular Biology and Biomedicine from UdG. They lecture in multiple courses and seminars about research given to health professionals at the unitat Docent de Medicina de Família de Girona. The group ISV also hosts residents in medicine and in nursing for a period of research instruction during their internship.

2. The platform for data management and statistical analysis. This structure is strategic for the group, since the expertise in the management of large clinical databases supports the three strategic objectives of the group. The coordinator of this platform is Dr García and the technicians are M. Comas and J. Blanch, who are both mathematicians. In recent years, this platform has gained great expertise in the management of clinical databases, essentially through collaboration with other international research groups. This platform supports 8 projects that are under competitive funding. Dr Maria García has been recently appointed director of SIDIAP system (www.sidiap.org).

3. Platform for patient recruitment and follow-up. This structure is specialised in patient enrolment and follow-up, with tuition in sample extraction, clinical measurements, and questionnaire administration. In recent years, more than 9000 participants have been recruited for the various projects this platform supports (HERMES study, MARK study, REGICOR study). Dra. Martí is the coordinator of this platform.

Project management and follow-up are carried out by R. Ramos, M. García, R. Martí, and A. Ponjoan.

RESEARCH TOPICS

The ISV research group offers a broad spectrum of expertise in both methodologies and topic areas in primary care. Its research is focused on three principal research lines, with which we aim to continue during the next three years. These lines are 1) evaluation of preventive interventions and study of the effectiveness of drugs used in primary prevention, using the Information System for Research in Primary Care (SIDIAP). The SIDIAP database was created in 2010 under the auspices of the Catalan Institute of Health (CIH) and the Primary Care Research Institute Jordi Gol (IDIAP). It is an anonymized database that generates reliable and standardized clinical information of nearly 5 million patients – about 80% of the Catalan population, and 10% of the Spanish – attended by 3414 general practitioners (GPs) in the 274 primary care practices managed by the CIH. The main aim of the SIDIAP platform is to promote the development of research based on data from these medical records. 2) Epidemiology of cardiovascular diseases, especially asymptomatic. 3) The design of decision-making support tools using mathematical modelling of risk prediction.

The above-mentioned three main research lines can be concreted in the following 5 objectives:

1. To assess the effectiveness and efficiency of different interventions for prevention and control of atherosclerotic disease in primary care using large databases.
2. To analyse the role of cardiovascular (CV) risk factors and their control in dementia incidence.
3. To design and validate risk functions, tailored to the needs of general and specific populations.
4. To analyse the role of emerging and new risk factors and the presence of asymptomatic atherosclerosis in cardiovascular risk prediction.
5. To evaluate activities for health promotion and disease prevention in the context of the redIAPP (Research Network on Preventive Activities and Health Promotion, RETICS).

PUBLICATIONS

INDEXED / I.F: 216.54

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4. Alves L, Comas M, Ponjoan A, Garcia M, Martí R, Blanch J, Elosua M, Parramon D, Camós L, Guzmán L, Ramos R. Levels of ankle-brachial index and the risk of diabetes mellitus complications. *BMJ Open Diabetes Res Care*. 2020. 8. (1):e000977. IF:3,388.
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9. Risk Factor Collaboration (NCD NCD, Taddei C, Zhou B, Bixby H, Carrillo RM, Danaei G, Jackson RT, Farzadfar F, Sophiea MK, Di M, Iurilli MLC, Martinez AR, Asghari G, Dhana K, Gulayin P, Kakarmath S, Santero M, Voortman T, Riley LM, Cowan MJ, Savin S, Bennett JE, Stevens GA, Paciorek CJ, Aekplakorn W, Cifkova R, Giampaoli S, Kengne AP, Khang YH, Kuulasmaa K, Laxmaiah A, Margozzini P, Mathur P, Nordestgaard BG, Zhao D, Aadahl M, Abarca L, Rahim HA, Abu NM, Acosta B, Adams RJ, Agdeppa IA, Aghazadeh J, Aguilar CA, Agyemang C, Ahluwalia TS, Ahmad NA, Ahmadi A, Ahmadi N, Ahmed SH, Ahrens W, Ajlouni K, Alarouj M, AlBuhairan F, AlDhukair S, Ali MM, Alkandari A, Alkerwi A, Aly E, Amarapurkar DN, Amouyel P, Andersen LB, Anderssen SA, Anjana RM, Ansari A, Aounallah H, Araújo J, Ariansen I, Aris T, Arku RE, Arlappa N, Aryal KK, Aspeland T, Assunção MCF, Auvinen J, Avdicová M, Azevedo A, Azizi F, Azmin M, Balakrishna N, Bamoshmoosh M, Banach M, Bandosz P, Banegas JR, Barbagallo CM, Barceló A, Barkat A, Bata I, Batieha AM, Batyrbek A, Baur LA, Beaglehole R, Belavendra A, Ben H, Benet M, Benn M, Berkinbayev S, Bernabe A, Bernotiene G, Bettli H, Bhargava SK, Bi Y, Bienek A, Bikbov M, Bista B, Bjerregaard P, Bjertness E, Bjertness MB, Björkelund C, Bloch KV, Blokstra A, Bo S, Boehm BO, Boggia JG, Boissonnet CP, Bonaccio M, Bongard V, Borchini R, Borghs H, Bovet P, Brajkovich I, Breckenkamp J, Brenner H, Brewster LM, Bruno G, Bugge A, Busch MA, de León AC, Cacciottolo J, Can G, Cândido A, Capanzana MV, Capuano E, Capuano V, Cardoso VC, Carvalho J, Casanueva FF, Censi L, Chadjigeorgiou CA, Chamukuttan S, Chaturvedi N, Chen CJ, Chen F, Chen S, Cheng CY, Cheraghian B, Chetrit A, Chiou ST, Chirlaque MD, Cho B, Cho Y, Chudek J, Claessens F, Clarke J, Clays E, Concin H, Confortin SC, Cooper C, Costanzo S, Cottle D, Cowell C, Crujeiras AB, Csilla S, Cui L, Cureau FV, D'Arrigo G, d'Orsi E, Dallongeville J, Damasceno A, Dankner R, Dantoft TM, Dauchet L, Davletov K, De Backer G, De Bacquer D, de Gaetano G, De Henauw S, de Oliveira PD, De Ridder D, De Smedt D, Deepa M, Deev AD, Dehghan A, Delisle H, Dennison E, Deschamps V, Dhimal M, Di

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N, Mohammadpourhodki R, Mohan V, Mohanna S, Mohd MF, Mohebbi I, Mohebi F, Moitry M, Molbo D, Møllehave LT, Møller NC, Molnár D, Momenan A, Mondo CK, Monroy M, Monterrubio E, Monyeki KDK, Moon JS, Moosazadeh M, Moreira LB, Morejon A, Moreno LA, Morgan K, Morin SN, Mortensen EL, Moschonis G, Mossakowska M, Mostafa A, Mota A, Mota J, Motlagh ME, Motta J, Moura MA, Mridha MK, Msyamboza KP, Mu TT, Muc M, Mugoša B, Muiesan ML, Mukhtorova P, Müller M, Murphy N, Mursu J, Murtagh EM, Musa KI, Music S, Musil V, Mustafa N, Nabipour I, Naderimaghani S, Nagel G, Naidu BM, Najafi F, Nakamura H, Námešná J, Nang E, Nangia VB, Nankap M, Narake S, Nardone P, Nauck M, Neal WA, Nejatizadeh

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IA, Russell K, Russo P, Rust P, Rutkowski M, Sabanayagam C, Sacchini E, Sachdev HS, Sadjadi A, Safarpour AR, Safi S, Safiri S, Saidi O, Saki N, Salanave B, Salazar E, Salmerón D, Salomaa V, Salonen JT, Salvetti M, Samoutian M, Sánchez J, S, Sans S, Santa Marina L, Santos DA, Santos IS, Santos LC, Santos MP, Santos O, Santos R, Santos S, Saramies JL, Sardinha LB, Sarrafzadegan N, Sathish T, Saum KU, Savva S, Savy M, Sawada N, Sbaraini M, Sczufca M, Schaan BD, Schaffrath A, Schargrodsky H, Schienkiewitz A, Schindler K, Schipf S, Schmidt CO, Schmidt IM, Schnohr P, Schöttker B, Schramm S, Schramm S, Schröder H, Schultz C, Schutte AE, Sebert S, Sein AA, Selamat R, Sember V, Sen A, Senbanjo IO, Sepanlou SG, Sequera V, Serra L, Servais J, Ševčíková L, Shalnova SA, Shamah T, Shamshirgaran M, Shanthirani CS, Sharafkhan M, Sharma SK, Shaw JE, Shayanrad A, Shayesteh AA, Shengelia L, Shi Z, Shibuya K, Shimizu H, Shin DW, Shin Y, Shirani M, Shiri R, Shrestha N, Si K, Siani A, Siantar R, Sibai AM, Silva AM, Silva D, Simon M, Simons J, Simons LA, Sjöberg A, Sjöström M, Skodje G, Slowikowska J, Slusarczyk P, Smeeth L, HK, Soares FC, Sobek G, Sobngwi E, Sodemann M, Söderberg S, Soekatri MY, Soemantri A, Sofat R, Solfrizzi V, Somi MH, Sonestedt E, Song Y, Sørensen TI, Sørgjerd EP, Soric M, Sossa C, Soto VE, Soumaré A, Sovic S, Sparboe B, Sparrenberger K, Spinelli A, Spiroski I, Staessen JA, Stamm H, Starc G, Stathopoulou MG, Staub K, Stavreski B, Steene J, Stehle P, Stein AD, Stergiou GS, Stessman J, Stevanovic R, Stieber J, Stöckl D, Stocks T, Stokwiszewski J, Stoyanova E, Stratton G, Stronks K, Strufaldi MW, Sturua L, Suárez R, Suka M, Sun CA, Sundström J, Sung YT, Sunyer J, Suriyawongpaisal P, Swinburn BA, SYRG, Syddall HE, Sylva RC, Szklo M, Szponar L, Tai ES, Tammesoo ML, Tamosiunas A, Tan EJ, Tang X, Tanser F, Tao Y, Tarawneh MR, Tarp J, Tarqui CB, Taxová R, Taylor A, Taylor J, Tchibinda F, Tebar WR, Tell GS, Tello T, Thankappan KR, Theobald H, Theodoridis X, Thijs L, Thomas N, Thuesen BH, Tichá L, Timmermans EJ, Tjonneland A, Tolonen HK, Tolstrup JS, Topbas M, Topór R, Torheim LE, Tormo MJ, Tornaritis MJ, Torrent M, Torres L, Toselli S, Traissac P, Tran TT, Trichopoulos D, Trichopoulou A, Trinh OT, Trivedi A, Tshepo L, Tsigga M, Tsugane S, Tuliakova AM, Tulloch MK, Tullu F, Tuomainen TP, Tuomilehto J, Turley ML, Tynelius P, Tzotzas T, Tzourio C, Ueda P, Ugel E, Ukoli FA, Ulmer H, Unal B, Usupova Z, Uusitalo HM, Uysal N, Vaitkeviciute J, Valdivia G, Vale S, Valvi D, van RM, Van der Heyden J, van der Schouw YT, Van K, Van H, van IG, Vanderschueren D, Vanuzzo D, Varbo A, Varela G, Varona P, Vasan SK, Vega T, Veidebaum T, Velasquez G, Velika B, Veronesi G, Verschuren WM, Victora CG, Viegi G, Viet L, Villalpando S, Vineis P, Vioque J, Virtanen JK, Visser M, Visvikis S, Viswanathan B, Vladulescu M, Vlasoff T, Vocanec D, Völzke H, Voutilainen A, Voutilainen S, Vrijheid M, Vrijkotte TG, Wade AN, Wagner A, Waldhör T, Walton J, Wambiya EO, Wan WM, Wan WN, Wanderley RS, Wang MD, Wang N, Wang Q, Wang X, Wang YX, Wang YW, Wannamethee SG, Wareham N, Weber A, Wedderkopp N, Weerasekera D, Weghuber D, Wei W, Weres A, Werner B, Whincup PH, Widhalm K, Widyahening IS, Wiecek A, Wilks RJ, Willeit J, Willeit P, Williams J, Wilsgaard T, Wojtyniak B, Wong RA, Wong A, Wong JE, Wong TY, Woo J, Woodward M, Wu FC, Wu J, Wu LJ, Wu S, Xu H, Xu L, Yaacob NA, Yamborisut U, Yan W, Yang L, Yang X, Yang Y, Yardim N, Yaseri M, Yasuharu T, Ye X, Yiallourous PK, Yoosefi M, Yoshihara A, You QS, You SL, Younger NO, Yusof SM, Yusoff AF, Zaccagni L, Zafirovulos V, Zainuddin AA, Zakavi SR, Zamani F, Zambon S, Zampelas A, Zamrazilová H, Zapata ME, Zargar AH, Zaw KK, Zdrojewski T, Zeljkovic T, Zeng Y, Zhang L, Zhang ZY, Zhao D, Zhao MH, Zhao W, Zhen S, Zheng W, Zheng Y, Zholdin B, Zhou M, Zhu D, Zocalo Y, Zuñiga J, Zuziak M, Ezzati M. 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1. Vilardell P,Brugada J,Aboal J,Loma P,Falces C,Andrea ,Figueras M,Brugada R. Characterization of electrocardiographic findings in young students. Rev Esp Cardiol (engl Ed). 2020. 73. (2):p. 139-144.
2. Gil N,Cerain MJ,Subirana I,Rodríguez LM,Cunillera O,Mestre J,Grau M,Dégano IR,Elosua R,Marrugat J,Ramos R,Baena M,Salvador B. Cardiovascular risk in mild to moderately decreased glomerular filtration rate, diabetes and coronary heart disease in a southern European region. Rev Esp Cardiol (engl Ed). 2020. 73. (3):p. 212-218.

GRANTS

Project: Girona, Regió Saludable
Funding agency: Generalitat de Catalunya, Fons FEDER
Duration: 01/01/2017 to 31/12/2021
Coordinator: Josep Puig Alcántara
Principal Investigator: Josep Puig Alcántara

COLLABORATIVE GRANTS

Project: Stratification of ObesePhenotypes to Optimize Future Obesity Therapy
Funding agency: European Commission
Duration: 09/07/2020 to 08/07/2025
Coordinator: José Manuel Fernández-Lemos
Principal Investigator: José Manuel Fernández-Lemos

Project: Smart City Observatories implement REsilient Water Management
Funding agency: European Commission
Duration: 2019 to 2020
Coordinator: Lluís Corominas (ICRA)
Principal Investigator: Rafel Ramos

Project: Análisis del papel de las aptitudes personales como DEterminantes de la incidencia de morbilidad, eStilos de vida, calidad de Vida, uso de sErvicios y mortaLidAd (Cohorte DESVELA)
Funding agency: Instituto Carlos III
Duration: 01/01/2020 to 31/12/2022
Principal Investigator: Ruth Martí-Lluch

Project: Seguiment de la cohort poblacional de l'estudi REGICOR: tendències en la incidència de malaltia cardiovascular, en la prevalença de factors de risc, identificació de nousmecanismes i biomarcadorspredictius, i avaluació d'estratègies de prevenció.
Funding agency: Generalitat de Catalunya (PERIS)

Duration: 29/03/2017 to 01/02/2010

Coordinator: Roberto Elosua Llanos

Principal Investigator: Rafel Ramos

Project: Nivel y variación del riesgo cardiovascular y prevención de la demencia.

Funding agency: Instituto Carlos III

Duration: 25/11/2020 to 01/02/2019

Coordinator: Roberto Elosua Llanos

Principal Investigator: Rafel Ramos

MEMBERSHIP OF COLLABORATIVE RESEARCH STRUCTURES (NATIONAL & INTERNATIONAL)

SPANISH

- RETICS - Red: REDIAPP ISCIII

DOCTORAL THESIS

Title: Creació i validació d'un model de predicció per al càlcul del temps d'antigio plàstica primària en pacients amb infart agut miocardi que són traslladats a un hospital amb disponibilitat d'hemodinàmic

Student: Jaime Aboal Viñas

University: Universitat de Girona

Directors: Dr. Rafel Ramos, Dr. Ramon Brugada

Date: 26/06/2020

Title: Validesa del Sistema d'Informació pel Desenvolupament de la Investigació a Atenció Primària (SIDIAP) en l'estudi de malalties vasculars i estudi de la efectivitat de les estatinas en la reducció de mortalitat i malalties vasculars en la població major de 74 anys

Student: Elisabet Balló Peña

Director: Rafel Ramos Blane

University: Universitat de Girona

Date: 31/07/2020

COLLABORATIONS

We effectively collaborate and share projects with investigators from both national and international institutions.

INTERNATIONAL COLLABORATIONS

- Dr Irene Petersen's research group. The group is located at the University College of London, and they are experts on Missing imputation techniques. Dr Irene Petersen collaborates as researcher in some of the projects led by members of our

group.

- Participation with EU-ADR Alliance. Members of the group are part of this European structure. We intend to be involved in European projects related to cost effectiveness of treatments for the prevention of CV disease.
- Dr Prieto Alhambra's research group from Oxford University. Drs Ramos and García stayed for a research fellowship at the Botnar Research Center

NATIONAL COLLABORATIONS

- Cardiovascular Epidemiology and Genetics Group from the IMIM (Institut Hospital del Mar Investigacions Mèdiques). Dr R. Elosua is the coordinator of this group, which is also composed by Dr J. Marrugat and Dr M. Grau, among others, with whom we have collaborated in many projects, and authored many papers.
- Collaboration with CIBERCV, through Dr Marrugat's (CB16/11/00229), Dr Elosua's (CB16/11/00246), and Dr Brugada's (CB16/11/00329) groups.
- We also collaborate on the Myocardial Infarction Genetics Consortium (MIGen): This international genetics research platform includes 2,967 cases of early-onset myocardial infarction and 3,075 age- and sex-matched controls.
- We also participate in the Non-Communicable Diseases Risk Factor Collaboration (NCD-RisC), which is a network of health scientists around the world that provides rigorous and timely data on major risk factors for non-communicable diseases; it covers all countries worldwide. (<http://ncdrisc.org/>)
- We are also involved in the INTERPRESS-IPD: The Inter-arm blood pressure difference individual patient data collaborations. It is an international collaboration evaluating the independent contribution of Inter-arm blood pressure difference to estimate cardiovascular and all-cause mortality risk. (<http://medicine.exeter.ac.uk/research/healthresearch/primarycare/projects/interpress-ipd/>)

Respiratory

ciberes
 Centro de Investigación Biomédica en Red
 Enfermedades Respiratorias

MEMBER OF
CIBER-ES

KEYWORDS

Bronchiectasis;
 Sleep disorders;
 Interstitial Lung Diseases;
 Occupational diseases

GROUP LEADER - R4

Ramón Orriols

ESTABLISHED RESEARCHERS - R3

Montserrat Vendrell
 Olga Tura

POST-DOCTORAL RESEARCHERS - R2

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TECHNICIANS

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 Paula Poyatos
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NON SCIENTIFIC RESEARCH SUPPORT STAFF

Laia Merchan



OVERVIEW

Respiratory Research Group at IDIBGI is composed by several researchers from the Pneumology Service. It is focused on bronchiectasis, sleep diseases, occupational respiratory diseases and Interstitial Lung Diseases research.

Research is complemented with an intensive clinical activity, which has lent the group to be invited to conferences at international congresses, draft reviews and publishers in magazines of high impact, as well as to be a member of experts in the field of respiratory illnesses, either on a national and international.

RESEARCH TOPICS

- Bronchiectasis. Physiotherapy. Primary immunodeficiencies
- Sleep diseases: diagnostic at Primary Health care level and vascular impact.
- Occupational diseases and immunoallergic respiratory diseases.
- Diffuse interstitial pulmonary disease: diagnostic and treatment.
- Lung cancer.
- Pulmonary hypertension

PUBLICATIONS

INDEXED / I.F: 131.11

1. Solanes N, Bobi J, Dagleish MP, Jiménez FR, Gray GA, Sabaté M, Tura O, Rigol M. Targeting the Main Anatomopathological Features in Animal Models of Myocardial Infarction. *J Comp Pathol.* 2020. 176. p. 33-38. IF:1,311.
2. Martínez MÁ, Máiz L, Oliveira C, Girón RM, de la Rosa D, Blanco M, Cantón R, Montserrat DRA, Polverino E, de Gracia J, Prados C. Erratum to Spanish Guidelines on the Evaluation and Diagnosis of Bronchiectasis in Adults [Arch Bronconeumol. 2018;54(2):79-87]. *Arch Bronconeumol.* 2020. 56. (4):p. 265-265. IF:4,872.
3. Happé C, Kurakula K, Sun XQ, da Silva Goncalves Bos D, Rol N, Guignabert C, Tu L, Schlij I, Wiesmeijer KC, Tura O, Vonk A, de Man FS, Bogaard HJ, Goumans MJ. The BMP Receptor 2 in Pulmonary Arterial Hypertension: When and Where the Animal Model Matches the Patient. *Cells.* 2020. 9. (6):1422. IF:6,600.

4. Aldás I, Menéndez R, Méndez R, España PP, Almirall J, Boderías L, Rajas O, Zalacaín R, Montserrat DRA, Mir I, Torres A, Grupo N, Grupo ANEXO, España PP, Uranga A, Borderías L, Briz E, Rajas O, Almirall J, de la Torre MC, Boixeda R, Zalacaín R, Vendrell M, Motjé M, Bello S, Mir I, Payeras A, Morales C, Molinos L, Ferrer R, Briones ML, Malo R, Méndez R, Menéndez R, Aldás I, Torres A, Amaro R. Early and Late Cardiovascular Events in Patients Hospitalized for Community-Acquired Pneumonia. *Arch Bronconeumol.* 2020. 56. (9):p. 551-558. IF:4,872.

5. Orriols R, Tarrés J, Albertí C, Rosell M, Abós R, Canela J. Malignant asbestos-related disease in a population exposed to asbestos. *Am J Ind Med.* 2020. 63. (9):p. 796-802. IF:2,214.

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7. Baz N, Rovira S, Fernández M, Castillo S, Cols M, Caballero MA, Asensio Ó, Martín de Vicente C, Martínez MDM, Torrent A, de Mir I, Gartner S, Iglesias I, Díez A, Polverino E, Amengual E, Amaro R, Montserrat DRA, Mumany M, Pascual MT, Pérez B, Reula A, Escribano A, Dasí F, Armengot M, Garrido M, Camats N, Moreno A. Immunofluorescence Analysis as a Diagnostic Tool in a Spanish Cohort of Patients with Suspected Primary Ciliary Dyskinesia. *J Clin Med.* 2020. 9. (11):3603. IF:4,241.

8. Chalmers JD, Haworth CS, Metersky ML, Loebinger MR, Blasi F, Sibila O, O'Donnell AE, Sullivan EJ, Mange KC, Fernandez C, Zou J, Daley CL, WILLOW I, ORRIOLS R. Phase 2 Trial of the DPP-1 Inhibitor Brensocatib in Bronchiectasis. *N Engl J Med.* 2020. 383. (22):p. 2127-2137. IF:91,245.

9. Rodrigues A, Muñoz G, Jácome C, Langer D, Parry SM, Burtin C. Current developments and future directions in respiratory physiotherapy. *Eur Respir Rev.* 2020. 29. (158):200264. IF:8,839.

GRANTS

Project: Targets of Chronic Thromboembolic Pulmonary Hypertension (CTEPH); the root cause and an in vivo model of CTEPH endothelial pathology

Funding agency: Instituto de Salud Carlos III

Duration: 01/01/2018 to 30/06/2022

Coordinator: Olga Tura Ceide

Principal Investigator: Olga Tura Ceide

Project: Incorporació al Grup de recerca de “Respiratori”:
Biomarcadors de disfunció endotelial en la SAOS
Funding agency: Generalitat de Catalunya (SLT006/17/00251)
Duration: 01/01/2018 to 31/12/2021
Coordinator: Olga Tura Ceide
Principal Investigator: Olga Tura Ceide

Project: Ayuda de personal Miquel Servet.
Funding agency: Instituto de Salud Carlos III
Duration: 01/01/2017 to 31/12/2021
Coordinator: Olga Tura Ceide
Principal Investigator: Olga Tura Ceide

Project: Estudio del metabolismo y de la función endotelial en pacientes con hipertensión pulmonar tromboembólica efecto de la estimulación de riociguat
Funding agency: Instituto de Salud Carlos III (PI18/0090)
Duration: 01/01/2019 to 31/12/2021
Coordinator: Olga Tura Ceide
Principal Investigator: Olga Tura Ceide

MEMBERSHIP OF COLLABORATIVE RESEARCH NETWORKS (NATIONAL & INTERNATIONAL)

INTERNATIONAL

- EMBARC - The European Bronchiectasis Registry

SPANISH

- CIBER_ES (enfermedades respiratorias) - CB06/06/0030



MEDICAL IMAGING

MEDICAL IMAGING

Medical imaging

GROUP LEADER - R4

Salvador Pedraza

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Xavier Molina Figuera



OVERVIEW

Medical Imaging research group main goals:

- Image Biomarkers validation.
- Validation of brain connectivity as a predictive biomarker in patients with cerebral infarction
- Aging predictive biomarkers study.
- “Population” study

RESEARCH TOPICS

The main research lines are:

- Determination of the biomarkers associated to the healthy aging in population studies.
- Validation of the predictive value about cardiovascular risk of imaging biomarkers.
- Validation of the value of artificial intelligence to predict cardiovascular risk of imaging biomarkers.
- Determination of the protocol of follow-up of incidental findings in population studies.
- Validation of the predictive utility of imaging biomarkers in patients with cerebral infarct.
- Validation of the prognostic value of imaging biomarkers in patients with cerebral hematoma.
- Validation of the predictive utility of imaging biomarkers in patients with brain tumors.
- Validation of the prognostic value of imaging biomarkers in patients with obesity.
- Validation of the predictive utility of imaging biomarkers in patients with Multiples sclerosis.
- Validation of the prognostic value of imaging biomarkers in patients with obesity.
- Validation of the diagnostic value of artificial intelligence in the interpretation of thoracic X-rays.

PUBLICATIONS

INDEXED / I.F: 266.69

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Suzuki M, Tan M, Tang SC, Tatlisumak T, Thijs V, Tainen M, Tsai CH, Tsai CK, Tsai CL, Tsai HT, Tsai LK, Tseng CH, Tseng LT, Tsoleridis J, Tu H, Tu HT, Vallat W, Virta J, Wang WC, Wang YT, Waters M, Weir L, Wijeratne T, Williams C, Wilson W, Wong AA, Wong K, Wu TY, Wu YH, Yan B, Yang FC, Yang YW, Yassi N, Yeh HL, Yeh JH, Yeh SJ, Yen CH, Young D, Ysai CL, Zhang WW, Zhao H, Zhao L, Althaus K, Bendszus M, Berrouschot J, Bluhmki E, Bovi P, Chatellier G, Cove L, Davis S, Dixit A, Donnan G, Dziewas R, Ehrenkrona C, Eschenfelder C, Fatar M, Francisco J, Gruber F, Hacke W, Kala L, Kapeller P, Kaste M, Kessler C, Köhrmann M, Laage R, Lees KR, Leys D, Luna A, Mas JL, Mikulik R, Molina C, Muddegowda G, Muir K, Niederkorn K, Nuñez X, Oppenheim C, Poli S, Ringleb P, Schellinger P, Schwab S, Serena J, Sobesky J, Steiner T, Svenson AS, Toni D, Veltkamp R, von R, Wahlgren N, Wardlaw J, Betensky RA, Boulouis G, Carandang RA, Copen WA, Cougo P, Cutting S, Drake K, Ford AL, Hallenbeck J, Harris GJ, Hoesch 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potential benefit from immunotherapy. *CLIN CANCER RES.* 2020. 26. (24):p. 6600-6609. IF:12,531.

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3. Figueras M, Sabaté A, Cañete N, Domènech B. The Chiari Network-Only an Embryonic Remnant or a Confusing Finding?. *World J Pediatr Congenit Heart Surg.* 2020. 11. (4):p. 47-49.

4. Pedraza S. Reinventing the radiological process: a real challenge!. *Radiologia.* 2020. 62(4):p. 331-331.

BOOKS

Kai Vilanova. Editor libro "Sports Injuries in Children and adolescents". Ed Rosa M Rodrigo, JC Vilanova, Jose Martel. Spinger. Diciembre 2020. ISBN 978-3-642-54745-4 ISBN 978-3-642-54746-1 (eBook). DOI: 10.1007/978-3-642-54746-1.

GRANTS

Project: An AI Platform integrating imaging data and models, supporting precision care through prostate cancer's continuum

Funding agency: European Commission

Duration: 01/10/2020 to 30/09/2024

Coordinator: Joan Carles Vilanova Busquets

Principal Investigator: Joan Carles Vilanova Busquets

Project: Girona Regió Saludable - Imagenoma de la Salut

Funding agency: Generalitat de Catalunya

Duration: 01/10/2017 to 31/12/2021

Coordinator: Josep Puig Alcántara

Principal Investigator: Josep Puig Alcántara

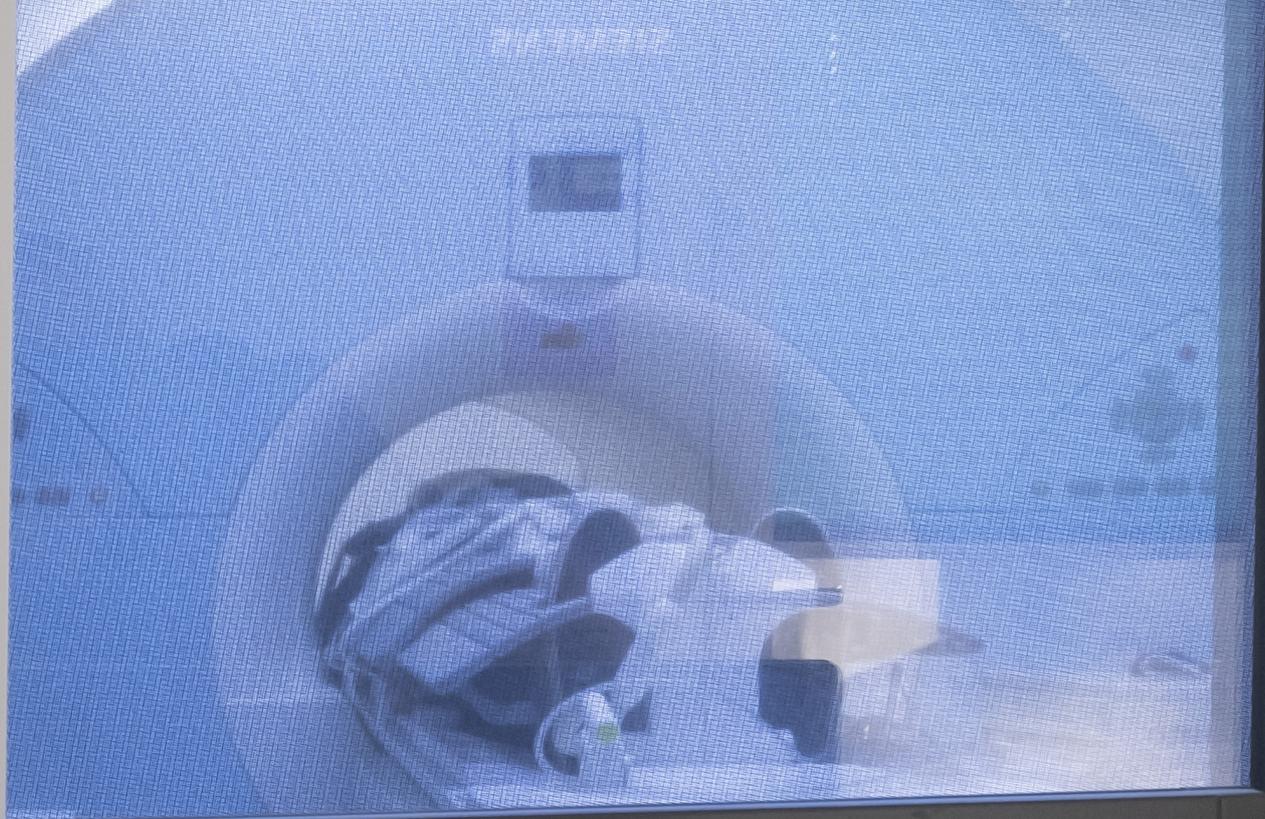
Project: BRAIN-CONNECTS: MRI Biomarkers of Brain Connectivity during Stroke Recovery and Rehabilitation

Funding agency: La Marató de TV3

Duration: 2017 to 2020

Coordinator: Josep Puig Alcántara

Principal Investigator: Josep Puig Alcántara



Paciente Aplicaciones Transfer Edición Cola Protocolo Ver Imagen Herramientas Evaluación Desplazar Sistema Complemento Opciones Ayuda

Examen Vista Explotación 3D

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21 ✓ L2_tee_sag_DORSAL 01 34
22 ✓ L2_tee_sag_LUMBAR 01 14
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SIEMENS



MENTAL HEALTH

MENTAL HEALTH AND ADDICTIONS
NEURODEVELOPMENTAL DISORDERS

Mental health and addictions

GROUP LEADER - R4

Jordi Cid

ESTABLISHED RESEARCHER - R3

Eva Frigola

POST-DOCTORAL RESEARCHERS - R2

Laura Masferre

PRE-DOCTORAL RESEARCHERS - R1

Miriam Broncano

Àngels Déu

COLLABORATORS

Jordi Nuñez

Meritxell Beltran

M^a Àngels Vila

Sacramento Mayoral

René Morgan

Eduard Palomer

Evgenia Baykova

Domènec Serrano

OVERVIEW

The Mental Health Research group lump together 2 research groups: Clinical and economics and Neurobiology. The two groups build collaborative research projects and share research structure.

RESEARCH TOPICS

1. Clinical and Economics: Jordi Cid

- Psychosis: functionalism, diagnosis and intervention – Jordi Cid and Eva Frigola-Capell
- Suicide: epidemiology, diagnosis and genetics – Jordi Cid and Eva Frigola-Capell
- School failure: epidemiology, prevention, neurodevelopmental disorders – Jordi Cid
- Mental Health and Neuropsychology: Jordi Cid and Eva Frigola-Capell
- Cost efficiency and Big Data: Jordi Cid

- Patient Safety: Eva Frigola-Capell
 - Addictions: risk factors and health outcomes - Laura Masferre
- ### 2. Neurobiology: Domènec Serrano
- TDHA: pharmacological treatment and Mobile technology – Domènec Serrano, Sacramento Mayoral, Evgenia Baykova

PUBLICATIONS

INDEXED / I.F.:18.54

1. Masferrer L, Mancini AD, Caparrós B. Understanding the Relationship Between Complicated Grief Symptoms and Patterns of Personality Disorders in a Substance Users' Sample: A Network Analysis Approach. *Front Psychol.* 2020. 11. p. 566785-566785. IF:2,990.
2. Hilarión P, Koatz D, Bonet P, Cid J, Pinar I, Otín JM, Espallargues M, Molina C, Suñol R. Implementation of the individual placement

and support pilot program in Spain. *Psychiatr Rehabil J.* 2020. 43. (1):p. 65-71. IF:1,935.

3. Lahera G,Cid J,Gonzalez A,Cabrera A,Mariner C,Vieta E,Aran-go C,Crespo B. Needs of people with psychosis and their caregivers: «In their own voice». *Rev Psiquiatr Salud Ment.* 2020. 13. (2):p. 80-89. IF:3,318.

4. Salas M,López R,Barajas A,Lorente E,Pousa E,Barrigón ML,Grasa E,Ruiz I,González F,Cid J,Aznar A,Pélaez T,Birulés I,Moritz S,Ochoa S,Spanish Metacognition Study G. Gender differences in response to metacognitive training in people with first-episode psychosis. *J Consult Clin Psychol.* 2020. 88. (6):p. 516-525. IF:5,348.

5. Birulés I,López R,Cuadras D,Pousa E,Barrigón ML,Barajas A,Lorente E,González F,Grasa E,Ruiz I,Cid J,de Apraiz A,Montserrat R,Pélaez T,Moritz S,The Spanish Metacognition Study G,Ochoa S. Cognitive Insight in First-Episode Psychosis: Changes during Meta-cognitive Training. *J Pers Med.* 2020. 10. (4):253. IF:4,945.

MEMBERSHIP OF COLLABORATIVE RESEARCH NETWORKS (NATIONAL & INTERNATIONAL)

SPANISH

- Spanish Metacognition Study Group (SMMSG)

Neurodevelopmental disorders

KEYWORDS

Mental health;
 intellectual disabilities;
 challenge behavior;
 genetics;
 behavioural phenotypes;
 Prader-Willy;
 Down syndrome;
 Neuropsychology;
 DTI;
 MEG;
 MRI

GROUP LEADER - R4

Ramón Novell

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Susana Esteba-Castillo
 Pilar Àvila

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 Aida Palacín
 Raimon Ripoll

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Marta Vilà

TECHNICIANS

Núria Ribas Vidal

NON SCIENTIFIC RESEARCH SUPPORT STAFF

Cristina Almeda
 Meritxell Baro
 David Losada



OVERVIEW

The Neurodevelopmental Disorders Research Group has been involved in many national and international research projects in the field of intellectual disability and development and has received several research grants. The members of the group have a long trajectory and experience in the evaluation and management of people with ID. The team collaborates with other research groups with several projects. For example, the neuroimaging research team at the Hospital del Mar directed by Jesús Pujol. This team is considered an international reference in obtaining and analyzing structural and functional neuroimaging in psychopathologies such as OCD, Affective Disorders and in the study of brain morphology in the emotional or personality component. Another of the teams is the Genetics group of the Corporació Sanitària Parc Tauli (CSPT), which has a long experience in the study of the etiology of intellectual disability and psychiatric disorders, among which we can highlight the study of the molecular and diagnostic bases of the Prader Willi, Fragile X, and Angelman syndromes. Likewise, the CSPT Genetics group is integrated in international collaborations with the aim of grouping and analysing the data of each team in order to identify recurrent variants and to be able to apply for European funding (Horizon 2021). It is important to point out the work done with the Department of Endocrinology of the Corporació Sanitària Parc Tauli (CSPT), studying the relationship between certain hormones and peptides and their relationship with cognition. Finally, the technical team of SESM-DI collaborates in the global training of the Institut d'Assistència Sanitària as a multidisciplinary teaching unit in psychiatry, psychology and neuropsychology, leading to. The project provides university internships for students in the fields of medicine, psychology and nursing, as well as students of post-graduate courses and masters.

RESEARCH TOPICS

The group has different lines of research:

1. Aging, mild cognitive impairment and dementia in people with intellectual disabilities.
2. Genetics in mental illness and challenge behaviour in people with intellectual disabilities
3. Behavioural and neuropsychological phenotypes of genetic origin
4. Autism and Neuropsychology
5. Integral care for people with limited intellectual functioning.
6. Creation, normalization and validation of Neuropsychological tests for ID population.

PUBLICATIONS

INDEXED / I.F: 35.38

1. de la Torre R, de Sola S, Farré M, Xicota L, Cuenca A, Rodríguez J, León A, Langohr K, Gomis M, Hernandez G, Esteba S, Del Hoyo L, Sánchez J, Cortés MJ, Ozaita A, Espadaler JM, Novell R, Martínez R, Milà M, Dierssen M, TESXF G, Cuenca A, Principe A, Hernandez G, Sánchez G, Rodríguez J, Espadaler JM, Sánchez J, Langohr K, Roca L, Del Hoyo L, Xicota L, Farré M, Dierssen M, de la Torre R, Fitó M, de Sola S, León A, Banea O, Novell R, Esteba S, Martínez R, Cortés MJ, Milà M, Maldonado R, Busquets A, Ozaita A, Gomis M. A phase 1, randomized double-blind, placebo controlled trial to evaluate safety and efficacy of epigallocatechin-3-gallate and cognitive training in adults with Fragile X syndrome. *CLIN NUTR.* 2020. 39. (2):p. 378-387. IF:7,324.
2. Martínez R, Folch A, Munir K, Novell R, Salvador L, Borderline Intellectual Functioning Consensus G. The Girona declaration on borderline intellectual functioning. *Lancet Psychiatry.* 2020. 7(3):p. 8-8. IF:27,083.
3. Garcia J, Rubio S, Julia M, Garcia AIM, Esteba S, Gomez M. Cognitive training in adults with intellectual disability: pilot study applying a cognitive tele-rehabilitation program. *Int. J. Dev. Disabil.* 2020. IF:0,973.

NON-INDEXED

1. Novell R, Esteba S, Rodríguez E. Efficacy and safety of a GA-BAergic drug (Gamalate® B6): effects on behavior and cognition in young adults with borderline-to-mild intellectual developmental disabilities and ADHD. *Drugs Context.* 2020. 9. p. 212601-212601.
2. Gimeno-Ruiz À, Novell-Alsina R, Marta Vilà-Alsina M, Torrents-Rodas D, Vergés-Planagumà L, et al. Effects of Deep Proprioceptive Stimulation on the Efficiency of Sleep in People with Intellectual Disability and the Necessity of Extensive-Generalized Support. *J Sleep Med Disord.* 2020. 6(4): 1116.

GRANTS

COLLABORATIVE GRANTS

Project: Tratamiento con hormona de crecimiento en el adulto con Síndrome de Prader-Willi: efecto sobre el tono muscular valorado mediante resonancia magnética funcional (RMf) y su relación con la fuerza muscular y la composición corporal
Funding agency: Instituto de Salud Carlos III
Duration: 2019 to 2021

Coordinator: A. Caixas

Principal Investigator: A. Caixas

COLLABORATIONS

- Research and Psychology in Education Department. Complutense University of Madrid, Spain.
- Laboratory of Cognitive and Computational Neuroscience. Department of Legal Medicine, Psychiatry and Pathology (Faculty of Medicine). Complutense University of Madrid, Spain.
- Down Syndrome Department, La Princesa University Hospital
- Department of Methodology for Behavioral Science. Complutense University of Madrid, Spain.
- Universidad Politecnica de Madrid, Centro de Tecnología Biomédica; Universidad de La Laguna, Electrical Engineering and Bioengineering group
- MRI Research Unit, Department of Radiology, Hospital del Mar, 08003 Barcelona, Spain
- Department of Clinical and Health Psychology, Autonomous University of Barcelona, 08193 Barcelona, Spain
- Endocrinology and Nutrition Department, Parc Taulí Hospital Universitari, Institut d'Investigació i Innovació Parc Taulí I3PT- Universitat Autònoma de Barcelona, Sabadell, Spain
- Philipps-Universität Marburg, Marburg, Germany
- Grup de Recerca del'I3PT Obseitat i síndrome de Prader Willi. Codi del grup: A4G1. Cap de grup: Assumpta Caixàs Pedragós. Àrea: inflamació, Immunologia i metabolisme (Susanna Esteba-Castillo).
- Investigadora en el área de neuropsicología del grupo para el estudio de variantes en número de copias (CNV's); Trinity College (Dublín) (Susanna Esteba-Castillo).
- Mienbro del grupo de trabajo consolidado en Neurodevelopmental disorders; genetics, psychiatry, intellectual disabilities and brain sciences con el Univeristy College London, division of Psychiatry (Susanna Esteba-Castillo).



METABOLISM AND INFLAM- MATION

DIGESTIVE DISEASES AND MICROBIOTA

**INFECTIONS, SEPSIS AND MULTI-ORGAN DYSFUNCTION IN THE PATIENT
INTERNAL MEDICINE**

METABOLIC AND MATERNOFOETAL

NEPHROLOGY

NUTRITION, EUMETABOLISM AND HEALTH

PAEDIATRIC OBESITY AND CARDIOVASCULAR RISK

Digestive diseases and microbiota

KEYWORDS

Microbiota;
Inflammatory Bowel diseases;
Biomarker;
Molecular microbial ecology

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POST-DOCTORAL RESEARCHERS - R2

Anna Bahí Salavedra
Marc Llíros
Mireia Vila

PRE-DOCTORAL RESEARCHERS - R1

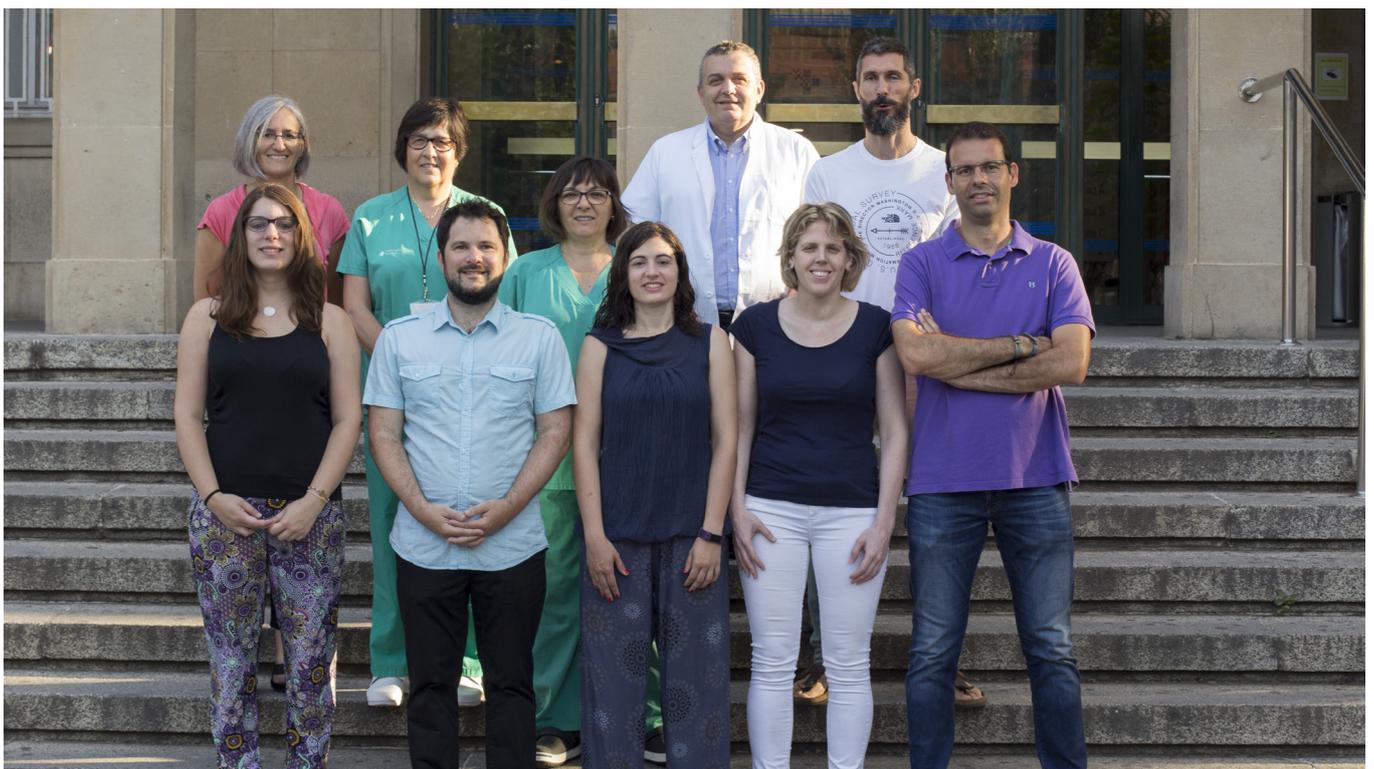
David Busquets
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COLLABORATORS

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NON SCIENTIFIC RESEARCH SUPPORT STAFF

Anna Feliu
Montserrat Capdevila



OVERVIEW

The group lead by MD PhD X Aldeguer is interested in understanding the role of those tinny bugs living in the gut and how their perturbations (i.e., dysbiois) affect the status of health and disease in humans. Basically, deviations from the "normal" state will tell us about the disease status and putative ways to solve the disequilibrium. We are a multidisciplinary team involving post-doctoral researchers with broad experience in the medical and microbial ecology fields, but also a wide range of medical doctors pursuing a PhD degree to understand the role of our tinny trip companions. In order to give answer to our research topics (basically which is the role of gut microbes on health and inflammatory bowel status), we are performing human clinical studies and culture-independent techniques focused on DNA sequencing of the 16S rRNA gene. These tools will enable us to address our biological questions from a taxonomic and functional perspective.

RESEARCH TOPICS

Over the last years our research group has established as main research lines the study of the human gut microbiome in all diseases affecting the digestive tract with the involvement of the inflammatory process (e.g., inflammatory bowel disease (IBD), colorectal cancer (CRC), chronic pancreatitis (CP), pancreatic cancer (PC), hepatic steatosis, hepatocarcinoma, Barrett's esophagus disease, among few others) with the intention to define a set of microbial biomarkers as prognosis tools for such disease collection, but also paying attention to their diagnosis and monitoring to support clinicians. Briefely, our research group has been working on the description IBD microbiome ever since 2002. Moreover, we have been spanning our view thus getting involved in research projects where inflammatory processes can be related with the role of gut microbiome (e.g., rheumatic diseases or ashma, to cite a pair).

On an early stage, we focused on the microbiome profile in Crohn's disease based upon colonic biopsies. A study that deserved a prestigious local grant. La Marato TV3 among others. The microbiome was described using 16SRNA application and DGGE gels. These studies were published in The IBD Journal 2016 (Martinez-Medina et al).

Derived from this early study, we took a step further and drew attention to the description of two main species in IBD, E coli and F. prausnitzii. We have also evaluated macrophage-resistant adherent adhesive E. coli found mainly in ileal Crohn's. We have shown their in vitro growth upon conditions resembling those of "western diet", resistance to antibiotics and their intriguing presence in dogs' and , above all, cats' diarrhea conditions published in different specialized international journals. In parallel, we worked on F.

prausnitzii and we were the first group in the world to describe 2 phylotypes of this species (Lopez-Sileset al. 2016 IBD Journal) with differences between Crohn's disease (CD) and Ulcerative Colitis (UC; unpublished results). The abundance of Akkermansia on mucosa samples in many IBD subtypes is currently being assessed and has been published (Lopez-Siles et al Front Cell InfectMicrobiol. 2018).

Beyond IBD, our group has also contributed to the description of microbial markers for IBS and colon cancer. In this sense, the main strategic research lines of our group are based on the following pillars:

1. Dysbiosis indicators in inflammatory bowel diseases

Over the last years, we are performing a wide-range study aimed to correlate microbiological indexes (based on logarithmic ratios of absolute quantifications) and clinical determinants for inflammatory bowel disorders (IBD) (Crohn's Disease (CD), ulcerative colitis (UC), and colo-rectal cancer (CRC)). We propose such ratios for risk determination, pre-screening processes and diagnostic of bowel disorders. Besides IBD, the utility of logarithmic ratios on Inflammatory Bowel Syndrome (IBS) is also under study. Moreover, a step forward in the healing mucosa concept is underlining our scientific proxy.

In close collaboration with the clinical microbiology team at Universitat de Girona lead by PhD Margarita Martínez-Medina, we are digging into the genetic elements defining the "adherent-invasive" pathovar within Escherichia coli (AIEC) and its role on CD. Microbiologically based molecular tools for detection of AIEC on CD patients are under process.

2. Hepatopancreatic line

More and more evidences pointed towards the presence and active role of microbes (either resident or transient ones from the gut) in the hepatopancreatic environment. In this sense, we have recently opened a new research line studying the microbial community in fecal samples of patients suffering of hepatic inflammatory diseases. By now, we are studying diseases such: chronic pancreatitis (CP) and its evolution towards cancer or steatotic liver ending in hepatocellular carcinoma.

3. Liver microbiome

Liver related diseases have somehow an inflammatory process. In this sense, we are currently performing clinical- and molecular-based studies trying to correlate gut microbiome and liver diseases, basically non-alcoholic steatohepatitis (NASH), hepatocellular carcinoma (HCC), and non-alcoholic fatty acid liver disease (NAFLD).

4. Dysbiosis and rheumatic diseases

A new research line aimed to connect the inflammatory process of rheumatic disorders with the gut microbiome has been recently activated. As for the IBD, the presence of inflammatory signals

might be correlated with the gut microbiome. In this sense, we propose the use and application of logarithmic ratios of absolute microbial quantifications to establish threshold values for rheumatic disorders.

6. Healing dysbiosis with traditional bread

In close collaboration with a high-quality traditionally made bread produced, we have started to investigate the effect of traditional bread (long fermentation of whole grain wheat flour with wild starters) on patients suffering of IBD and metabolic syndrome (in collaboration with the Institut Mar d'Investigacions Biomèdiques (IMIM) of Hospital del Mar de Barcelona. This new research line allowed establishing collaboration between the private sector (Elias Boulanger) and two public partners (IMIM and IDIBGI).

Based on those results, our group has founded in 2014, a start-up biotech company named GoodGut (www.goodgut.eu). This company is focused on the development of microbial fecal signatures based on markers described in our previous studies which are integrated upon a machine-learning derived algorithm.

Based on this techniques, there are three markers being validated clinically for IBD:

- Raid-Monitor that correlates more precisely to endoscopic indexes than calprotectin (results under submission)
- Raid-Response which have a preliminary results very robust on prediction of response to anti-TNF treatment
- Raid-DX which allows a good differential diagnosis between IBD and IBS (under submission)

PUBLICATIONS

INDEXED / I.F: 38.35

1. Malagón M, Ramió S, Serrano M, Amoedo J, Oliver L, Bahí A, Miquel JO, Ramirez M, Queralt X, Gilabert P, Saló J, Guardiola J, Piñol V, Serra M, Castells A, Xavier DR, Garcia LJ. New fecal bacterial signature for colorectal cancer screening reduces the fecal immunochemical test false-positive rate in a screening population. *PLoS One*. 2020. 15. (12):e0243158. IF:3,240.
2. Pin N, Iglesias MJ, Remedios D, Rodríguez L, Rodriguez F, Álvarez V, Fernández F, Boadas J, Martínez E, Campo R, Bujanda L, Ferrandez Á, Piñol V, Rodríguez D, Guardiola J, Cubiella J, On Behalf Of The Colonpredict Study I. Risk of gastrointestinal cancer in a symptomatic cohort after a complete colonoscopy: Role of faecal immunochemical test. *World J Gastroenterol*. 2020. 26. (1):p. 70-85. IF:5,742.
3. Casanova MJ, Chaparro M, Mínguez M, Ricart E, Taxonera C, García S, Guardiola J, López A, Iglesias E, Beltrán B, Sicilia B, Vera MI, Hinojosa J, Riestra S, Domènech E, Calvet X, Pérez JL, Martín MD, Xavier DR, Rivero M, Monfort D, Barrio J, Esteve M, Márquez L, Lorente R, García E, de Castro L, Bermejo F, Merino O, Rodríguez A, Martínez P, Van M, Alcaín G, Domínguez M, Muñoz C, Gomollón F, Fernández L, García MF, Rodríguez I, Gutiérrez A, Argüelles F, Rodríguez C, Rodríguez GE, Bujanda L, Llaó J, Varela P, Ramos L, Huguet JM, Almela P, Romero P, Navarro M, Abad Á, Ramírez P, Lucendo AJ, Sesé E, Madrigal RE, Charro M, García A, Pajares R, Khorrani S, Gisbert JP. Effectiveness and Safety of the Sequential Use of a Second and Third Anti-TNF Agent in Patients With Inflammatory Bowel Disease: Results From the Eneida Registry. *Inflamm Bowel Dis*. 2020. 26. (4):p. 606-616. IF:5,325.
4. Lenchi N, Kebbouche S, Servais P, Gana ML, Lliros M. Diesel Biodegradation Capacities and Biosurfactant Production in Saline-Alkaline Conditions by Delftia sp NL1, Isolated from an Algerian Oilfield. *Geomicrobiol J*. 2020. 37. (5):p. 454-466. IF:2,308.
5. Domenech B, Juanpere S, Serra I, Codina J, Maroto A. Duodenal tumors on cross-sectional imaging with emphasis on multidetector computed tomography: a pictorial review. *DIAGN INTERV RADIOL*. 2020. 26. (3):p. 193-199. IF:2,630.
6. Díaz Á, Sanduzzi M, da LG, Di GG, Alves R, Iavarone M, Leal C, Sacco R, Matilla AM, Hernández M, Aballay G, Wörns MA, Pinter M, Varela M, Ladekarl M, Chagas AL, Mínguez B, Arenas JI, Granito A, Sánchez Y, Rojas Á, Rodríguez de Lope C, Alvares MR, Pascual S, Rimassa L, Lledó JL, Huertas C, Sangro B, Giannini EG, Delgado M, Vergara M, Perelló C, Lue A, Sala M, Gallego A, Coll S, Hernández T, Piñero F, Pereira G, França A, Marín J, Anders M, Mello V, Lozano M, Nault JC, Menéndez J, García I, Bruix J, Reig M. International and multicenter real-world study of sorafenib-treated patients with hepatocellular carcinoma under dialysis. *LIVER INT*. 2020. 40. (6):p. 1467-1476. IF:5,828.
7. Rodríguez S, Domínguez Á, Carrión JA, Buti M, Quer JC, Morillas RM, López C, Torras X, Baliellas C, Vergara M, Forner M, Zaragoza N, Saló J, Rigau J, Caballeria L, Mariño Z, Janè M, Colom J, Forn X, Lens S. Significant decrease in the prevalence of hepatitis C infection after the introduction of direct acting antivirals. *J Gastroenterol Hepatol*. 2020. 35. (9):p. 1570-1578. IF:4,029.
8. Ausania F, Senra Del Río P, Borin A, Guzmán S, Rivera R, Fort E, Concepción M, Del Val A, Ferrández A, Grau FJ, Ruiz ML, Andreu EB, de E. Factors associated with mortality in patients with infected pancreatic necrosis: the "surgery effect". *Updates Surg*. 2020. 72. (4):p. 1097-1103. IF:2,797.
9. Lenchi N, Anzil A, Servais P, Kebbouche S, Gana ML, Lliros M. *Microbacterium algeriense* sp. nov., a novel actinobacterium

isolated from Algerian oil production waters. *Int J Syst Evol Microbiol.* 2020. 70. (12):p. 6044-6051. IF:2,747.

10. Pin N, Iglesias MJ, Remedios D, Álvarez V, Fernández F, Boadas J, Martínez E, Campo R, Bujanda L, Ferrández Á, Piñol V, Rodríguez D, Menéndez M, García N, Pérez C, Cubiella J. Predictive Value of Carcinoembryonic Antigen in Symptomatic Patients without Colorectal Cancer: A Post-Hoc Analysis within the COLONPREDICT Cohort. *Diagnosics (Basel).* 2020. 10. (12):1036. IF:3,706

NON-INDEXED

1. Marin I, Bastida G, Forés A, García E, Argüelles F, Sarasa P, Tagarro I, Fernández A, Montoto C, Aguas M, Santos J, Bosca MM, Ferreiro R, Merino O, Xavier DR, Cortés X, Sicilia B, Mesonero F, Barreiro M. Impact of comorbidities on anti-TNF α response and relapse in patients with inflammatory bowel disease: the VERNE study. *BMJ Open Gastroenterol.* 2020. 7. (1):e000351.

2. Lopez M, Xavier DR, Sabat M, Serra M, Duncan SH, Flint HJ, García LJ, Martínez M. Evaluation of bacterial biomarkers to aid in challenging inflammatory bowel diseases diagnostics and subtype classification. *World J Gastrointest Pathophysiol.* 2020. 11. (3):p. 64-77

GRANTS

Project: Caracterización y desarrollo de Procesos de Elaboración de Productos Panificables con Impacto positivo en la Salud Humana: Estudio en modelos Humanos de Inflamación y Disbiosis Intestinal.

Funding agency: Ministerio de economía y competitividad (RTC-2017-6467-2)

Duration: 18/09/2018 to 30/09/2021

Coordinator: Xavier Aldeguer Manté

Principal Investigator: Xavier Aldeguer Manté

Project: Analysis of microbiota patterns linked to pancreatic cancer and their role in host inflammation, oxidative stress, and immune status.

Funding agency: Fundació La Marató TV3 (201912-31)

Duration: 30/09/2020 to 30/09/2023

Coordinator: Xavier Aldeguer Manté

Principal Investigator: Xavier Aldeguer Manté

PATENTS

Number of application: WO2020182922

Title: Improved method for the screening, diagnosis and/or

monitoring of colorectal advanced neoplasia, advanced adenoma and/or colorectal cancer.

National Patent/PCT / / EPO

Applicants: Mariona Serra Pagès, Jesús García-Gil, Xavier Aldeguer Manté, Marta Malagón Rodríguez, Sara Ramió Pujol.

DOCTORAL THESIS

Title: Avaluació de la utilitat del monitoratge farmacocinètic dels fàrmacs anti-TNF en pacients amb malaltia inflamatòria intestinal en dos hospitals amb diferent grau d'especialització

Student: Mireia Vila Currius

Director: Xavier Aldeguer Manté

University: Universitat de Girona

Date: 09/03/2020

COLLABORATIONS

Our research group is currently collaborating with the following team partners (see provided list below).

Clinical Microbiology and Infectious diseases group of the University of Girona (UdG); with the university research group lead by M Martínez-Medina and LJ García-Gil we have a close collaboration experience dealing with inflammatory bowel diseases and isolation, characterization and study of different *E. coli* enterotypes.

- LJ García-Gil, full-professor
- M Martínez Medina, tenure-track lecturer

Oncology Data Analytics Program (ODAP), Catalan Institute of Oncology (ICO) from the Bellvitge Biomedical Research Institute (IDIBELL); with Eric Duell's team we have been awarded with a MARATÓ TV3 prize to investigate the human microbiome in pancreatic cancer.

- E Duell, team leader
- Ainhoa García, PhD student

Goodgut sl; a biotechnology company dedicated to the research and development of non-invasive systems to support the diagnosis and treatment of digestive diseases located in Girona area and in which our group leader is co-founder and medical director.

Infections, sepsis and multi-organ dysfunction in the patient

KEYWORDS

Microbiota;
Inflammatory Bowel diseases;
Biomarker;
Molecular microbial ecology

GROUP LEADER - R4

Josep Maria Sirvent

PRE-DOCTORAL RESEARCHERS - R1

Sílvia Maritza Cuenca
Cristina Murcia

COLLABORATORS

Carolina Lorencio
Patricia Ortiz
Sara Foradada
Josep Miquel Morales

TECHNICIANS

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NON SCIENTIFIC RESEARCH SUPPORT STAFF

Juliana Gonzalez
Abdó Tache



OVERVIEW

More than 15 years ago a research group was created in the IDIBGI called "Microbiology and inflammation". This group included all projects on infections of the University Hospital of Girona Doctor Josep Trueta (HUGDJT) as well as a group from the University of Girona working in conjunction with them. Also Dr. Sirvent, is involved in CIBERrespiratori group, 14th grou- Dr. Antoni Torres (Hospital Clinic).

In order to update the group and suitably redefine the projects and research staff actively involved, we will create an internal specific, dynamic group for the study of infectious diseases in the critically ill patient: Study Group of Microbiology and Infection in Critically ill patients (MI-ICU).

RESEARCH TOPICS

- Studies of Microbiology and Infections in the critically ill patient.
- Study of sepsis.
- Study of community-acquired pneumonia.
- Study of sepsis in glycemia.
- Nursing procedure in security and sepsis in critical patient.

PUBLICATIONS

INDEXED / I.F.: 2.491

1. Yébenes JC, Lorencio C, Esteban E, Espinosa L, Badia JM, Capdevila JA, Cisteró B, Moreno S, Calbo E, Jiménez X, Clèries M, Faixedas MT, Ferrer R, Vela E, Medina C, Rodríguez A, Netto C, Armero E, Solsona M, Lopez R, Granés A, Perez V, Artigas A, Estany J, Comisión Asesora para la Atención al Paciente con Sepsis Grup de Treball de Sè Y. Interhospital Sepsis Code in Catalonia (Spain): Territorial model for initial care of patients with sepsis. MED INTENSIVA. 2020. 44. (1):p. 36-45. IF:2,491.

NON-INDEXED:

1. Vera C, Gonzalez J, Carbó G, Ortiz P. Traumatic tracheal injury after motorcycle accident. BMJ Case Rep. 2020. 13. (9):e238895

Internal medicine

KEYWORDS

Venous Thromboembolism;
Heart Failure;
Infectious diseases;
COVID-19;
Sarcoidosis

GROUP LEADER - R4

Antoni Castro i Guardiola

COLLABORATORS

Gemma Álvarez
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Arola Armengou
Marta Conde
Ariadna de Genover
Ana del Cielo Pérez
Iria Francisco
Aberaldo Hurtado
Marta Lora
Anna Oller
Meritxell Ortega
Guillem Policarpo
Martín guintana
Maria Rexach
Xavier Salgado
Ferran Garcia-Bragado

OVERVIEW

All members belong to the Internal Medicine Service, a healthcare service that assists a wide spectrum of pathologies. The main activity of the group is the assistance, and, in their effort to maintain the quality of care, they dedicate notable efforts to continuing medical education (after hours), and in their conviction that clinical research results in a better quality of care.

RESEARCH TOPICS

- Venous thromboembolic disease (VTE). The group, for years, has been dedicated to clinical research of the VTE; has participated in several controlled clinical trials on the new direct-acting oral anticoagulants, all of which were published in the New England Journal of Medicine (the last in 2018). The group also participates in two international registries on the VTE, the registries RIETE and GARFIELD - VTE. Nowadays involves in the trial API-CAT STUDY for Apixaban Cancer Associated Thrombosis.
- Heart failure. Dr. Arola Armengou She is a member of the Heart Failure and Atrial Fibrillation group of the Spanish

Internal Medicine Society and is an active member of the RICA registry.

- *Infectious diseases. The group designed and developed a clinical trial on pneumonia acquired in the community, as well as other studies on the same pathology; These studies were translated into an original in the American Journal of Medicine as well as other publications and communications to different congresses. The group also works on the infection by the human immunodeficiency virus, multi-resistant bacteria, urinary tract infections and Tuberculosis.
- Finally, the group also participates in the clinical investigation of systemic autoimmune diseases and recently we have started clinical research, together with the Ophthalmology Service, of uveitis. The group participates in the RELES registry (Registro Español del Lupus Eritematoso Sistémico) of the Spanish Internal Medicine Society.

PUBLICATIONS

INDEXED / I.F: 20.84

1. Tufano A, López L, Bikdeli B, García F, Mazzolai L, Amitrano M, Gómez C, Marchena PJ, Madridano O, Monreal M, Di P, RIETE I. Inferior vena cava agenesis in patients with lower limb deep vein thrombosis in the RIETE registry. When and why to suspect. *INT J CARDIOL*. 2020. 305. p. 115-119. IF:4,164.
2. Bikdeli B, Jiménez D, Muriel A, Barrios D, Ballaz A, Verhamme P, Monreal M, RIETE I, Coordinator of the RIETE Registry: Manuel RIETE Steering Committee Memb MONREAL, Prandoni P, Brenner B, Farge D, Barba R, Di P, Bertolotti L, Schellong S, Tzoran I, Reis A, Bosevski M, Bounameaux H, Malý R, Verhamme P, Caprini JA, Bui MYH, Adarraga MD, Agud M, Aibar J, Aibar MA, Alfonso J, Amado C, Arcelus JI, Arramberrri M, Azcarate P, Ballaz A, Barba R, Barbagelata C, Barrón M, Barrón B, Blanco A, Camon AM, Castro J, Criado J, Culla A, de Miguel J, Del Toro J, Demelo P, Díaz MC, Díaz JA, Díez J, Domínguez IM, Escribano JC, Fernández C, Fernández JL, Fidalgo MA, Flores K, Font C, Font L, Francisco I, Furest I, Gabara C, García MA, García F, García A, Gavín O, Gavín O, Gayol MC, Gil A, Gómez C, González J, Grau E, Gutiérrez J, Hernando E, Iglesias M, Jara L, Jaras MJ, Jiménez D, Joya MD, Jou I, Lacruz B, Lalueza A, Lima J, Llamas P, Lobo JL, López L, López M, López P, López JJ, López R, López JB, Lorente MA, Lorenzo A, Loring M, Lumbierres M, Madridano O, Maestre A, Marchena PJ, Martín M, Martín M, Martín JM, Martín F, Mella C, Mellado M, Mercado MI, Moisés J, Monreal M, Morales MV, Muñoz A, Muñoz D, Nieto JA, Núñez MJ, Olivares MC, Ortega C, Ortega MD, Osorio J, Otero R, Paredes D, Parra V, Pedrajas JM, Pellejero G, Pérez C, Pérez A, Pérez G, Peris ML, Pesántez D, Porras JA, Portillo J, Reig L, Riera A, Rivas A, Rodríguez A, Rodríguez C, Rosa V, Rubio CM, Ruiz N, Ruiz P, Sahuquillo JC, Sala MC, Salgueiro G, Sampéris A, Sánchez JF, Sancho T, Soler S, Suárez S, Suriñach JM, Tapia E, Tiberio G, Torres MI, Tolosa C, Trujillo J, Uresandi F, Usandizaga E, Valle R, Vela JR, Vidal G, Villares P, Zamora C, Gutiérrez P, Vázquez FJ, Vanassche T, Vandenbriele C, Verhamme P, Hirmerova J, Malý R, EcuadOR E, Benzidia I, Bertolotti L, Bura A, Debourdeau P, Courtois MC, Farge D, Helfer H, Hij A, Mahé I, Moustafa F, Schellong S, Braester A, Brenner B, Tzoran I, Amitrano M, Bilora F, Bortoluzzi C, Brandolin B, Bucherini E, Ciammaichella M, Dentali F, Di P, Grandone E, Imbalzano E, Maida R, Pace F, Pesavento R, Prandoni P, Quintavalla R, Rocci A, Siniscalchi C, Tiraferri E, Tufano A, Visonà A, Vo N, Zalunardo B, Kigitovica D, Skride A, Strautmene S, Ferreira M, Bosevski M, Zdraveska M, Bounameaux H, Mazzolai L, Bikdeli B, Caprini JA, Tafur AJ, Weinberg I, Wilkins H, Bui HM. Association between reperfusion therapy and outcomes in patients with acute pulmonary embolism and right heart thrombi. *Eur Respir J*. 2020. 56(5):2000538. IF:16,671.

Metabolic and maternofoetal

Recognised as a consolidated research group by AGAUR (Generalitat de Catalunya) - 2017SGR01236

KEYWORDS

Pregnancy;
Pre and postnatal growth;
Metabolic programming

GROUP LEADER - R4

Judit Bassols

PRE-DOCTORAL RESEARCHERS - R2

José María Martínez-Calcerrada
Ariadna Gómez Vilarrubia

COLLABORATORS

Mercè Montesinos
Alexandra Bonmatí
Montserrat Gispert Sauch



OVERVIEW

An unfavorable prenatal environment and inadequate nutritional stimulus during critical developmental periods are associated with an increased risk of endocrine-metabolic diseases in the mother and in their offspring. This metabolic programming is produced, in part, by epigenetic changes in maternal and fetal tissues. In recent years, we have developed a longitudinal clinical study in a cohort of pregnant-newborns with prenatal development alterations (pre-gestational obesity, gestational obesity and fetal growth restriction) to study the epigenetic marks (miRNA and DNA methylation) in maternal plasma, placenta and umbilical cord and to determine their relationship with endocrine-metabolic parameters and with pre and postnatal growth. These epigenetic marks in pregnancy available tissues can be used as new predictive elements for the identification of newborns at risk of developing future metabolic diseases and as new therapeutic targets for these diseases.

RESEARCH TOPICS

MAIN RESEARCH LINE:

Identification of metabolic and (epi)genetic marks associated with metabolic alterations of pregnancy and offspring, and their relation to pre and postnatal growth.

SPECIFIC RESEARCH LINES:

1. Alterations of prenatal development: gestational obesity and restriction of fetal growth.
2. Postnatal recovery growth (catch-up).
3. Metabolic programming during pregnancy.
4. Epigenetics of development.

PUBLICATIONS

INDEXED / I.F.: 63.71

1. Prats A, Xargay S, Carreras G, Mas B, Bassols J, Petry CJ, Girardot M, E DF, Ibáñez L, Dunger DB, Feil R, López A. Methylation of the C19MC microRNA locus in the placenta: association with maternal and childhood body size. *Int J Obes (Lond)*. 2020. 44. (1):p. 13-22. IF:5,095.
2. Xargay S, Dorado E, Benavides A, Lizárraga E, Mas B, Montesinos M, De Zegher F, Ibáñez L, Bassols J, López A. Circulating IGF-1 Independently Predicts Blood Pressure in Children With Higher

Calcium-Phosphorus Product Levels. *J Clin Endocrinol Metab*. 2020. 105. (1):p. 610-618. IF:5,958.

3. Prats A, García S, Puig M, Vasileva F, Font R, Xargay S, Carreras G, Mas B, Bassols J, López A. DNA Methylation Reorganization of Skeletal Muscle-Specific Genes in Response to Gestational Obesity. *FRONT PHYSIOL*. 2020. 11. p. 938-938. IF:4,566.

4. Díaz M, Bassols J, López A, de Zegher F, Ibáñez L. Low Circulating Levels of miR-451a in Girls with Polycystic Ovary Syndrome: Different Effects of Randomized Treatments. *J Clin Endocrinol Metab*. 2020. 105. (3):p. 273-281. IF:5,958.

5. Zhao M, Caserta CA, Medeiros CCM, López A, Kollias A, Zhang Q, Pacifico L, Reinehr T, Litwin M, Bassols J, Romeo EL, Ramos T, Stergiou GS, Yang L, Xargay S, Amante A, Estrela TM, Grammatikos E, Zhang Y, Prats A, Franklin de Carvalho D, Yang L, Carreras G, de Oliveira M, Hou Y, Lizárraga E, Shui W, Guo T, Wang M, Zhang Y, Bovet P, Xi B, International Childhood Vascular Structure Evaluation C. Metabolic syndrome, clustering of cardiovascular risk factors and high carotid intima-media thickness in children and adolescents. *J Hypertens*. 2020. 38. (4):p. 618-624. IF:4,844.

6. Derakhshan A, Peeters RP, Taylor PN, Bliddal S, Carty DM, Meems M, Vaidya B, Chen L, Knight BA, Ghafoor F, Popova PV, Mosso L, Oken E, Suvanto E, Hisada A, Yoshinaga J, Brown SJ, Bassols J, Auvinen J, Bramer WM, López A, Dayan CM, French R, Boucai L, Vafeiadi M, Grineva EN, Pop VJM, Vrijkotte TG, Chatzi L, Sunyer J, Jiménez A, Riaño I, Rebagliato M, Lu X, Pirzada A, Männistö T, Delles C, Feldt U, Alexander EK, Nelson SM, Chaker L, Pearce EN, Guxens M, Steegers E, Walsh JP, Korevaar T. Association of maternal thyroid function with birthweight: a systematic review and individual-participant data meta-analysis. *Lancet Diabetes Endocrinol*. 2020. 8. (6):p. 501-510. IF:32,069.

7. Yang L, Whincup PH, López A, Caserta CA, Muniz CC, Kollias A, Pacifico L, Reinehr T, Litwin M, Owen CG, Bassols J, Romeo EL, Almeida TD, Stergiou GS, Zhao M, Yang L, Xargay S, Amante A, Gusmão T, Grammatikos E, Wang M, Prats A, Franklin de Carvalho D, Carreras G, de Oliveira M, Mas B, Shui W, Deanfield JE, Magnussen CG, Xi B, International Childhood Vascular Structure Evaluation C. Use of Static Cutoffs of Hypertension to Determine High cIMT in Children and Adolescents: An International Collaboration Study. *CAN J CARDIOL*. 2020. 36. (9):p. 1467-1473. IF:5,223.

GRANTS

Project: Perfil de ácidos grasos y programación epigenética en placenta: prevención del riesgo cardiovascular y obesidad en la infancia (PI17/00557)

Funding agency: Instituto de Salud Carlos III
Duration: 01/01/2018 to 30/06/2021
Coordinator: Judit Bassols Casadevall
Principal Investigator: Judit Bassols Casadevall

Project: Ayuda de personal PFIS
Funding agency: Instituto de Salud Carlos III
Duration: 01/01/2019 to 31/12/2022
Coordinator: Judit Bassols Casadevall
Principal Investigator: Judit Bassols Casadevall

Project: Ayuda de personal Miquel Servet II
Funding agency: Instituto de Salud Carlos III
Duration: : 01/01/2018 to 31/05/2021
Coordinator: Judit Bassols Casadevall
Principal Investigator: Judit Bassols Casadevall

Project: Impronta genética y crecimiento recuperativo postnatal en recién nacidos con bajo peso al nacimiento
Funding agency: Asociación Española de Pediatría
Duration: 2019-2021
Coordinator: Judit Bassols Casadevall
Principal Investigator: Abel López-Bermejo

Project: Función cognitiva y obesidad en niños prepuberales: Efecto de la obesidad materna, crecimiento pre y postnatal y factores ambientales
Funding agency: Fundación Merck-Salud
Duration: 2019-2021
Coordinator: Judit Bassols Casadevall
Principal Investigator: Abel López-Bermejo

Project: Análisis longitudinal de las marcas de metilación del ADN asociadas con la obesidad infantil (PI20/00399)
Funding agency: Instituto de Salud Carlos III
Duration: 01/01/2021 to 31/12/2023
Coordinator: Judit Bassols Casadevall
Principal Investigator: Judit Bassols Casadevall

COLLABORATIVE GRANTS

Project: Repercusión de las alteraciones prenatales perinatales en el desarrollo postnatal: Enfermedades de origen fetal. (Exp. 2017-SGR-1236)
Funding agency: Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR)
Duration: 2018-2020
Coordinator: Lourdes Ibañez
Principal Investigator: Lourdes Ibañez

MEMBERSHIP OF COLLABORATIVE RESEARCH NETWORKS (NATIONAL & INTERNATIONAL)

INTERNATIONAL:

- International Childhood Vascular Structure Evaluation Consortium (ICVSEC)
- International Consortium on Thyroid and Pregnancy (ICTP)

AWARDS

Title: Umbilical Cord miRNAs in Small -for-Gestational-Age Children and Association with catch-up growth: A Pilot Study
Institution: Sociedad Española de Endocrinología Pediátrica (SEEP)
Awardee/s: Premio a la Investigación en Endocrinología Pediátrica y Crecimiento 2020
Date: 16/10/2020

Title: Ayuda de personal Miquel Servet III
Institution: Sociedad Española de Endocrinología Pediátrica (SEEP)
Awardee/s: Accésit de los Premios a la Investigación en Endocrinología Pediátrica y Crecimiento 2020
Date: 16/10/2020

COLLABORATIONS

- Endocrinology, Pediatric Research Institute, Sant Joan de Déu Children's Hospital, Barcelona
- Development & Regeneration, University of Leuven, Leuven, Belgium

Nephrology

KEYWORDS

Nephrology;
Dialysis;
Hypertension;
Therapeutic aphaeresis

GROUP LEADER - R4

Jordi Calabia

ESTABLISHED RESEARCHERS - R3

Xoana Barros

PRE-DOCTORAL RESEARCHERS - R1

Anna Merino



OVERVIEW

Consolidate the method for studying cardiovascular risk and the atheroma burden in patients with chronic kidney disease, high blood pressure and Diabetes Mellitus with diabetic nephropathy.

Consolidating the methodology for the study of stiffness and vascular calcification in patients with chronic kidney disease.

RESEARCH TOPICS

Study of the macro and microvascular affectation of inflammatory markers and bone-mineral metabolism markers in chronic kidney disease and their most frequent pathologies: high blood pressure and diabetic nephropathy.

PUBLICATIONS

INDEXED / I.F.: 63.71

1. Corredor Z,Filho M,Rodríguez L,Velázquez A,Hernández A,Catalano C,Hemminki K,Coll E,Silva I,Diaz JM,Ballarín J,Vallés M,Calabia J,Försti A,Marcos R,Pastor S. Genetic Variants Associated with Chronic Kidney Disease in a Spanish Population. *Sci Rep.* 2020. 10. (1):p. 144-144. IF:4,379.
2. Bermejo S,González E,López K,Ibernon M,López D,Martín A,García R,Linares T,Díaz M,Martín N,Barros X,Marco H,Navarro MI,Esparza N,Eliás S,Coloma A,Robles NR,Agraz I,Poch E,Rodas L,Lozano V,Fernández B,Hernández E,Martínez MI,Stanescu RI,Moirón JP,García N,Goicoechea M,Calero F,Bonet J,Galceran JM,Liaño F,Pascual J,Praga M,Fulladosa X,Soler MJ. Risk factors for non-diabetic renal disease in diabetic patients. *Clin Kidney J.* 2020. 13. (3):p. 380-388. IF:4,452.
3. Caravaca F,Díaz MM,Lucientes L,Cavero T,Cabello V,Ariceta G,Quintana LF,Marco H,Barros X,Ramos N,Rodríguez N,Cruz S,Fernández G,Rodríguez A,Pérez de José A,Rabasco C,Rodado R,Fernández L,Pérez V,Ávila AI,Bravo L,Lumbreras J,Allende N,Sánchez de la Nieta MD,Rodríguez E,Olea T,Melgosa M,Huerta A,Miquel R,Mon C,Fraga G,de Lorenzo A,Draibe J,Cano M,González F,Shabaka A,López ME,Fenollosa MÁ,Martín L,De I,Alonso J,Rodríguez de Córdoba S,Goicoechea de Jorge E,Praga M,Spanish Group for the Study of Glomerular Diseases G. Mycophenolate Mofetil in C3 Glomerulopathy and Pathogenic Drivers of the Disease. *Clin J Am Soc Nephrol.* 2020. 15. (9):p. 1287-1298. IF:8,237.
4. Hueso M,de Haro L,Calabia J,Dal R,Tebé C,Gibert K,Cruzado JM,Vellido A. Leveraging Data Science for a Personalized Haemodialysis. *Kidney Dis (Basel).* 2020. 6. (6):p. 385-394. IF:3,222

MEMBERSHIP OF COLLABORATIVE RESEARCH NETWORKS (NATIONAL & INTERNATIONAL)

SPANISH:

- Grupo sobre enfermedades glomerulares (GLOSEN)

CATALAN:

- Grup de malalties glomerulars (GlomCAT)

Nutrition, eumetabolism and health



Recognised as a consolidated research group by AGAUR (Generalitat de Catalunya) - 2017SGR00734

MEMBER OF
CIBER-OBN

KEYWORDS
Inflammation;
Iron;
Insulin Resistance;
Type 2 diabetes;
Obesity

GROUP LEADER - R4
José-Manuel Fernández-Real

ESTABLISHED RESEARCHERS - R3
José María Moreno Navarrete
Francisco José Ortega
Jordi Mayneris Perxachs
Wifredo Ricart Engel

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Gemma Xifra
Jessica Latorre

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Núria Oliveras
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Cristina Planella
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OVERVIEW

The research group, “Nutrition, Eumetabolism and Health”, is a consolidated group recognized by the Generalitat of Catalonia and belongs to the CIBERobn (CIBER Physiopathology of Obesity and Nutrition) since its foundation.

The research is focused on the pathophysiology of obesity, type 2 diabetes mellitus and their complications and the main lines of research are centered on innate immune system, inflammation and metabolic disease, the group has done significant work on the association of various genetic inflammatory polymorphisms of the innate immune system with insulin resistance and several other parameters of the metabolic syndrome;

Genomic / genetic type 2 diabetes and obesity (including microRNAs and long-non-coding RNAs);

Biology of adipose tissue, the group coordinates the FatBANK at the state level, the only biobank specializing in adipose tissue;

Iron (systemic, circulating and tissue in liver, brain, fatty tissue and muscle) as a modulator of inflammation to metabolic pathology, the group has pioneered the study of the links between iron metabolism and type 2 diabetes and José Manuel Fernández-Real was the first to propose ferritin as a component of the metabolic syndrome (Diabetes Care 1998) and to measure the effects of iron-depletion on insulin sensitivity in type 2 diabetes mellitus (Diabetes 2002);

The role of the microbiota to obesity and type 2 diabetes, the microbiota is a very important regulatory factor of aggression and response to aggression. Intestinal bacteria are a part of the unconscious system that regulates our behavior. It has been postulated that in the absence of bacteria humans would not have developed their level of cognitive performance;

Non-alcoholic steatohepatitis and fatty liver;

The brain as a metabolic organ and

Computational tools to optimize glycemic control.

In parallel, the group’s work has contributed to characterize new phenotypic variables linked to insulin resistance.

The group has led a part of a European project (FLORINASH) that characterizes the signature of the microbiota related to non-alcoholic steatohepatitis in patients with morbid obesity and is currently part of another Horizon 2020 project, PEPPER (patient empowerment through predictive personalised decision support),

which contemplates the development of a personalized decision support system for the management of chronic diseases. The system, based on reasoning based on cases and predictive models, will allow patients to manage their own illnesses, as is the case of diabetes.

RESEARCH TOPICS

- Inflammation and insulin resistance.
- Physiology of the adipose tissue.
- Iron metabolism and insulin resistance.
- Biomarkers for obesity, insulin resistance and Type-2 diabetes.
- Microbiota composition in metabolic disease.
- Interactions among microbiota, brain microstructure and function: the gut-brain axis.

PUBLICATIONS

INDEXED / I.F.: 194.68

1. Badenes M, Amin A, González I, Félix I, Burbridge E, Cavadas M, Ortega FJ, de Carvalho É, Faísca P, Carobbio S, Seixas E, Pedroso D, Neves A, Moita LF, Fernández JM, Vidal A, Domingos A, López M, Adrain C. Deletion of iRhom2 protects against diet-induced obesity by increasing thermogenesis. *Mol Metab.* 2020. 31. p. 67-84. IF:7,422.
2. Santamaria F, Benítez I, Pinilla L, Ortega F, Zapater A, Girón C, Mínguez O, Gómez S, Vaca R, Fernandez JM, Barbé F, Sánchez M. MicroRNA Profile of Cardiovascular Risk in Patients with Obstructive Sleep Apnea. *Respiration.* 2020. 99. (12):p. 1122-1128. IF:3,580.
3. Guirro M, Gual A, Gibert A, Alcaide JM, Canela N, Arola L, Mayneris J. Metabolomics Elucidates Dose-Dependent Molecular Beneficial Effects of Hesperidin Supplementation in Rats Fed an Obesogenic Diet. *Antioxidants (Basel).* 2020. 9. (1):79. IF:6,312.
4. Mayneris J, Fernández JM. Exploration of the microbiota and metabolites within body fluids could pinpoint novel disease mechanisms. *FEBS J.* 2020. 287. (5):p. 856-865. IF:5,542.
5. Mayneris J, Mousa A, Naderpoor N, Fernández JM, de Courten B. Plasma Phospholipids with Long-Chain Polyunsaturated Fatty Acids and Dihydroceramides at the Crossroads of Iron Stores and

Insulin Resistance. *Mol Nutr Food Res*. 2020. 64. (5):e1901055. IF:5,914.

6. Latorre J,Ortega FJ,Liñares L,Moreno JM,Lluch A,Comas F,Oliveras N,Ricart W,Höring M,Zhou Y,Liebisch G,Nidhina PA,Olkkonen VM,López M,Fernández JM. Compounds that modulate AMPK activity and hepatic steatosis impact the biosynthesis of microRNAs required to maintain lipid homeostasis in hepatocytes. *EBioMedicine*. 2020. 53. p. 102697-102697. IF:8,143.

7. Ballester M,Quintanilla R,Ortega FJ,Serrano J,Cassanyé A,Rodríguez M,Moreno JA,Portero M,Tibau J. Dietary intake of bioactive ingredients impacts liver and adipose tissue transcriptomes in a porcine model of prepubertal early obesity. *Sci Rep*. 2020. 10. (1):p. 5375-5375. IF:4,379.

8. Santamaria F,Benitez ID,Latorre J,Lluch A,Moreno JM,Sabater M,Ricart W,Sanchez de la Torre M,Mora S,Fernández JM,Ortega FJ. Comparative and functional analysis of plasma membrane-derived extracellular vesicles from obese vs. nonobese women. *CLIN NUTR*. 2020. 39. (4):p. 1067-1076. IF:7,324.

9. Arnoriaga M,Mayneris J,Burokas A,Pérez V,Moya A,Portero M,Ricart W,Maldonado R,Fernández JM. Gut bacterial ClpB-like gene function is associated with decreased body weight and a characteristic microbiota profile. *Microbiome*. 2020. 8. (1):p. 59-59. IF:14,650.

10. Mayneris J,Mousa A,Naderpoor N,Fernández JM,de Courten B. Low AMY1 Copy Number Is Cross-Sectionally Associated to an Inflammation-Related Lipidomics Signature in Overweight and Obese Individuals. *Mol Nutr Food Res*. 2020. 64. (11):e1901151. IF:5,914.

11. Castelblanco E,Sanjurjo L,Barranco M,Falguera M,Hernández M,Soldevila B,Sarrias MR,Franch J,Arroyo JA,Fernandez JM,Alonso N,Mauricio D. The Circulating Fatty Acid Transporter Soluble CD36 Is Not Associated with Carotid Atherosclerosis in Subjects with Type 1 and Type 2 Diabetes Mellitus. *J Clin Med*. 2020. 9. (6):1700. IF:4,241.

12. Palomino M,Mayneris J,Caballano E,Rodríguez MA,Palomo ME,Xiao X,Mares R,Ricart W,Simó R,Herance JR,Fernández JM. Combining metabolic profiling of plasma and faeces as a fingerprint of insulin resistance in obesity. *CLIN NUTR*. 2020. 39. (7):p. 2292-2300. IF:7,324.

13. Puig J,Biarnes C,Pedraza S,Vilanova JC,Pamplona R,Fernández JM,Brugada R,Ramos R,Coll G,Calvo L,Serena J,Ramió L,Gich J,Gallart L,Portero M,Alberich A,Jimenez A,Camacho E,Mayneris J,Pineda V,Font R,Prats A,Gacto ML,Deco G,Escrichs A,Clotet B,Paredes R,Negredo E,Triaire B,Rodríguez M,Heredia A,Coronado

R,de Graaf W,Prevost V,Mitulescu A,Daunis P,Thió S,Miralles F,Ribas V,Puig M,Essig M,Figley CR,Figley TD,Albensi B,Ashraf A,Reiber JHC,Schifitto G,Nasir MD,Leiva C,Wintermark M,Nael K,Vilalta J,Jordi B,Garre J. The Aging Imageomics Study: rationale, design and baseline characteristics of the study population. *Mech Ageing Dev*. 2020. 189. p. 111257-111257. IF:5,432.

14. Fort R,Carmona C,Oscá G,Marcos R,Puigdemont M,Biarnes J,Lopez S,Garcia A,Guardeno R. Incidence and survival of pancreatic neuroendocrine tumours in Girona, Spain. *Ann Oncol*. 2020. 31. p. 169-169. IF:32,976.

15. Domenech B,Cuba V,Daunis P,Thió S,Jaldo F,Biarnes C,Molina X,Xifra G,Ricart W,Bardera A,Boada I,Essig M,Pedraza S,Federici M,Fernández JM,Puig J. Bariatric Surgery-Induced Changes in Intima-Media Thickness and Cardiovascular Risk Factors in Class 3 Obesity: A 3-Year Follow-Up Study. *Obesity (Silver Spring)*. 2020. 28. (9):p. 1663-1670. IF:5,002.

16. Jové M,Tibau J,Serrano JC,Berdún R,Rodríguez M,Font M,Cassanyé A,Rodríguez R,Sol J,Rassendren H,Fàbrega E,Crescenti A,Castell A,Sabater M,Ortega FJ,Martin M,Quintanilla R,Puigjaner J,Moreno JA,Prat J,Arola L,Fernández JM,Pamplona R,Portero M. Molecular phenomics of a high-calorie diet-induced porcine model of prepubertal obesity. *J NUTR BIOCHEM*. 2020. 83. p. 108393-108393. IF:6,048.

17. Moore SR,Quinn LA,Maier EA,Guedes MM,Quetz JS,Perry M,Ramprasad C,Lanzarini GML,Mayneris J,Swann J,Soares AM,Filho JQ,Junior FS,Havt A,Lima NL,Guerrant RL,Lima A. Intervention and Mechanisms of Alanine-glutamine for Inflammation, Nutrition, and Enteropathy: A Randomized Controlled Trial. *J Pediatr Gastroenterol Nutr*. 2020. 71. (3):p. 393-400. IF:2,839.

18. Mayneris J,Arnoriaga M,Luque D,Priego F,Pérez V,Moya A,Burokas A,Maldonado R,Fernández JM. Gut microbiota steroid sexual dimorphism and its impact on gonadal steroids: influences of obesity and menopausal status. *Microbiome*. 2020. 8. (1):p. 136-136. IF:14,650.

19. Arnoriaga M,Mayneris J,Burokas A,Contreras O,Blasco G,Coll C,Biarnes C,Miranda R,Latorre J,Moreno JM,Castells A,Sabater M,Palomo ME,Puig J,Pedraza S,Gich J,Pérez V,Ricart W,Moya A,Fernández X,Ramió L,Pamplona R,Sol J,Jové M,Portero M,Maldonado R,Fernández JM. Obesity Impairs Short-Term and Working Memory through Gut Microbial Metabolism of Aromatic Amino Acids. *CELL METAB*. 2020. 32. (4):p. 548-548. IF:27,287.

20. Mayneris J,Puig J,Burcelin R,Dumas ME,Barton RH,Hoyles L,Federici M,Fernández JM. The APOA1bp-SREBF-NOTCH axis is associated with reduced atherosclerosis risk in morbidly obese

patients. *CLIN NUTR.* 2020. 39. (11):p. 3408-3418. IF:7,324.

21. Cornejo IM,Gómez AM,Fernández JC,Barahona San Millan R,Aguilera A,de Hollanda A,Jiménez A,Jimenez S,Munguia L,Ortega E,Fernandez F,Fernández JM,Tinahones F. Coronavirus disease 2019 (COVID-19) and obesity. Impact of obesity and its main comorbidities in the evolution of the disease. *Eur Eat Disord Rev.* 2020. 28. (6):p. 799-815. IF:4,520.

22. Fernández F,Munguía L,Mestre G,Steward T,Ettxandi M,Baenas I,Granero R,Sánchez I,Ortega E,Andreu A,Moize VL,Fernández JM,Tinahones FJ,Dieguez C,Frühbeck G,Le D,Tchanturia K,Karwautz A,Zeiler M,Favaro A,Claes L,Luyckx K,Shekrladze I,Serrano E,Rangil T,Meler M,Soriano J,Carceller M,Bujalance S,Lozano M,Linares R,Gudiol C,Carratala J,Sanchez J,Machado PP,Håkansson A,Túry F,Pászthy B,Stein D,Papezová H,Bax B,Borisenkov MF,Popov SV,Kim YR,Nakazato M,Godart N,van R,Ilnytska T,Chen J,Rowlands K,Treasure J,Jiménez S. COVID Isolation Eating Scale (CIES): Analysis of the impact of confinement in eating disorders and obesity-A collaborative international study. *Eur Eat Disord Rev.* 2020. 28. (6):p. 871-883. IF:4,520.

23. Vicens J,Esteve E,Fort A,Casals M,Bandholm T,Ishøi L,Opar D,Shield A,Thorborg K. Performance changes during the off-season period in football players - Effects of age and previous hamstring injury. *J Sports Sci.* 2020. 38. (21):p. 2489-2499. IF:3,337.

NON-INDEXED

1. Liu C,Avari P,Leal Y,Wos M,Sivasithamparam K,Georgiou P,Reddy M,Fernández JM,Martin C,Fernández M,Oliver N,Herrero P. A Modular Safety System for an Insulin Dose Recommender: A Feasibility Study. *J Diabetes Sci Technol.* 2020. 14. (1):p. 87-96.

GRANTS

Project: Anàlisi integrat de les interaccions entre la glucèmica i la composició de la microbiota, i del seu imapcte sobre l'acumulació de ferro cerebral i la congició en subjectes obesos
Funding agency: Instituto de Salud Carlos III (ISCIII)
Duration: 01/01/2019 to 31/12/2021
Coordinator: José Manuel Fernández-Lemos
Principal Investigator: José Manuel Fernández-Lemos

Project: Stratification of Obese Phenotypes to Optimize Future Obesity Therapy
Funding agency: European Comission
Duration: 09/07/2020 to 08/07/2025
Coordinator: José Manuel Fernández-Lemos

Principal Investigator: José Manuel Fernández-Lemos

Project: Herencia epigenética mediada por ARN paterno de trastornos metabólicos: impacto de la pérdida de peso en el epitranscriptoma de los espermatozoides humanos
Funding agency: Instituto de Salud Carlos III (ISCIII)
Duration: 01/01/2019 to 31/12/2021
Coordinator: José Manuel Fernández-Lemos
Principal Investigator: José Manuel Fernández-Lemos

Project: Ayuda de personal para la intensificación
Funding agency: Instituto de Salud Carlos III (ISCIII)
Duration: 01/01/2020 to 31/12/2023
Coordinator: José Manuel Fernández-Lemos
Principal Investigator: José Manuel Fernández-Lemos

Project: Ayuda de personal Río Hortega
Funding agency: Instituto de Salud Carlos III (ISCIII)
Duration: 01/01/2020 to 31/12/2021
Coordinator: José Manuel Fernández-Lemos
Principal Investigator: José Manuel Fernández-Lemos

Project: Gut-brain-axis: Targets for improvement of cognition in the elderly (SMARTAGE)
Funding agency: Unión Europea (Horizonte 2020)
Duration: 2020 to 2024
Coordinator: Otto W. Witte
Principal Investigator: José Manuel Fernández-Lemos

Project: Predicción personalizada de la cognición a través de la microbiota humana. (ThinkGut)
Funding agency: Interreg-POCTEFA
Duration: 2019 to 2022
Coordinator: José Manuel Fernández-Lemos
Principal Investigator: José Manuel Fernández-Lemos

Project: Are there any links between microbial products accumulation in adipose tissue and obesity-associated insulin resistance? The possible role LBP and lysozyme
Funding agency: Instituto de Salud Carlos III
Duration: 2020 to 2022
Coordinator: José María Moreno Navarrete (CIBER)
Principal Investigator: José María Moreno Navarrete (CIBER)

Project: Papel de la Olfactomedina 2 (OLFM2) en el tejido adiposo en relación con la obesidad
Funding agency: Instituto de Salud Carlos III
Duration: 2019 to 2021
Coordinator: Francisco José Ortega
Principal Investigator: Francisco José Ortega

Project: Systems biology approach to unravel the pathogenesis of non-alcoholic fatty liver disease (NAFLD)

Funding agency: Instituto de Salud Carlos III - Miguel Servet

Duration: 2019 to 2024

Coordinator: Jordi Mayneris Perxachs

Principal Investigator: Jordi Mayneris Perxachs

Project: Relevance of the cluster miR-424(322)/503 in the development of hyperplastic adipose tissue

Funding agency: Fundació La Marató de TV3

Duration: 2017 to 2020

Coordinator: Francisco José Ortega

Principal Investigator: Francisco José Ortega

Project: Estudio de la biosíntesis de H₂S en el tejido adiposo humano y su posible efecto en la adipogénesis y en la sensibilidad a la insulina

Funding agency: Instituto de Salud Carlos III

Duration: 2017 to 2021

Coordinator: José María Moreno Navarrete (CIBER)

Principal Investigator: José María Moreno Navarrete (CIBER)

Project: Restricting fatty liver: Therapeutic utility of miR-30b

Funding agency: Instituto de Salud Carlos III - Miguel Servet

Duration: 2020 to 2024

Coordinator: Francisco José Ortega

Principal Investigator: Francisco José Ortega

Project: Role of gut microbiota in fatty liver and diabetes

Funding agency: Diabetes UK

Duration: 2018 to 2022

Coordinator: Marc Dumas

Principal Investigator: José Manuel Fernández-Lemos

Project: Precision medicine through integrative metagenomics and phenomics in a human NAFLD cohort

Funding agency: Guts UK

Duration: 2019 to 2023

Coordinator: Marc Dumas

Principal Investigator: José Manuel Fernández-Lemos

Number of application: US63/132.881

Title: Compositions and methods for treating metabolic disorders.

National Patent /PCT // EPO

Inventor: Ramón Díaz, Kiyoshi Tachikawa, Priya Kamali, Rajesh Mukthavaram, Padmanabh Chivukula, José Moreno-Navarrete, José Manuel Fernández-Real, Aleix Gavaldà Navarro, Marta Giralt Oms, Francesc Villarroya Gombau.

MEMBERSHIP OF COLLABORATIVE RESEARCH NETWORKS (NATIONAL & INTERNATIONAL)

INTERNATIONAL

- ECNP Network

SPANISH

- CIBER_OBN (Obesidad y nutrición) - CB06/03/0010

DOCTORAL THESIS

Title: Efectes de l'exercici de resistència de baixa intensitat i del suport nutricional sobre la sarcopènia i la inflamació crònica de baix grau en persones de 60- 75 anys

Student: Cristina Planella Farrugia

Director: Wifredo Ricart, José Manuel Fernández-Real Lemos

University: Universitat de Girona

Date: 10/09/2020

Title: Relevance of the epigenetic regulation exercised by hepatic micrnas in the fatty liver arena: from the bedside to the bench

Student: Jèssica Latorre Luque

Director: José Francisco Ortega Delgado, José Manuel Fernández-Real Lemos

University: Universitat de Girona

Date: 04/03/2020

PATENTS

Number of application: EP20382592

Title: Gut microbiota composition and uses thereof.

National Patent /PCT // EPO

Applicants: José Manuel Fernández-Real, Jordi Mayneris Perxachs, Maria Arnoriaga Rodríguez, Rafael Maldonado, Aurelijus Burokas, Andrés Moya Simarro, Vicente Pérez Brocal.

Paediatric obesity and cardiovascular risk

Recognised as a consolidated research group by AGAUR (Generalitat de Catalunya) - 2017SGR01236

KEYWORDS

Obesity;
Cardiovascular risk;
Metabolic programming;
Developmental epigenetics;
Intrauterine growth retardation

GROUP LEADER - R4

Abel López Bermejo

POST-DOCTORAL RESEARCHER - R2

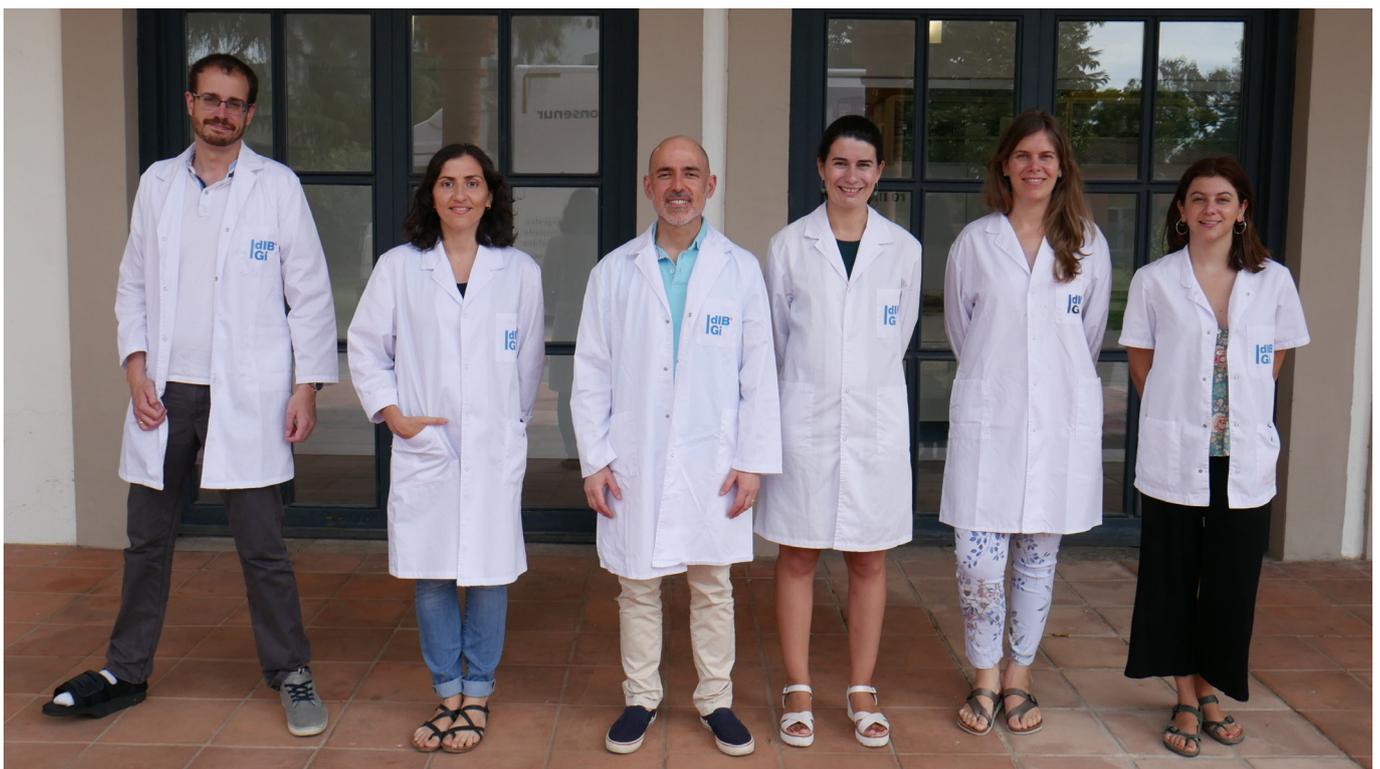
Gemma Carreras

PRE-DOCTORAL RESEARCHERS -R1

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Berta Mas
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COLLABORATORS

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Pilar Soriano
Elena Riera
Anna Prats



OVERVIEW

Our research is aimed at identifying new biomarkers during the perinatal life and childhood for the early detection and prevention of cardio-metabolic risk in the adult life. We also investigate the epigenetic marks that contribute to prenatal programming of such diseases and the use of metformin to prevent them early in life. To carry out these objectives we have developed a population-based cohort of children with and without obesity (n = 700), two prenatal cohorts of pregnant mother-father-infant trios (n= 700) and a swine animal model of piglets treated with metformin (n=96). In recent years, we have characterized several endocrine, genetic and epigenetic markers in relation to the pre- and postnatal growth and metabolic dysfunction in pregnant women and in the offspring.

RESEARCH TOPICS

MAIN RESEARCH LINES:

- Identification of biomarkers in childhood for the early detection and prevention of cardio-metabolic risk.

SPECIFIC RESEARCH LINES:

- Pathophysiology of childhood obesity.
- Cardiovascular risk markers in childhood.
- Epigenetics of development: DNA methylation and imprinted marks.
- Prenatal basis of metabolic programming.
- The use of metformin to revert metabolic programming.

PUBLICATIONS

INDEXED / I.F.: 79.68

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GRANTS

Project: Efecto de la sobrenutrición materna en las marcas epigenéticas de programación metabólica: identificación y reversibilidad terapéutica (PI16/01335)
Funding agency: Instituto de Salud Carlos III
Duration: 01/01/2017 to 30/06/2021
Coordinator: Abel López-Bermejo
Principal Investigator: Abel López-Bermejo

Project: Ayuda de personal Río Hortega
Funding agency: Instituto de Salud Carlos III
Duration: 01/01/2019 to 31/05/2021
Coordinator: Abel López-Bermejo
Principal Investigator: Abel López-Bermejo
Grant holder: Elsa Puerto Carranza

Project: Función cognitiva y obesidad en niños prepuberales: Efecto de la obesidad materna, crecimiento pre y postnatal y factores ambientales
Funding agency: Fundación Merck-Salud
Duration: 2019 - 2021
Coordinator: Abel López-Bermejo
Principal Investigator: Abel López-Bermejo

Project: Ayuda de personal Sara Borrell
Funding agency: Instituto de Salud Carlos III
Duration: 01/01/2020 to 31/05/2022
Coordinator: Abel López-Bermejo
Principal Investigator: Abel López-Bermejo
Grant holder: Gemma Carreras Badosa

MEMBERSHIP OF COLLABORATIVE RESEARCH NETWORKS (NATIONAL & INTERNATIONAL)

INTERNATIONAL

- International Childhood Vascular Structure Evaluation Consortium (ICVSEC)
- International Consortium on Thyroid and Pregnancy (ICTP)



NEUROSCIENCE

AGING, DISABILITY AND HEALTH

CEREBROVASCULAR PATHOLOGY

NEURODEGENERATION AND NEUROINFLAMMATION

Aging, disability and health

Recognised as a consolidated research group AGAUR (Generalitat de Catalunya) – 2017SGR00731

KEYWORDS

Ageing;
Disability;
Dementia;
Alzheimer's disease;
Epidemiology;
Neuropsychology;
Depression;
Caregivers

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COLLABORATORS

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NON SCIENTIFIC RESEARCH SUPPORT STAFF

Laia de Castro Sala



OVERVIEW

The research group on Ageing, Health and Disability has as a scientific challenge related to the socio-demographic, clinical and epidemiological factors associated with the normal and pathological aging and with the process of disability and dependence.

RESEARCH TOPICS

1. Clinical characteristics and consequences of pathological aging associated with dementia
2. Epidemiology of dementia and aging
3. Development, adaptation and validation of psychometric instruments to measure variables related to aging (normal and pathological) and disability

PUBLICATIONS

INDEXED / I.F: 52.86

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2. Font J,Gras ME,Calvo L,Vilalta J. Scale for the Evaluation of Risk of Aggressiveness in Psychiatric Intensive Care Units. *Actas Esp Psiquiatr.* 2020. 48. (1):p. 8-18. IF:1,196.
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7. Conde JL,Garre J. Early parental death and psychosocial risk factors for dementia: A case-control study in Europe. *Int J Geriatr Psychiatry.* 2020. 35. (9):p. 1051-1059. IF:3,485.
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GRANTS

Project: Prevalencia y fenotipos de multimorbilidad crónica según agregación de enfermedades o trayectorias individuales en pacientes con demencia frente a población general

Funding agency: Instituto de Saludo Carlos III

Duration: 01/01/2020 to 31/12/2022

Coordinator: Josep Garre-Olmo

Principal Investigator: Josep Garre-Olmo

Project: Trastorns afectius i risc cardiovascular en població general: efecte diferencial dels mecanismes fisiopatològics (SLT006/17/234)

Funding agency: Generalitat de Catalunya

Duration: 01/01/2018 to 31/12/2021

Coordinator: Josep Garre-Olmo

Principal Investigator: Josep Garre-Olmo

Project: Ajuts per donar suport a les activitats dels grups de recerca (SGR)

Funding agency: Agència de gestió d'ajuts Univ. i Recerca

Duration: 01/01/2017 to 30/09/2021

Coordinator: Josep Garre-Olmo

Principal Investigator: Josep Garre-Olmo

Project: IEI sentit de coherència (SOC) de les persones cuidadores com a factor determinant dels costos assistencials de la malaltia d'Alzheimer. Cod. SOC & DEM

Funding agency: Instituto de Salud Carlos III

Duration: 01/01/2018 to 31/12/2021

Coordinator: Oriol Turró Garriga

Principal Investigator: Oriol Turró Garriga

MEMBERSHIP OF COLLABORATIVE RESEARCH NETWORKS (NATIONALS & INTERNATIONAL)

INTERNATIONAL

- Survey of Health, Ageing and Retirement in Europe (<http://www.share-project.org>)

Cerebrovascular pathology



Recognised as a consolidated research group AGAUR (Generalitat de Catalunya) - 2017SGR01730

MEMBER OF
RED INVICTUS + ISCIII

KEYWORDS

Acute Stroke;
Ischaemic stroke;
Haemorrhagic stroke;
Thrombolysis;
Stroke unit;
Endovascular treatment;
Cryptogenic stroke;
Animal models;
Molecular and cellular neuroscience;
Atherosclerosis;
Biomarkers.

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Pilar Tarifa



OVERVIEW

The Cerebrovascular Pathology Research Group is a multidisciplinary team with more than 20 years of investigating experience in the area of cerebrovascular diseases, during which time it has consolidated itself as new investigators have joined. It has been recognised as a pre-consolidated research group by the Catalan Autonomous Government (2017 SGR 1730) and maintains scientific relations with other member centres of a network of scientific collaboration which began more than 10 years ago. Relations are particularly close with the groups that make up the STROKE area of the Thematic Network of Cooperative Health Investigation (Red RENEVAS, Red INVICTUS –Investigación Vascular en Ictus- and Red INVICTUS PLUS), of the Carlos III Health Institute. We are one of the 11 members of this group, who have all been selected on the basis of their experience and results from the first call of this network.

RESEARCH TOPICS

The main areas of investigation of the group are:

1. Clinical and experimental investigation of vulnerable atheromatous plaques in the identification of at-risk groups of patients with atherothrombotic disease.
2. Clinical and experimental investigation of the predictive capacity of biomarkers in the functional prognosis of patients with ischaemic and haemorrhagic stroke, with special focus on biomarkers of endothelial lesions and of the extracellular matrix that are predictors of haemorrhagic transformation (HT) of the ischaemic lesion and the recanalization response in patients who receive fibrinolytic therapy with rt-PA.
3. Basic investigation into the molecular mechanisms related with cerebral ischaemia in vivo and in vitro experimental models. Blood brain barrier model. Mechanisms of genic regulation (miRNA) and their involvement in cerebral ischaemia.
4. Clinical and experimental investigation of the predictive capacity of biomarkers associated with haematoma growth in patients with primary intracerebral haemorrhage.
5. Application and utility of advanced neuroimaging predictors in the identification of salvageable cerebral tissue in the ischaemic penumbra and predictors of progression in cerebral haemorrhage.
6. Ultrasound clinical investigation focussed on the epidemiology of the patent foramen ovale, the possibility of associated

stroke recurrence, and response to current preventative pharmacological therapy.

PUBLICATIONS

INDEXED / I.F.:159.42

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4. Terceño M, Silva Y, Bashir S, Vera V, Buxó M, Serena J. Troponin T Predicts Cardioembolic Aetiology and Clinical Outcome in Undetermined Ischaemic Stroke in Hyperacute Phase. *J Stroke Cerebrovasc Dis*. 2020. 29. (2):p. 104528-104528. IF:2,136.
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7. García S, Aldavert L, Huguet G, Kádár E, Segura P. Orexin-1 receptor blockade differentially affects spatial and visual

discrimination memory facilitation by intracranial self-stimulation. *Neurobiol Learn Mem.* 2020. 169. p. 107188-107188. IF:2,877.

8. Yogendrakumar V, Ramsay T, Fergusson DA, Demchuk AM, Aviv RI, Rodriguez D, Molina CA, Silva Y, Dzialowski I, Kobayashi A, Boulanger JM, Gubitz G, Srivastava P, Roy J, Kase CS, Bhatia R, Hill MD, Goldstein JN, Dowlathshahi D, PREDICT/Sunnybrook CTA Study G. Redefining Hematoma Expansion With the Inclusion of Intraventricular Hemorrhage Growth. *Stroke.* 2020. 51. (4):p. 1120-1127. IF:7,914.

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10. Puig I, Garcia S, Faghihi N, Gubern C, Aldavert L, Segura P, Huguet G, Kádár E. Intracranial Self-Stimulation Modulates Levels of SIRT1 Protein and Neural Plasticity-Related microRNAs. *Mol Neurobiol.* 2020. 57. (6):p. 2551-2562. IF:5,590.

11. Puig J, Biarnes C, Pedraza S, Vilanova JC, Pamplona R, Fernández JM, Brugada R, Ramos R, Coll G, Calvo L, Serena J, Ramió L, Gich J, Gallart L, Portero M, Alberich A, Jimenez A, Camacho E, Mayneris J, Pineda V, Font R, Prats A, Gacto ML, Deco G, Escrichs A, Clotet B, Paredes R, Negredo E, Triaire B, Rodríguez M, Heredia A, Coronado R, de Graaf W, Prevost V, Mitulescu A, Daunis P, Thió S, Miralles F, Ribas V, Puig M, Essig M, Figley CR, Figley TD, Albensi B, Ashraf A, Reiber JHC, Schifitto G, Nasir MD, Leiva C, Wintermark M, Nael K, Vilalta J, Jordi B, Garre J. The Aging Imageomics Study: rationale, design and baseline characteristics of the study population. *Mech Ageing Dev.* 2020. 189. p. 111257-111257. IF:5,432.

12. Sobrino T, Rodríguez M, Campos F, Iglesias R, Millán M, de la Ossa NP, Dávalos A, Delgado R, Martínez A, Martí J, Castellanos M, Serena J, Lago A, Díez E, Castillo J. Association of High Serum Levels of Growth Factors with Good Outcome in Ischemic Stroke: a Multicenter Study. *TRANSL STROKE RES.* 2020. 11. (4):p. 653-663. IF:6,829.

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biomarkers predictive of epilepsy after an acute stroke event. *Epilepsia.* 2020. 61. (10):p. 2244-2253. IF:5,864.

15. Pérez L, Bashir S. Narrative review of sleep and stroke. *J THORAC DIS.* 2020. 12. (Suppl 2):p. 176-190. IF:2,895.

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GRANTS

Project: Aproximación proteómica para la identificación de placa vulnerable y posterior validación de biomarcadores no invasivos en pacientes con estenosis carotídea: biomarcadores en sangre periférica y neuroimagen de alta resolución.

Funding agency: Instituto de Salud Carlos III

Duration: 01/01/2017 to 30/06/2021

Coordinator: Joaquín Serena

Principal Investigator: Joaquín Serena

Project: Circulating miRNAs as predictive biomarkers of vulnerable plaque in patients with carotid stenosis. Clinical and pre-clinical study

Funding agency: Instituto de Salud Carlos III

Duration: 01/01/2020 to 31/12/2022

Coordinator: Joaquín Serena

Principal Investigator: Joaquín Serena

Project: Red de Enfermedades Vasculares Cerebrales. INVICTUS PLUS.

Funding agency: Instituto de Salud Carlos III

Duration: 01/01/2017 to 31/12/2021

Coordinator: Joaquín Serena

Principal Investigator: Joaquín Serena

Project: Prediction of intracerebral hemorrhage growth by CT-perfusion: a prospective study.

Funding agency: Fundació La Marató de TV3

Duration: 01/01/2018 to 31/12/2020

Coordinator: Yolanda Silva Blas

Principal Investigator: Yolanda Silva Blas

COLLABORATIVE GRANT

Project: Potenciación de la plasticidad neural en ratas sanas y en un modelo de enfermedad de Alzheimer: estimulación cerebral

reforzante y sinergias con suplementos dietéticos (PlastAEICdietAD)

Funding agency: Ministerio de Economía, Industria y Competitividad

Duration: 01/01/2018 to 31/12/2021

Coordinator: Pilar Segura

Principal Investigator: Gemma Huguet Blanco i Elisabet Kádár Garcia

PATENTS

Number of application: WO2020234269

Title: Method for the differential diagnosis of symptomatic versus asymptomatic carotid stenosis.

National Patent /PCT // EPO

Applicants: Fundació Institut d'Investigació Biomèdica de Girona Dr. Josep Trueta (IDIBGI). Fundació Instituto de Investigación Sanitaria de Santiago de Compostela (FIDIS). Servizo Galego de Saúde.

Inventors: Joaquín Serena Leal, María Carme Gubern Mérida, Yolanda Silva Blas, Mikel Terceño Izaga, Saima Bashir Viturro, José Castillo Sánchez, Tomás Sobrino Moreiras.

MEMBERSHIP OF COLLABORATIVE RESEARCH NETWORKS (NATIONAL & INTERNATIONAL)**INTERNATIONAL**

- The International PFO Consortium Study Group

SPANISH

- RETICS: Red Enfermedades Vasculares Cerebrales (INVICTUS PLUS) (RD16/0019/0003)

DOCTORAL THESIS

Title: Indicació selectiva de "shunt" en l'endoarteriectomia carotídea, un nou mètode

Student: Andrés Navarro, Omar Aitor

University: Universitat de Girona

Directors: Joaquín Sabina Leal, Yolanda Silva Blas

Date: 25/9/2020

Title: Depresión, ansiedad y calidad de vida percibida en pacientes fumadores con ictus agudo.

Student: Eduardo Maldonado Manzano

Director: Rosa Suñer Soler, Joaquín Serena Leal, María Eugenia Gras

University: Universitat de Girona

Date: 27/7/2020

COLLABORATIONS

- Grupo: Dr. Ignacio Lizasoain and Dr. María Ángeles Moro. Unidad de Investigación Neurovascular (UIN). Departamento de Farmacología. Facultad de Medicina. Universidad Complutense de Madrid.
- Grupo: Prof. José Castillo. Laboratorio de Investigación en Neurociencias Clínicas. Hospital Clínico Universitario. Santiago de Compostela.
- Grup col·laboratiu Catalan Stroke Code and Reperfusion Study Group (Cat-SCR) del Pla Director de Malalties Cerebrovascular.
- International PFO Consortium. Prof. Dr. med. Krassen Nedeltchev. Kantonsspital Aarau AG. CH – 5001 Aarau (<http://www.pfoconsortium.org>).
- Grup de Gestió del Pla de Malalties Malalties Cerebrovasculars de l'Institut Català de la Salut (ICS).
- Grupo de Trabajo de la Sociedad Española de Neurología - Proyecto RENISEN, Registro de Ictus de la Sociedad Española de Neurología.

Neurodegeneration and neuroinflammation

redEspañola de
esclerosismúltiple

GRANÉS
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les capacitats

Recognised as a consolidated research group AGAUR (Generalitat de Catalunya) - 2017SGR01444

MEMBER OF
REEM ISCIII

KEYWORDS

Multiple sclerosis;
Nurodegeneration;
Neuroinflammation;
Cognitive impairment;
Neuroimmunology;
Epigenetics;
EHealth

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OVERVIEW

Our multidisciplinary research group is headed by Dr. Lluís Ramió i Torrentà who is also in charge of the Neuroimmunology and Multiple Sclerosis (MS) Unit and head of the neurology department in Dr. Josep Trueta University Hospital. The Unit take care of most of the multiple sclerosis patients in Girona's region. The group is composed by neurologist, neuropsychologist, radiologists, lab personal, nurses and office personal with common aim of give responses to each challenge that MS could give us. Our horizon is not only with the knowledge, but transfers it to the society and finally to the patient. We are involved in several clinical studies (clinical trials, epidemiologic studies) and in basic research (genetic and epigenetic factors, biomarkers, cognitive rehabilitation, rare clinical phenotypes) we also are actively working in developing eHealth systems no improve patients' care.

RESEARCH TOPICS

Brief description of the main lines of research group

Priority clinical-healthcare lines:

1. Study of neuropsychological disorders and cognitive rehabilitation in multiple sclerosis.
2. Study of the emotional impact, ability to cope, and adaptation to the diagnosis of multiple sclerosis.
3. Study of fatigue in multiple sclerosis.
4. Improve compliance with immunomodulatory treatment in multiple sclerosis.
5. Improve the clinical data collection by developing of a multiparametric, multidisciplinary database for multiple sclerosis. Include biosensors and app as new methods to collect data
6. Application of Deep Learning technique as a new brain MRI analyzer to generate prognosis markers in multiple sclerosis.
7. Shared decisions, expert patient empowerment and patient with multiple sclerosis

Priority lines in basic research:

1. Study of epigenetic factors in multiple sclerosis.
2. Study of miRNA pattern expression in different clinical subtype and their biomarker value
3. Study of the relation between viruses miRNAs and multiple sclerosis
4. Study of pattern methylation in multiple sclerosis
5. Genetic studies in familial multiple sclerosis
6. Determination of biological prognosis factors in cerebrospinal fluid and serum for the evolution of multiple sclerosis (genetic factors, biochemical factors, environmental factors such as vitamin D, virus and others).
7. Determination of biological response factors (genetic and biochemical) to immunomodulatory treatments in multiple

sclerosis.

8. Microbiota in multiple sclerosis and other neurodegenerative diseases.

Bank of DNA, CSF and serum samples of neuroimmunological diseases and control subjects

PUBLICATIONS

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5. Tomas J, Agbemenyah HY, Celarain N, Quintana E, Ramió L, Havemann U. Dose-dependent effect of cannabinoid WIN-55,212-2 on myelin repair following a demyelinating insult. *Sci Rep.* 2020. 10. (1):p. 590-590. IF:4,379.
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8. Fernández O, Aladro Y, Arroyo R, Brieva L, Calles MC, Carrascal P, Comabella M, Costa L, Eichau S, García JA, Ginestal R, González I, Izquierdo G, Martínez ML, Meca JE, Mendibe MM, Oterino A, Prieto JM, Río J, Ramió L, Romero L, Téllez N, Rodríguez A. XII Reunión Post-ECTRIMS: revisión de las novedades presentadas en el Congreso ECTRIMS 2019 (I). *Rev Neurol.* 2020. 70(10):p. 379-390. IF:0,870.

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GRANTS

Project: Red Española de Esclerosis Múltiple
Funding agency: Instituto de Salud Carlos III
Duration: 01/01/2017 to 21/12/2021
Coordinator: Lluís Ramió I Torrentà
Principal Investigator: Lluís Ramió I Torrentà

Project: Proyectos BIANUALES EME-REEM 2020
Funding agency: Asociación Esclerosis Múltiple España
Duration: 01/07/2020 to 30/06/2022
Coordinator: Lluís Ramió I Torrentà
Principal Investigator: Lluís Ramió I Torrentà

Project: Estudio piloto sobre los efectos del tratamiento con calcitriol en la función neurológica y los niveles de frataxina en pacientes con ataxia de Friedreich (fa-calcitriol)
Funding agency: FEDAES (Federación de ataxias de España)
Duration: 01/09/2020 to 30/09/2022
Coordinator: Berta Alemany Perna
Principal Investigator: Berta Alemany Perna

Project: Determinación de las concentraciones de IL-6 y otras citoquinas como biomarcadores pronósticos en pacientes afectados de COVID-19
Funding agency: Merck
Duration: 2020 to 2021
Coordinator: Lluís Ramió I Torrentà
Principal Investigator: Lluís Ramió I Torrentà

FUNDRAISING GRANT

Project: Beca Granés Fundació
Funding agency: Granés Fundació
Duration: 2020 to 2024
Coordinator: Lluís Ramió I Torrentà
Principal Investigator: Lluís Ramió I Torrentà

MEMBERSHIP OF COLLABORATIVE RESEARCH NETWORKS (NATIONAL & INTERNATIONAL)

NATIONAL

- RETICS - Red Española de Esclerosis Múltiple (REEM) - RD16/0015/0006

AWARDS

Title: 2020 Premi Neurovation in Multiple Sclerosis

Institution: Sociedad Española de Neurología (SEN)

Awardee/s: Marina González

Country: Barcelona, Spain

Date: 24/04/2020

Title: International Nightingale Awards

Institution: International Organization of Multiple Sclerosis Nurses

Awardee/s: Marina González

Country: Darmstadt, Germany

Date: 27/08/2020

COLLABORATIONS

- VICOROB- UdG
- Hospital Ramón y Cajal, neurology service
- Hospital Universitari Vall d'Hebron, neuroimmune service
- Trial in collaboration with the CIBER (Centro de Investigación Biomédica en Red) group of Valencia.



ONCOLOGY AND HAEMATOLOGY

CHROMOSOMAL REPLICATION

DESCRIPTIVE EPIDEMIOLOGY, GENETICS AND CANCER PREVENTION

GENERAL AND DIGESTIVE SURGERY

HAEMATOLOGY

METABOLISM AND CANCER

Chromosomal replication

F B A
Fundació Bosch Aymerich

espai
GIRONÈS

KEYWORDS

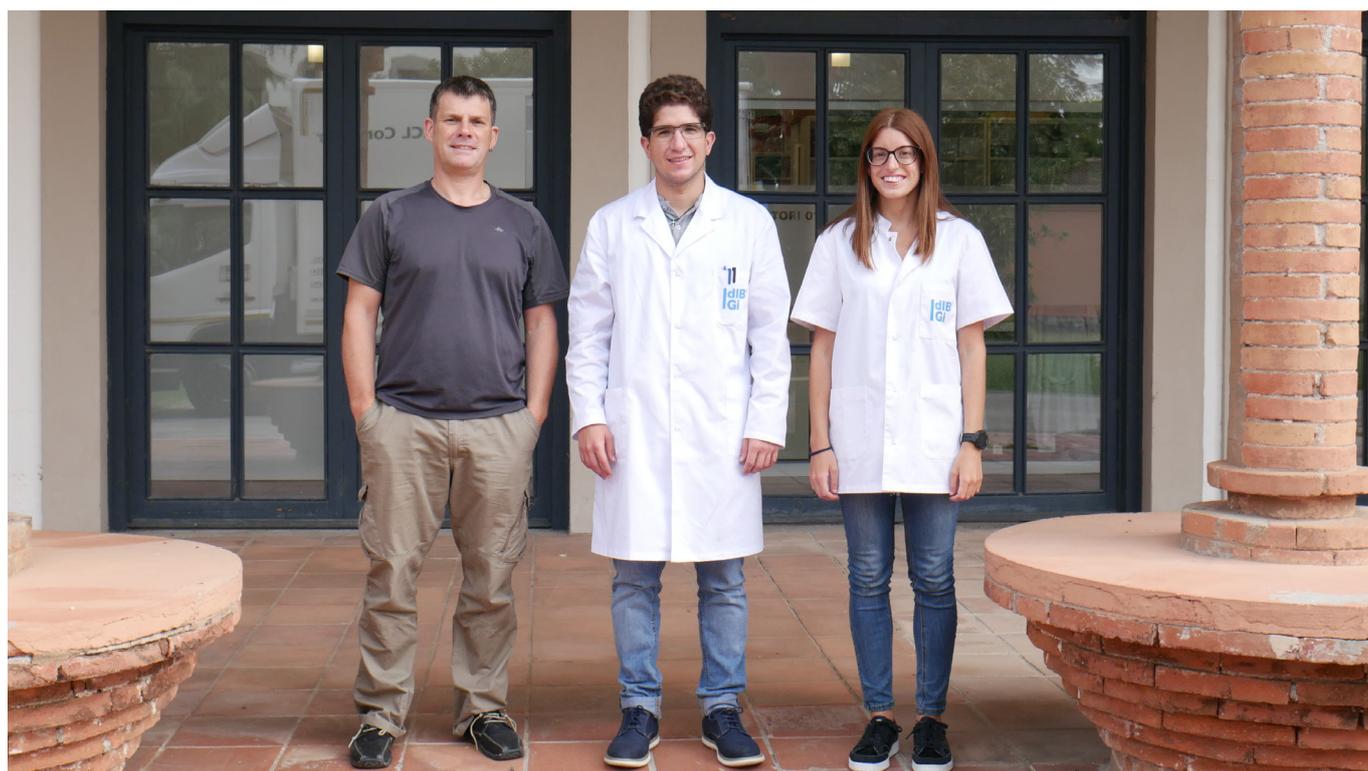
Genomic duplication;
Cell cycle

GROUP LEADER - R4

Jordi Frigola Mas

PRE-DOCTORAL RESEARCHERS - R1

Marina Guerrero
Adrián Jiménez



OVERVIEW

Genomic duplication is an essential task to any living organism. In eukaryotes, multiple replication origins are used to replicate their large genomes. Once copied their DNA, the cells will be ready to divide into two daughter cells. Genomic duplication, together with cell division, are a series of events that allow cells to grow, develop, proliferate and renew themselves. Due to its prominent role in cell proliferation and cancer, historically chromosome replication has been a major target of both, radiotherapy and chemotherapy. During the last decade or so, enormous progression has been made towards the molecular comprehension of chromosome replication.

Our laboratory is working on the first stages of chromosome replication, known as origin licensing. Using budding yeast as a model organism, together with the latest developed tools in the replication field, we are dissecting the specific roles of individual proteins involved in origin licensing. Ultimately, our goal is to translate all this knowledge into new and better cancer treatments. Specifically, we are developing new therapies that able us to stop cell proliferation without the need to introduce any DNA damage. This new strategy should overcome one of the main limitations of the current therapies, their high toxicity.

RESEARCH TOPICS

Our laboratory is working into two main lines of research.

1. Understand at molecular level how the protein complex that allows cells to duplicate their genomes, known as replisome, assembles, regulates and function. To do so, we make use of budding yeast and the latest generation of replication assays.
2. Develop new cancer treatments that target chromosome replication with significantly less toxicity than current ones. At present, most of cancer treatments that target replication induce DNA damage to stop uncontrolled cell proliferation. Our aim is to develop new therapies that halt replication, without the need to induce vast amount of mutations.

GRANTS

Project: Estudios bioquímicos de la finalización de la replicación cromosómica. Disección molecular del desensamblaje del replisoma en condiciones normales y de estrés replicativo

Funding agency: MINECO

Duration: 2017 to 2020

Coordinator: Jordi Frigola Mas

Principal Investigator: Jordi Frigola Mas

FUNDRAISING GRANT

Project: Recerca i desenvolupament de noves teràpies antitumorals.

Funding agency: Fundació Bosch i Aymerich

Duration: 2020 to 2022

Coordinator: Jordi Frigola Mas

Principal Investigator: Jordi Frigola Mas

Project: Nova teràpia d'ajuda al Sistema immunitari per contenir la COVID-19

Funding agency: Espai Gironès

Duration: 2020 to 2020

Coordinator: Jordi Frigola Mas i Narcís Fernández

Principal Investigator: Jordi Frigola Mas i Narcís Fernández

COLLABORATIONS

- Narcís Fernández Fuentes - Universitat de Vic

Descriptive epidemiology, genetics and cancer prevention



Recognised as a consolidated research group by AGAUR (Generalitat de Catalunya) - 2017SGR00733

MEMBER OF CIBER-ESP

KEYWORDS
Cancer epidemiology;
Prognostic and predictive markers;
Cancer risk factor

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PRE-DOCTORAL RESEARCHERS - R1
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TECHNICIANS
Montse Puigdemont
Anna Vidal
Martí Respau

NON SCIENTIFIC RESEARCH SUPPORT STAFF
Joana Fuentes



OVERVIEW

The Descriptive Epidemiology, Genetics and Cancer prevention group is made up of a multidisciplinary group including epidemiologists, statisticians, oncologists, radiotherapists, physical therapist, dermatologist; biologist, nurse and medical documentalists, biologist. The group main focus is cancer epidemiology (descriptive and analytical), cancer prevention and genetic.

The group takes part in numerous national and international collaborations:

- La Red Española de Registros de Cáncer (REDECAN). <http://redecan.org/es/index.cfm>
- Cancer Incidence in Five Continents (CI5) is the result of a long collaboration between the International Agency for Research on Cancer and the International Association of Cancer Registries. The series of monographs, published every five years, has become the reference source of data on the international incidence of cancer. <http://ci5.iarc.fr/Default.aspx>
- International Incidence of Childhood Cancer (IICC) is a collaborative project of the International Agency for Research on Cancer (IARC) and the International Association of Cancer Registries (IACR). This project was co-sponsored by the Union for International Cancer Control (UICC). The objective is to disseminate the available data on the incidence of cancer in children around the world.
- The European Network of Cancer Registries (ENCR), established within the framework of the Europe Against Cancer Programme of the European Commission, has been in operation since 1990. The ENCR promotes collaboration between cancer registries, defines data collection standards, provides training for cancer registry personnel and regularly disseminates information on incidence and mortality from cancer in the European Union and Europe. <http://www.encreu.eu/>
- European Cancer Information System (ECIS). ECIS provides the latest information on indicators that quantify cancer-burden across Europe. It permits the exploration of geographical patterns and temporal trends of incidence, mortality and survival data across Europe for the major cancer entities. The purpose of the web-application is to support research as well as public-health decision-making in the field of cancer and to serve as a point of reference and information for European citizens. <https://ecis.jrc.ec.europa.eu/>
- EUROpean Cancer REgistry based study on survival and care of cancer patients (EUROCARE) (member of the Steering Committee); <http://www.eurocare.it/>
- The High Resolution studies (HR) started in 1990s as ancillary studies of the EUROCARE project, with the participation of a few population-based Cancer Registries (CR) across Europe. Based on samples of cases representative of the whole cancer incidence population, the HR studies collect more clinical detailed data than those available in the routine cancer registry activity, such as stage at diagnosis, diagnostic procedures, molecular profiling and main treatments. The main aim of the HR studies is: to explain the reasons of the cancer survival differences evidenced by the EUROCARE studies across Europe. The HR studies started in the 1990s with 26 CR, and thanks to a steadily growing number of participating Cancer Registries; the study regularly provides publications of patterns of care in Europe. <http://www.hrstudies.eu/>
- RARECAREnet project: the RARECAREnet database on the epidemiology of rare cancers in Europe is drawn from the dataset of EUROCARE-5, the wider collaborative study on cancer patients' survival in Europe (www.eurocare.it). Overall 94 European population-based cancer registries (CRs) participating in EUROCARE-5 adhered to the RARECAREnet project also. They provided information on cancer patients diagnosed up to 2007 and followed-up for vital status ascertainment to the end of 2008 or later. <http://www.rarecaren.net/>
- Global surveillance of cancer survival (CONCORD programme). CONCORD is the global programme for world-wide surveillance of cancer survival, led by the London School of Hygiene & Tropical Medicine. . <http://csg.lshtm.ac.uk/>
- EUPancreas. is a COST Action -.BM1204-. That aims to unite pancreas cancer research groups across Europe and provides an innovative and unique platform for collaborating and sharing information, ideas and experience.
- **Multicentre case-control studies:**
 - » MCC Spain. Population-based multicase-control study (MCC-SPAIN) to evaluate the influence of environmental factors and their interaction with genetic factors in common tumours or tumours with peculiar epidemiological characteristics in our country, for which the environmental factors involved were not well investigated. At present, the MCC-Spain study includes 17 CIBERSP research groups.
 - » International Lymphoma Epidemiology Consortium (InterLymph). The InterLymph Consortium, or formally

the International Consortium of Investigators Working on Non-Hodgkin's Lymphoma Epidemiologic Studies, is an open scientific forum for epidemiologic research in non-Hodgkin's lymphoma. Formed in 2001, the Consortium is a group of international investigators who have completed or have ongoing case-control studies and who discuss and undertake research projects that pool data across studies or otherwise undertake collaborative research. <https://epi.grants.cancer.gov/>

RESEARCH TOPICS

STRATEGIC OBJECTIVES

1. Descriptive and analytical epidemiology of cancer

Population-based cancer registry in the province of Girona (national and international collaborations)

- To monitor the cancer burden (incidence, prevalence and survival) and its evolution in Girona, Spain, Europe and Worldwide.
- To provide a basis for research on cancer causes
- Aetiological studies of chronic lymphocytic leukaemia (CLL) and breast cancer.
- Study of the genetic and molecular prognosis factors in breast cancer and haematological tumours.
- Study of the genetic and environmental risk factors in breast cancer and chronic lymphocytic leukaemia.
- Studies of infectious, genetic and environmental risk factors linked to the development of lymphomas.
- Genetic susceptibility and the interaction between genes and environment. The study of the interaction of environmental factors with genetic factors is a key part of aetiopathogenesis.

2. Cancer prevention

Primary prevention

- Evaluation of the efficacy of vaccination against the human papilloma virus

Secondary prevention

- Evaluation of the organized breast cancer detection program:

Benefits and adverse effects of breast cancer detection: a method to improve the measurement of the results of early detection.

Evaluation of the rate of interval of cancer and its determinants in the program of early detection of breast cancer at the province of Girona.

- Screening and prevention of cervical cancer.
- Evaluation of the program of timely detection of cervical cancer:

Determination of the sensitivity and specificity of cervical cytology.

Tertiary prevention

- Tertiary prevention in cancer care: the use of treatment and rehabilitation programmes to improve the outcome of illness among affected individuals.
- To design strategic rehabilitation programmes improve Quality of Life in cancer patients.
- To design and implement rehabilitation programmes based on epidemiological knowledge.
- To maintain strategic and collaborative links with rehabilitation cancer research programmes.
- To improve the quality of survival in older cancer population based on multimodal rehabilitation programmes.
- To generate knowledge on cancer recovery and Quality of Life by conducting, assisting and evaluating innovative, internationally competitive, public health programs.
- To form and maintain strategic and collaborative links with cancer research / control programs and related institutions nationally and internationally.

3. Genetics (Genetic Epidemiology of Cancer)

- Evaluation of the risk of developing cancer.
- Study of the genetic risk factors for cancer.
- Genetic susceptibility to cancer.

PRINCIPAL LINES OF RESEARCH

Descriptive and analytical epidemiology of cancer

PUBLICATIONS

INDEXED / I.F.: 364.20

1. Luque MA, Redondo D, Lee SF, Rodríguez M, Carmona MC, Marcos R, Sánchez MJ. Multimorbidity by Patient and Tumor Factors and Time-to-Surgery Among Colorectal Cancer Patients in Spain: A Population-Based Study. *Clin Epidemiol.* 2020. 12. p. 31-40. IF:4,790.
2. Cunill M, Aymerich M, Serda B, Patino J. The Impact of COVID-19 on Spanish Health Professionals: A Description of Physical and Psychological Effects. *Int. J. Ment. Health Promot.* 2020. 22. (3):p. 185-198. IF:0,500.
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6. Bielska M, Rossi S, Krzyzak M, Haelens A, Domenic A, De Angelis R, Maciejczyk A, Rodríguez M, Zadnik V, Minicozzi P, EURO CARE G, Hackl M, Ihle P, Van E, Henau K, Valerianova Z, Dimitrova N, Sekerija M, Cukelj P, Dušek L, Zvolský M, Mägi M, Aareleid T, Malila N, Seppä K, Velten M, Guizard AV, Faivre J, Woronoff AS, Tretarre B, Bossard N, Uhry Z, Colonna M, Molinié F, Cowppli A, Bara S, Lapôtre B, Grosclaude P, Stabenow R, Luttmann S, Eberle A, Brenner H, Nennecke A, Engel J, Schubert G, Heidrich J, Holleczer B, Katalinic A, Birgisson H, Tryggvadóttir L, Clough K, Mazzoleni G, Bulatko A, Buzzoni C, Sutera A, Mancuso P, Ferretti S, Barchielli A, Caldarella A, Gatta G, Sant M, Amati C, Baili P, Berrino F, Bonfarnuzzo S, Botta L, Capocaccia R, Foschi R, Margutti C, Meneghini E, Minicozzi P, Trama A, Serraino D, Dal L, De Angelis R, Di C, Caldora M, Francisci S, Galati F, Mallone S, Pierannunzio D, Tallon M, Rossi S, Santaquilani M, Tavilla A, Pannoizzo F, Busco S, Filiberti RA, Marani E, Ricci P, Spagnoli G, Cirilli C, Fusco M, Vitale MF, Usala M, Vitale F, Mazzucco W, Michiara M, Zanetti R, Rosso S, Tumino R, Mangone L, Di E, Russo AG, Andreano A, Falcini F, Caiazzo AL, Cesaraccio R, Piffer S, Madeddu A, Tisano F, Fanetti AC, Cometti I, Candela P, Scuderi T, Stracci F, Bianconi F, Tagliabue G, Contiero P, Ruge M, Zorzi M, Pildava S, Smailyte G, Azzopardi M, Calleja N, Johannesen TB, Rachtan J, Gózd S, Macek P, Blaszczyk J, Bebenek M, Bielska M, Forjaz de Lacerda G, Bento MJ, Antunes L, Miranda A, Mayer A, Safaei C, Zadnik V, Primic M, Lopez de Munain A, Gil L, Díaz JM, Marcos AI, Marcos R, Puigdemont M, Sanchez MJ, Chang DY, Chirlaque MD, Ardanaz E, Guevara M, Galceran J, Carulla M, Lambe M, Khan S, Staehelin K, Bouchardy C, Fournier E, Mousavi SM, Ess SM, Lorez M, Mousavi M, Herrmann C, Bordoni A, Spitale A, Konzelmann I, Visser O, Aarts M, Otter R, Coleman M, Allemani C, Rachet B, Rashbass J, Broggio J, Verne J, Gavin A, Donnelly D, Morrison D, Black R, Huws DW, Thomas R. Reasons for low cervical cancer survival in new accession European Union countries: a EURO CARE-5 study. *ARCH GYNECOL OBSTET.* 2020. 301. (2):p. 591-602. IF:2,344.
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survivorship in a cohort of breast cancer: the MCC-Spain study. *Breast Cancer Res Treat.* 2020. 181. (3):p. 667-678. IF:4,872.

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R, Navarro LM, Gil M, Alonso M, Herrero A, Peralta S, Olier C, Perez P, Covela M, Martinez M, Berrocal A, Gallego O, Luque R, Perez FJ, Esteve A, Munne N, Domenech M, Villa S, Sanz C, Carrato C. A phase II randomized, multicenter, open-label trial of continuing adjuvant temozolomide beyond six cycles in patients with glioblastoma (GEINO 14-01). *Neuro Oncol.* 2020. 22. (12):p. 1851-1861. IF:12,300.

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GRANTS

Project: Deteció precoç dels canvis cardiovasculars després de la radioteràpia en el càncer de mama. / Títol oficial: MEDIRAD "Implications of Medical LowDoseRadiationExposure"
Funding agency: European Commission
Duration: 01/06/2017 to 28/02/2022
Coordinator: Arantxa Eraso Urien
Principal Investigator: Arantxa Eraso Urien

COLLABORATIVE GRANTS

Project: Genetic and metabolomics screening towards the precision medicine in cancer prevention
Funding agency: Fundación AECC Investigación contra el cancer
Duration: 1/10/2018 to 30/09/2023
Principal Investigator: Victor Moreno Aguado
Collaborator researcher: Rafael Marcos-Gragera and Marta Solans

Project: Estudio Poblacional Multinivel de las Desigualdades Socioeconómicas en la Distribución Geográfica de la Incidencia, la Mortalidad y la Supervivencia Neta del Cáncer en España.
Funding agency: FIS – Instituto de Salud Carlos III
Duration: 01/01/2018 to 31/12/2020
Coordinator: Miguel Angel Luque Fernández
Principal Investigator: Miguel Angel Luque Fernández
Collaborator researcher: Loreto Vilardell and Montse Puigdemont

Project: Epidemiologia de les neoplasies hematològiques.
Funding agency: Institut de Recerca contra la Leucèmia Josep

Carreras (FIJC1100)

Duration: 01/01/2020 to 31/12/2022

Coordinator: Rafael Marcos-Gragera

Principal Investigator: Rafael Marcos-Gragera

Project: Modelo predictivo de supervivencia poblacional del cáncer de mama según el estadio, el subtipo molecular en el momento del diagnóstico y la adherencia al tratamiento.

Funding agency: Instituto de Salud Carlos III - PI18/01836)

Duration: 01/01/2019 to 31/12/2021

Coordinator: Ramon Clèries (PDO)

Principal Investigator: Ramon Clèries (PDO)

Collaborator researcher: Ramon Clèries (PDO)

Project: Hacia una estimación precisa de cáncer y la individualización del tratamiento médico mediante la aplicación del riesgo poligénico en cáncer de mama y ovario hereditario.

Funding agency: FIS – Instituto de Salud Carlos III (PI19/01195)

Duration: 01/01/2020 to 31/12/2022

Coordinator: Judith Balmaña (HVO)

Principal Investigator: Balmaña (HVO)

Collaborator researcher: Angel Izquierdo

Project: Organ-specific biomarkers and therapies to improve the management of brain metastasis

Funding agency: LA MARATÓ TV3

Duration: 01/01/2020 to 31/12/2022

Principal Investigator: Joaquim Bosch Barrera.

Collaborator researcher: Montse Puigdemont Gemma Osca Gelis.

Project: High Resolution Study of Social Inequalities in Cancer: a population-based multilevel study (HiReSIC)

Funding agency: FAECC- Fundación Científica de la Asociación

contra el Cáncer (AECC) (10981)

Duration: 01/01/2020 to 31/12/2023

Principal Investigator: M José Sánchez Pérez

Collaborator researcher: Rafael Marcos-Gragera

Project: COVID-19 Cohort in Spain: Social dynamics, mental health and inequalities (CONTENT)

Funding agency: Fundació La Caixa

Duration: 01/01/2020 to 31/12/2022

Principal Investigator: Manolis Kogevinas, MD, PhD

Collaborator researcher: Rafael Marcos-Gragera

Project: Projectes d'especialització i competitivitat territorial (PECT): Estils de vida, característiques sociodemogràfiques i econòmiques, discapacitat, dolor, qualitat de vida, impulsivitat, suport social, i prevalença de factors de risc i de malalties cròniques de la població adulta de la província de Girona. (Girona, regió saludable).

Funding agency: FEDER / Diputació de Girona / DIPSALUT / Institut d'Investigació Biomèdica de Girona Dr. Josep Trueta (IDIBGI) / Fundació Salut Empordà (GO03-001848)

Duration: 01/01/2019 to 31/12/2021

Principal Investigator: Rafel Ramos Blanes i Josep Garre Olmo

Collaborator researcher: Rafael Marcos-Gragera

MEMBERSHIP OF COLLABORATIVE RESEARCH NETWORKS (NATIONAL & INTERNATIONAL)

INTERNATIONAL

- Cancer Incidence in Five Continents (CI5)
- European Cancer Information System (ECIS)
- EUROpean CAncer Registry (EUROCARE)
- European Network of Cancer Registries (ENCR)
- Global Surveillance of cancer survival (CONCORD programme)
- Innovative Partnership for Action Against Cancer (iPAAC)
- International Incidence of Childhood Cancer (IICC)
- International Lymphoma Epidemiology Consortium (InterLymph) (Multicentre case-control studies)
- RARECARENet project
- The High Resolution studies (HR)

SPANISH

- CIBER_ESP (Epidemiología y Salud pública) - CB06/02/1002)
- GenRisk cáncer
- La Red Española de Registros de Cáncer (REDECAN)
- MCC-Spain (Multicentre case-control studies)

DOCTORAL THESIS

Title: Estudi epidemiològic poblacional de la incidència, tendència i supervivència de les neoplàsies limfoides a la província de Girona durant un període de 20 anys (1996-2015)

Student: Auñón Sanz, Ma.del Carmen

Director: Fuentes Raspall, Rafael / Marcos Gragera, Rafael / Aranzazu Eraso, Maria

University: Universitat de Girona

Date: 20/11/2020

General and digestive surgery

KEYWORDS

Oncology Surgery

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Jordi Gironés

Núria Gómez

David Julià

Santiago López-Ben

Núria Ortega

Anna Pigem

OVERVIEW

The research group focuses on digestive oncological diseases. Our research is fundamentally clinical and is based on clinical assistance.

IF:7,027.

2. Nari GA,Castro E,Layún J,Falgueras L,Mariot D,Albiol MT,Casellas M. Open versus laparoscopic hepatectomies within an ERAS (Enhanced Recovery After Surgery) program. Are there differences?. CIR CIR. 2020. 88. (1):p. 49-55. IF:0,361.

RESEARCH TOPICS

The main lines of research group are:

- Colorectal cancer
- Gastric tumours
- Liver and pancreas tumours

3. López C,Bosch R,Orero G,Fontoura L,Korzynska A,García M,Bueno G,Fernández MDM,Roszkowiak L,Callau C,Salvadó MT,Jaén J,Gibert A,Roso A,Gras A,Berenguer M,Llobera M,Gil J,Tomás B,Gestí V,Laine E,Plancoulaine B,Baucells J,Lejeune M. Peritumoral immune infiltrates in primary tumours are not associated with the presence of axillary lymph node metastasis in breast cancer: a retrospective cohort study. PeerJ. 2020. 8. e9779. IF:2,984.

PUBLICATIONS

INDEXED / I.F.: 192.27

1. López S,Albiol MT,Falgueras L. Laparoscopic two stage hepatectomy: combined Glissonean approach of hepatic pedicles and dorsal approach of right and middle hepatic veins and vascular reconstruction. J Hepatobiliary Pancreat Sci. 2020. 27. (1):p. 1-2.

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Haematology



Recognised as a consolidated research group AGAUR (Generalitat de Catalunya) - 2017SGR00733

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OVERVIEW

The Hematology Group has been working in clinical and translational research since its foundation in 2007. The PI is Dr. David Gallardo, Head of the Hematology Department. The group has been awarded with several grants obtained in competitive calls, such as 3 projects Fundació Marató TV3, 6 projects FIS in a row (Instituto de Salud Carlos III), two projects from Fundación Mutua Madrileña and also grants from local foundations against cancer, such as Oncolliga Girona, Roses contra el cancer or Llavaneres contra el cancer. We are currently collaborating with one of the IDIBAPS groups in a European grant (POCTEFA) together with the Toulouse group.

The group has published several papers in top scientific journals, such as Blood, Leukemia or Haematologica. Moreover, active collaboration of many investigators in scientific networks has led to publication of collaborative works, both at the National and International levels. There are currently five Ph.D. projects going on as a result of the group scientific activity.

RESEARCH TOPICS

- Immune response after allogeneic stem cell transplant
- Pharmacogenomics and signaling pathways in acute myeloid leukemia
- Immune checkpoints in hematological malignancies
- Molecular mechanisms involved in lymphoma transformation
- Clinical trials concerning hematological malignancies

PUBLICATIONS

INDEXED / I.F.: 98.93

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GRANTS

Project: Modulación de respuesta inmune en trasplante alogénico de progenitores hematopoyéticos por el genotipo de moléculas inhibitoras de checkpoint. Biobanco español de aloTHP

Funding agency: Instituto de Salud Carlos III

Duration: 01/01/2018 to 01/06/2022

Coordinator: David Gallardo

Principal Investigator: David Gallardo

Project: Genotype of immune response inhibitory molecules: beyond allogeneic transplantation. National DNA Bank of patients treated with CAR-T cell therapy

Funding agency: Instituto de Salud Carlos III

Duration: 01/01/2021 to 31/12/2023

Coordinator: David Gallardo

Principal Investigator: David Gallardo

Project: EFA281/16/IMLINFO: Réseau transfrontalier d'immunothérapies personnalisées dans le traitement des lymphomes non Hodgkiniens

Funding agency: Interreg V-A Espagne-France-Andorre POCTEFA 2014-2020 FR

Duration: 01/01/2018 to 31/12/2020

Coordinator: Patricia Pérez Galán

Principal Investigator: David Gallardo

FUNDRAISING GRANT

Project: Estudi de les molècules de coestimulació com a marcadors

de progressió del mieloma múltiple.

Funding agency: Fundació Roses Contra el Càncer

Duration: 01/01/2019 to 31/12/2020

Coordinator: Yolanda González Montes

Principal Investigator: Yolanda González Montes

MEMBERSHIP OF COLLABORATIVE RESEARCH NETWORKS (NATIONAL & INTERNATIONAL)**INTERNATIONAL**

- European Society for Blood and Marrow Transplantation (EBMT)

SPANISH

- Grupo Cooperativo de Estudio y Tratamiento de las Leucemias Agudas y Mielodisplásias (CETLAM)
- Grupo de Estudio de Hemostasia y Trombosis (GEHT)
- Grupo Español de Enfermedades Mieloproliferativas Crónicas Filadelfia Negativas (GEMFIN)
- Grupo Español de Leucemia Linfocítica Crónica (GELLC)
- Grupo Español de Linfomas/Trasplante Autólogo de Médula Ósea (GELTAMO)
- Grupo Español de Mieloma (GEM)
- Grupo Español de Síndromes Mielodisplásicos (GESMD)
- Grupo Español de Trasplante Hematopoyético y Terapia Celular (GETH)
- Programa Español de Tratamientos en Hematología (PETHEMA)

CATALAN

- Grup Català de Citologia Hematològica (GCCH)
- Grup Català de Citometria Hematopatològica (FLOWCAT)

Metabolism and cancer

KEYWORDS

Metabolism;
Cancer;
Aging

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OVERVIEW

The “Metabolism & Cancer” group adopts the view that aging diseases including cancer are governed by a pivotal regulatory role of metabolic reprogramming in cell fate. The group aims to advance new metabolism-targeted anti-approaches through completion of clinical proof-of-efficacy in cancer patients.

RESEARCH TOPICS

Metabolism & Cancer

- Metabolism as a bona fide cancer driver
- Metabolic mechanisms of drug resistance: Targeting cellular metabolism to improve cancer therapeutics
- Molecular characterization and preclinical evaluation of new metabolic targets in human carcinomas
- Pre-clinical development and clinical testing of anti-metabolic drug candidates for oncology patients

Metabolo-epigenetics & cancer: molecular aspects and therapeutic development

- Metabolo-epigenetic mechanisms involved in the generation and maintenance of cancer stem cells (CSCs), i.e., the metabostemness hallmark.
- New therapeutic strategies targeting the metabolo-epigenetic machinery of CSCs.
- Precision medicine approaches based on the metabolo-epigenetic machinery of CSCs.
- Mitochondrial dynamics & cancer
- Role of autophagy and mitochondrial dynamics in the generation and maintenance of CSCs
- Targeting autophagy and mitochondrial dynamics to overcome drug resistance in cancer therapy

Computational systems biology in cancer & aging

- Mathematical & Computational Biology: stochastic tools, conceptual frameworks, and wet-lab validation of metabolo-epigenetics models in cancer & aging

Natural biocompounds: mechanisms & drug development

- Molecular characterization and preclinical evaluation of natural with anti-cancer and/or anti-aging properties
- In silico modeling and pre-clinical development of biocompounds-based anti-cancer and anti-aging drugs

Metabolo-immunotherapy

- Identification of metabolic nodes essential for the regulation of immune checkpoints in cancer cells
- Dietary interventions and efficacy of immune checkpoint inhibitors (ICIs)

- In silico clinical trials of metabolic interventions in combination with ICIs

PUBLICATIONS

INDEXED / I.F.: 201.51

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2. Cabré N, Luciano F, Baiges G, Fernández S, Rodríguez E, Hernández A, París M, Sabench F, Del Castillo D, López J, Menéndez JA, Camps J, Joven J. Plasma metabolic alterations in patients with severe obesity and non-alcoholic steatohepatitis. *Aliment Pharmacol Ther*. 2020. 51. (3):p. 374-387. IF:8,171.
3. Hernández A, Fibla M, Cabré N, Luciano F, Camps J, Fernández S, Martín V, Menendez JA, Sirvent JJ, Joven J. Chemokine (C-C motif) ligand 2 and coronary artery disease: Tissue expression of functional and atypical receptors. *Cytokine*. 2020. 126. p. 154923-154923. IF:3,861.
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8. Bosch J, Martín B, Buxó M, Brunet J, Encinar JA, Menendez JA. Silibinin and SARS-CoV-2: Dual Targeting of Host Cytokine Storm and Virus Replication Machinery for Clinical Management of COVID-19 Patients. *J Clin Med*. 2020. 9. (6):1770. IF:4,241.
9. Cuyàs E, Verdura S, Martín B, Alarcón T, Lupu R, Bosch

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14. Menendez JA, Mehmi I, Papadimitropoulou A, Vander T, Cuyàs E, Verdura S, Espinoza I, Vellon L, Atlas E, Lupu R. Fatty Acid Synthase Is a Key Enabler for Endocrine Resistance in Heregulin-Overexpressing Luminal B-Like Breast Cancer. *INT J MOL SCI*. 2020. 21. (20):7661. IF:5,923.

15. Papadimitropoulou A, Vellon L, Atlas E, Steen TV, Cuyàs E, Verdura S, Espinoza I, Menendez JA, Lupu R. Heregulin Drives Endocrine Resistance by Altering IL-8 Expression in ER-Positive Breast Cancer. *INT J MOL SCI*. 2020. 21. (20):7737. IF:5,923.

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17. Cuyàs E, Gumuzio J, Lozano J, Segura A, Verdura S, Bosch J, Martin B, Nonell A, Llebaria A, Cabello S, Serra C, Sanchez M, Martin ÁG, Menendez JA. Mimetics of extra virgin olive oil phenols with

anti-cancer stem cell activity. *Aging (Albany NY)*. 2020. 12. (21):p. 21057-21075. IF:5,682.

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19. Garcia R, Arrieta O, Massuti B, Rodriguez D, Granados A, Majem M, Vicente D, Lianes P, Bosch J, Insa A, Dómine M, Reguart N, Guirado M, Sala MÁ, Vázquez S, Caro RB, Drozdowskyj A, Verdú A, Karachaliou N, Molina MA, Rosell R, Spanish Lung Cancer Group (SLCG). Combination of gefitinib and olaparib versus gefitinib alone in EGFR mutant non-small-cell lung cancer (NSCLC): A multicenter, randomized phase II study (GOAL). *Lung Cancer*. 2020. 150. p. 62-69. IF:5,705.

20. Menendez JA, Peirce SK, Papadimitropoulou A, Cuyàs E, Steen TV, Verdura S, Vellon L, Chen WY, Lupu R. Progesterone receptor isoform-dependent cross-talk between prolactin and fatty acid synthase in breast cancer. *Aging (Albany NY)*. 2020. 12. (24):p. 24671-24692. IF:5,682.

GRANTS

Project: Metabolic dependencies and dietary regulation of immune-checkpoints: New targets for cancer immunotherapy resistance (PID2019-104055GB-I00)

Funding agency: Ministerio de Economía y Competitividad

Duration: 2020 to 2023

Coordinator: Javier A. Menendez

Principal Investigator: Javier A. Menendez

Project: A therapeutic strategy to co-target brain metastasis-initiating and hyperlipidemia-driving mechanisms in lorlatinib-treated NSCLC

Funding agency: PFIZER, S.L.U.

Duration: 2019-2021

Collaborator: Joaquim Bosch Barrera and Javier A. Menendez

Principal Investigator: Joaquim Bosch Barrera and Javier A. Menendez

- Professor Dr. Ruth Lupu. Mayo Clinic, USA.

Project: Pre-clinical efficacy and synergistic potential of the flavonolignan silibinin in combined treatment with atezolizumab (Tecentriq) to prevent NSCLC brain metastases

Funding agency: ROCHE S.L.U

Duration: 2020-2021

Collaborator: Joaquim Bosch Barrera and Javier A. Menendez

Principal Investigator: Joaquim Bosch Barrera and Javier A. Menendez

Project: A metabolic and dietary blueprint for boosting cancer immunotherapy

Funding agency: Fundació Oncolliga Girona

Duration: 2020-2021

Collaborator: Javier A. Menendez

Principal Investigator: Javier A. Menendez

Project: A metabolic framework for reducing and exploiting the multidimensional complexity of tumor heterogeneity: Sub-phenotyping of cancer stem cell metabolomic states.

Funding agency: Ministerio de Economía y Competitividad

Duration: 2016 to 2020

Collaborator: Javier A. Menendez

Principal Investigator: Javier A. Menendez

COLLABORATIONS

- Professor Dr. Jorge Joven. IISPV, Reus
- ICREA Professor Tomás Alarcón. Centre de Recerca Matemàtica, Barcelona.
- Professor Dr. José Antonio Encinar. Universidad Miguel Hernández, Elche.
- Professor Dr. Pilar Blancafort. Harry Perkins Institute of Medical Research (University of Western Australia, Australia).
- Professor Dr. Francesca Cutruzzolà. SAPIENZA University of Rome, Italy
- Dr. Alexei Vazquez. Beatson Institute (Glasgow), UK.



ASSOCIATED GROUPS

UNIVERSITY OF GIRONA

BIOCHEMISTRY OF CANCER

COMPUTER VISION AND ROBOTICS

**CONTROL ENGINEERING AND INTELLIGENT SYSTEMS - MEDICINE AND
HEALTH**

HEALTH AND HEALTHCARE

HEALTH PSYCHOLOGY

MICELAB - MODELLING, IDENTIFICATION AND CONTROL ENGINEERING

PROTEIN ENGINEERING

STATISTICS AND DATA ANALYSIS

STATISTICS, ECONOMETRICS AND HEALTH (GRECS)

Biochemistry of cancer

University of Girona

Recognised as a consolidated research group AGAUR (Generalitat de Catalunya) - 2017SGR00673

KEYWORDS

Pancreatic cancer;
Prostate cancer;
Tumor markers;
Aberrant glycosylation;
PSA;
New cancer therapeutic approaches, targeted drug delivery.

GROUP LEADER - R4

Rafael de Llorens
Rosa Peracaula

TECHNICIANS

Montserrat Ferrer

ESTABLISHED RESEARCHERS - R3

Anna Massaguer
Esther Llop

POST-DOCTORAL RESEARCHERS - R2

Sílvia Barrabés
M. Ángeles Martínez

PRE-DOCTORAL RESEARCHERS- R1

Anna Gratacós
Adrià Duran
Laura Miró

COLLABORATORS

Josep Comet
Manel Ramírez
Dúnia Pérez
Marina Fontán
M. Rosa Ortiz
Adelaida Garcia Velasco
Ernesto Castro
Esther Fort

OVERVIEW

The research of the group is focused on the field of cancer therapy and diagnosis.

RESEARCH TOPICS

- Glycobiology and cancer:**

Biomarker discovery based on altered glycoforms of serum proteins. Study of molecular mechanisms that lead to altered glycosylation in tumors and its influence in the cancer phenotype. Targeting specific glycosyltransferases.

- Targeted anti-tumour therapies (TAD):**

Development and delivery of molecules with anti-tumour activity. Analogs of epidermal growth factor (EGF) as antitumour agents. Photochemotherapy.

PUBLICATIONS

INDEXED / I.F.: 96.65

- Nari GA, Castro E, Layún J, Falgueras L, Mariot D, Albiol MT, Casellas M. Open versus laparoscopic hepatectomies within an ERAS (Enhanced Recovery After Surgery) program. Are there differences?. *CIR CIR*. 2020. 88. (1):p. 49-55. IF:0,361.
- España S, Ochoa de Olza M, Sala N, Piulats JM, Ferrandiz U, Etxaniz O, Heras L, Buisan O, Pardo JC, Suarez JF, Barretina P, Comet DR, Garcia Del Muro X, Sumoy L, Font A. PSA Kinetics as Prognostic Markers of Overall Survival in Patients with Metastatic Castration-Resistant Prostate Cancer Treated with Abiraterone Acetate. *Cancer Manag Res*. 2020. 12. p. 10251-10260. IF:3,989.
- Greville G, Llop E, Huang C, Creagh J, Pfister S, O'Flaherty R, Madden SF, Peracaula R, Rudd PM, McCann A, Saldova R. Hypoxia Alters Epigenetic and N-Glycosylation Profiles of Ovarian and Breast Cancer Cell Lines in-vitro. *Front Oncol*. 2020. 10. p. 1218-1218. IF:6,244.
- Garcia A, Quintana M, Puigdemont M, Carbajal W, Sanchez RG, Anna V, Nica A, Villavicencio A, Vilardell L, Marcos R. Incidence and trends of biliary tract cancer in Girona: A population-based study from the Girona Cancer Registry (1994-2016). *Ann Oncol*. 2020. 31. p. 160-161. IF:32,976.

5. Fort R, Carmona C, Osca G, Marcos R, Puigdemont M, Biarnes J, Lopez S, Garcia A, Guardeno R. Incidence and survival of pancreatic neuroendocrine tumours in Girona, Spain. *Ann Oncol*. 2020. 31. p. 169-169. IF:32,976.

6. Guerrero PE, Miró L, Wong BS, Massaguer A, Martínez N, Llorens R, Navarro P, Konstantopoulos K, Llop E, Peracaula R. Knockdown of α 2,3-Sialyltransferases Impairs Pancreatic Cancer Cell Migration, Invasion and E-selectin-Dependent Adhesion. *INT J MOL SCI*. 2020. 21. (17):6239. IF:5,923.

7. Barrabés S, Ng I, Martínez MÁ, Manzano BR, Jalón FA, Espino G, Feliu L, Planas M, De Llorens R, Massaguer A. A nucleus-directed bombesin derivative for targeted delivery of metalodrugs to cancer cells. *J Inorg Biochem*. 2020. 212. p. 111214-111214. IF:4,155.

8. Gratacós A, Duran A, Asadi A, Ferrer M, Ramírez M, Comet DR, De Llorens R, Saldova R, Llop E, Peracaula R. Characterisation of the main PSA glycoforms in aggressive prostate cancer. *Sci Rep*. 2020. 10. (1):p. 18974-18974. IF:4,379.

9. Ausania F, Senra Del Río P, Borin A, Guzmán S, Rivera R, Fort E, Concepción M, Del Val A, Ferrández A, Grau FJ, Ruiz ML, Andreu EB, de E. Factors associated with mortality in patients with infected pancreatic necrosis: the "surgery effect". *Updates Surg*. 2020. 72. (4):p. 1097-1103. IF:2,797.

10. García A, Zacarías L, Teixidor H, Valeros M, Liñan R, Carmona MC, Puigdemont M, Carbajal W, Guardado R, Malats N, Duell E, Marcos R. Incidence and Survival Trends of Pancreatic Cancer in Girona: Impact of the Change in Patient Care in the Last 25 Years. *Int J Environ Res Public Health*. 2020. 17. (24):9538. IF:2,849.

GRANTS

Project: Non-invasive biomarkers for Prostate Cancer clinical risk stratification: PSA glycoforms and multiparametric magnetic resonance imaging. Predictive model for potential metastatic Prostate Cancer. Ref. 201922

Funding agency: University of Girona. Ajuts PONT 2020 (2020/04)

Duration: From 19/07/2020 to 19/07/2023

Principal Investigator: Esther Llop and Josep Comet

Project: Glycomic approaches for the discovery of novel biomarkers and therapeutic targets in pancreatic cancer

Funding agency: Fundació La Marató de TV3

Duration: From 1/11/2020 to 30/06/2021

Principal Investigator: Rosa Peracaula and Esther Llop

Project: Nuevos metalofármacos diseñados para incrementar la selectividad. Uso de fototerapia y vehiculación con ligandos dirigidos a tumores (Ref. RTI2018-100709-B-C22).

Funding agency: Ministeri de Ciència, Innovació i Universitats/MCIU

Duration: From 1/1/2019 to 31/12/2021

Principal Investigator: Anna Massaguer Vall-Ilovera

Project: Nueva metodología para la detección del cáncer de próstata a partir de biomarcadores no invasivos. Estudio multicéntrico PSA glicosilado (ref IDI-20170423 N).

Funding agency: CDTI

Duration: From 02/2018 to 02/2020

Principal Investigator: Rosa Peracaula and Rafael de Llorens

DOCTORAL THESIS

Title: Altered glycosylation in pancreatic cancer: development of new tumor markers and therapeutic strategies

Student: Pedro E. Guerrero

University: Universitat de Girona

Directors: E. Llop and R. Peracaula

Date: 29/07/2020

COLLABORATIONS

- Glycoscience Group (Dr. Radka Saldova) from NIBRT Dublin
- Cancer Molecular Targets group (Dr. Pilar Navarro) from IMIM-Hospital del Mar Medical Research Institute/ Institute of Biomedical Research of Barcelona (IIBB)-CSIC.
- Grupo de Química de la coordinación aplicada (Dr. Blanca R Manzano) from Universidad de Castilla-La Mancha
- Multiscale in Mechanical and Biological Engineering (M2BE) group (Dr. PE Guerrero, Dr. JM Garcia Aznar) from University of Zaragoza

Computer vision and robotics

University of Girona

Recognised as a consolidated research group by AGAUR (Generalitat de Catalunya) - 2017SGR01164

GROUP LEADER - R4

Robert Martí

ESTABLISHED RESEARCHERS - R3

Xavier Lladó
Arnau Oliver
Jordi Freixenet
Joan Martí

POST-DOCTORAL RESEARCHERS - R2

Sergi Valverde
Joel Vidal

PRE-DOCTORAL RESEARCHERS - R1

Mostafa Salem
Albert Malet
Basel Alyafi
Albert Clèrigues
Llucia Coll
Liliana Valencia
Kaisar Kushibar
José Bernal

TECHNICIANS

Isaac Llorente
Pablo Gómez

NON SCIENTIFIC RESEARCH SUPPORT STAFF

Mireia Frigola
Anna Ferrarons

OVERVIEW

The Image Analysis and 3D Perception research group (G3DAI) belongs to the VICOROB research Institute of the University of Girona and it has been recognised as a consolidated group (2017 SGR 1164).

G3DAI focuses its effort on two main research lines: **image analysis**, to develop and optimize hardware and software for analysis of data, with particular focus on the study of medical images; **3D perception**, for the acquisition and processing of three-dimensional information of a real scene.

Currently, G3DAI has 21 members: 10 doctors, 5 doctoral students, 4 master's students and 2 administrative staff. From 2014 to 2020, 16 theses have been defended.

RESEARCH TOPICS

G3DAI's motivation is driven by the scientific challenges which continuously appear as a consequence of the society's requirements with a common research area of image analysis,

perception and computer vision. Regarding medical imaging, G3DAI is working towards the development of imaging tools to help women stratification for personalized **breast cancer** screening programs. With respect to **multiple sclerosis**, the group's research intends to develop novel algorithms to improve the current magnetic resonance biomarkers such as brain lesions, longitudinal brain atrophy, and regional cortical and subcortical gray matter. Regarding 3D perception, G3DAI focuses the research on the development of **novel 3D reconstruction techniques** based on scanner systems and computer vision algorithms.

PUBLICATIONS

INDEXED / I.F.: 19.78

1. Rakic M, Cabezas M, Kushibar K, Oliver A, Lladó X. Improving the detection of autism spectrum disorder by combining structural and functional MRI information. *Neuroimage Clin.* 2020. 25. p. 102181-102181. IF:4,881.
2. Hasan MK, Dahal L, Samarakoon PN, Tushar FI, Martí R. DSNet: Automatic dermoscopic skin lesion segmentation. *Comput Biol*

ASSOCIATED GROUPS

Med. 2020. 120. p. 103738-103738. IF:4,589.

3. González S, Oliver A, Huo Y, Lladó X, Landman BA. A fully automated pipeline for brain structure segmentation in multiple sclerosis. *Neuroimage Clin.* 2020. 27. p. 102306-102306. IF:4,881.

4. Clèrigues A, Valverde S, Bernal J, Freixenet J, Oliver A, Lladó X. Acute and sub-acute stroke lesion segmentation from multimodal MRI. *Comput Methods Programs Biomed.* 2020. 194. p. 105521-105521. IF:5,428.

GRANTS

Project: Predictive models for multiple sclerosis using brain magnetic resonance imaging biomarkers - EVOLUTION

Funding agency: Ministerio de Economía y Competitividad

Duration: From 2018 to 2021

Coordinator: Universitat de Girona

Principal Investigator: Xavier Lladó

Project: Erasmus + Joint Master Degree in Medical Imaging and Applications – MAIA

Funding agency: Comissió Europea

Duration: From 2016 to 2024

Coordinator: Universitat de Girona (UdG)

Principal Investigator: Arnau Oliver

Project: Computación de la Imagen para la mejora de la Radiómica del cáncer de mama

Funding agency: Ministerio de Economía y Competitividad

Duration: From 2019 to 2021

Coordinator: Universitat de Girona (UdG)

Principal Investigator: Robert Martí

Project: Storm III - Sistema de predicción de muy alta resolución de la producción de energía de plantas fotovoltaicas con almacenamiento basado en inteligencia artificial de bajo coste computacional, prueba de concepto, storm fase II

Funding agency: Ministerio de industria, comercio y turismo (MINCOTUR)

Duration: From 25/06/2020 to 31/03/2021

Coordinator: Universitat de Girona (UdG)

Principal Investigator: Robert Martí

DOCTORAL THESIS

Title: Automatic segmentation of brain structures in magnetic resonance images using deep learning techniques

Student: Kaisar Kushibar

Director: Dr. Arnau Oliver / Dr. Xavier Lladó / Dr. Sergi Valverde

University: Universitat de Girona (UdG)

Date: 20/07/2020

Title: Deep learning methods for automated detection of new multiple sclerosis lesions in longitudinal magnetic resonance images

Student: Mostafa Abobakr Abdelmajed Salem

Director: Dr. Joaquim Salvi Mas and Dr. Xavier Lladó Bardera

University: Universitat de Girona (UdG)

Date: 13/02/2020

Title: Deep learning for atrophy quantification in brain magnetic resonance imaging

Student: Jose Bernal Moyano

Director: Dr. Xavier Lladó and Dr. Arnau Oliver

University: Universitat de Girona (UdG)

Date: 27/10/2020

COLLABORATIONS

- At an international level, through the existing international masters at G3DAI, the group coordinates on a daily basis with Fabrice Meriaudeau, Alain Lalande, from the University of Bourgogne (France) and Francesco Tortorella, from Cassino University (Italy). This has also encouraged the mobility of lectures between these institutions.
- In the field of brain image analysis, the group has also collaborations with international institutions such as Vanderbilt University, Nashville, USA (Prof. Bennett Landman), University College of London, UK (J.E. Iglesias, Prof. C. Wheeler-Kingshot), University of Sydney (Prof. S. Klistorner) or McConnell Brain Imaging Centre, Montreal, Canada (Prof. Arnold Douglas).
- The group is also collaborating in the field of breast image analysis and computer aided diagnosis with the Manchester Metropolitan University (Dr. Moi Hoon Yap), Aberystwyth University (Prof. Reyer Zwiggelaar), Universidad Complutense de Madrid (Dr. Margarita Chevalier), Prof. N. Karsssemeijer (Radboud Medical University Center, Nijmegen, Netherlands, ScreenPoint Medical), Prof. A. Maidment, Dr. Pedrag Bakic (Penn University, USA), Prof. A. Noble (Univ. of Oxford, UK), Prof. F. Meriaudeau (Univ. de Bourgogne, France).

Control engineering and intelligent systems - Medicine and health

University of Girona

Recognised as a consolidated research group by AGAUR (Generalitat de Catalunya) - 2017SGR01551

KEYWORDS

Healthcare;
Artificial intelligence;
Case based reasoning;
Machine learning;
Optimization

GROUP LEADER - R4

Beatriz López

ESTABLISHED RESEARCHERS - R3

Bianca Innocenti
Carles Pous

POST-DOCTORAL RESEARCHERS - R2

Joaquim Massana

PRE-DOCTORAL RESEARCHERS - R1

Natàlia Mordvanyuk
Alihuén García
Oscar Raya

TECHNICIANS

Miquel Rustullet
Daniel Macaya

NON SCIENTIFIC RESEARCH SUPPORT STAFF

Pau Olives
Jaume Gauchola
Marc González
Roberto Petite
Sara Murlà

OVERVIEW

The main research activity of the Medicine and Healthcare research line of the control engineering and intelligent systems (eXiT) research group is focused on the application of artificial intelligence principles (data mining and knowledge discovery, qualitative reasoning, case based reasoning, metaheuristic optimization) and machine learning, to support decision-making processes in healthcare.

dyslipidaemia, and familial hypercholesterolemia detection mechanism.

- Mental health: treatment recommender system for Attention Deficit and hyperactivity disorder (ADHD).
- Neurology: machine learning algorithms for seizure detection and prediction from EEG, machine learning for migraine prediction.
- Odontology: New devices for bruxism monitoring.
- Paediatrics: Neonatologist at home (NOAH) project for vital signs monitoring in premature babies.

RESEARCH TOPICS

The Medicine and Healthcare research line of eXiT focuses on four main groups: (i) Disease prognosis, (ii) Clinical decision support systems, (iii) mHealth and (iv) Biosignal processing. These research and technical approaches were applied to the following medical and healthcare areas:

- Endocrinology: Insulin bolus recommendation for diabetic patients, phenotype model learning for obesity prognosis.
- Hospital management: machine learning methods for Emergency department attendance prediction.
- Internal medicine: treatment recommendationsystem for

GRANTS

Project: SERAS - Seizure Risk Assessment

Funding agency: MINECO (Retos Colaboración, RTC-2017-6701-1)

Duration: From 1/1/2018 to 31/12/2020

Coordinator: David Blánquez (MJN)

Principal Investigator: Beatriz López

Project: PEPPER - Patient Empowerment through Predictive PERsonalised decision support

Funding agency: EU H2020 (PHC-28-2015), Grant Agreement 689810

ASSOCIATED GROUPS

Duration: From 1/2/2016 to 31/3/2020

Coordinator: Clare Martin (Oxford Brookes University)

Principal Investigator: Beatriz López

Project: Development of a prototype tool to formulate participatory, individualized and automated therapeutic recommendations for the treatment of patients with Attention Deficit Hyperactivity Disorder (ADHD)

Funding agency: COMG, Fundación Pascual i Prats & Campus Salud de la Universidad de Girona (UdG)

Duration: From 1/5/2018 to 30/4/2020

Principal Investigator: Domenec Serrano (IACS), Xavier Castells (Translab, UdG)

Project: Red Temática sobre Inteligencia Artificial en Biomedicina

Funding agency: Ministerio de Ciencia, Innovación y Universidades

Duration: From 1/1/2020 to 31/12/2021

Coordinator: Mar Marcos (Universidad Jaime I)

Principal Investigator: Beatriz López

Project: Desarrollo y evaluación de una herramienta de mHealth que utiliza la inteligencia artificial para formular recomendaciones terapéuticas farmacológicas para el tratamiento de TDAH

Funding agency: Ministerio de Ciencia, Innovación y Universidades, Instituto de Investigación Carlos III

Duration: From 1/1/2020 to 31/12/2021

Principal Investigator: Xavier Castells

Project: DREAMER: Detección pREcoz AlzheiMER

Funding agency: MJN Neuroserveis, S.L. (through CDTI, MISIONES programme)

Duration: From 12/2020 to 03/2021

Principal Investigator: Beatriz López

- Doctor Xavier Castells from the Laboratori de Medicina Translacional i Ciències de la Decisió, TRANSLAB (ADHD project)
- Doctor Alberto Zamora, TRANSLAB (Dyslipidemia and Familial Hypercholesterolemia project)
- MJN Neuroserveis (SERAS project, Epilepsy)
- Daniel Lambisto (ICO, Girona)
- Dr. Abel López Bermejo, Dra. Judith Sanz, Marta Fabrellas (Noah Project)

MEMBERSHIP OF COLLABORATIVE RESEARCH NETWORKS (NATIONAL & INTERNATIONAL)

INTERNATIONAL

- European AI Alliance (EAA)

COLLABORATIONS

The eXit Healthcare research group collaborates with the following researchers / groups:

- Doctor Fernandez Real and team from IdIBGI (obesity and diabetes projects)
- Doctor Nick Oliver and team from Imperial College London (PEPPER project)
- Clare Martin and team from Oxford Brookes (PEPPER project)

Health and healthcare

University of Girona

Recognised as a consolidated research group AGAUR (Generalitat de Catalunya) - 2017SGR01767

KEYWORDS

Health promotion;
Elders and carers;
Woman;
Gender and health;
Health

GROUP LEADER - R4

Dolors Juvinyà

ESTABLISHED RESEARCHERS - R3

Carme Bertran
David Ballester
Maria del Carme Malagon
Maria Rosa Suñer
Concepció Fuentes
Anna Bonmatí
Bernat Carles Serdà
Josep Olivet
Cristina Bosch

POST-DOCTORAL RESEARCHERS - R2

Marta Vilanova

PRE-DOCTORAL RESEARCHERS - R1

Almerinda Domingo

NON SCIENTIFIC RESEARCH SUPPORT STAFF

Cristina Vilarò

OVERVIEW

The Research Group in Health and Healthcare is a multidisciplinary group composed of experts in nursery, psychology, anthropology and physiotherapy. Its aim is to conduct high quality research in different areas of health.

The research group in Health and Healthcare was founded in 2002 and in 2017, the Generalitat de Catalunya (2017-SGR-1767) renew your recognition as a "Consolidated Group".

The group is part to the sectorial campus of Health of the University of Girona.

RESEARCH TOPICS

The research carried out by the Group is organized into four major areas of work: Health Promotion, The elderly and carers, Woman, Gender and Health and Health Emergencies,

Health promotion

Research in Health Promotion covers a wide range of actions in several areas:

- Health institutions: evaluation of the quality of both the organizations themselves and the care services they provide; assessment of the skills of the professionals of health.
- Educational institutions such as schools and universities.
- Community collectives of users of health services.
- Strategies: health literacy and salutogenesis.
- Health care and quality of life of people in critical conditions, with neurological problems, with mental health problems or with cancer.

The Elderly and carers

The main objective of this area is to improve the quality of life of the elderly, the dependent and fragile population and its carers. To achieve it, its investigators do specialized research to enhance the understanding of these situations, with special attention to the development of tools to assess dependency.

Women, Gender and Health

The research developed in this area is designed to provide the scientific knowledge needed to undertake actions to revert the discriminatory elements of the healthcare system that affect the health professions, the health professionals and the users of health services.

Health Emergency

This area focuses on the assessment of the skills to conduct basic and advanced life support protocols and on the creation of new tools to assess the professional competences in this field. This activity takes place in the group's laboratory in the Science Park

PUBLICATIONS

INDEXED / I.F.: 38.15

1. Turró O,Viñas V,Conde JL,Calvo L,Cullell M,Mas G,Flaqué M,Turon A,Juvinyà D,Mioshi E,Garre J. Caregivers' Sense of Coherence: Implications on Direct and Indirect Costs of Dementia Care. *J Alzheimers Dis.* 2020. 78. (1):p. 117-126. IF:4,472.
2. Colillas E,Prat G,Espelt A,Juvinyà D. Gender differences in health-related quality of life in people with severe mental illness. *PLoS One.* 2020. 15. (2):e0229236. IF:3,240.
3. Cunill M,Aymerich M,Serda B,Patino J. The Impact of COVID-19 on Spanish Health Professionals: A Description of Physical and Psychological Effects. *Int. J. Ment. Health Promot.* 2020. 22. (3):p. 185-198. IF:0,500.
4. Munuera E,Saez M,Juvinyà D,Rodríguez A,Barrot JF,Franch J,Romero P,Barceló MA,Coll G. Analysis of the location of retinal lesions in central retinographies of patients with Type 2 diabetes. *ACTA OPHTHALMOL.* 2020. 98. (1):p. 13-21. IF:3,761.
5. Fontova A,Suñer R,Salleras L,Bertran C,Congost L,Ferrer M,Juvinyà D. Evolution of Job Satisfaction and Burnout Levels of Emergency Department Professionals during a Period of Economic Recession. *Int J Environ Res Public Health.* 2020. 17. (3):921. IF:2,849.
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8. Martínez L,Ríos A,Gutiérrez PR,Santainés E,Gómez FJ,Agras MC,Iriarte J,Cañadas GA,Herruzo R,Hurtado B,Blanco G,Bárcena C,Llorca FJ,Perelló C,Asunsolo A,Arribas JM,Sánchez P,García S,Fernández A,Soto MN,Teresa de Jesús M,Navalón JC,Lana A,Bertran C,Fuentes L,Peña MP,Hernández JR,Jiménez MF,Virseda J,Blanco R,Yelamos J,Calvo MD,Bondía JA,Prado MC,González A,Martínez A,Bas P,Faus F,Muiños A,Peyró L,Hernández H,López AI,Parrilla P,Ramírez P. Exploring Health Science Students' Notions on Organ Donation and Transplantation: A Multicenter Study. *Transplant Proc.* 2020. 52. (5):p. 1428-1431. IF:1,066.
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10. Malagón MC,Suñer R,Bonmatí A,Bosch C,Gelabert S,Fontova A,Grau A,Juvinyà D. Dispositional Optimism, Burnout and Their Relationship with Self-Reported Health Status among Nurses Working in Long-Term Healthcare Centers. *Int J Environ Res Public Health.* 2020. 17. (14):4918. IF:2,849.
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13. Reverté S,Dávalos A,Font S,Berenguer M,Sauras E,López C,Sanjuan E,Muñoz L,Suñer R. Coping Strategies, Quality of Life, and Neurological Outcome in Patients Treated with Mechanical Thrombectomy after an Acute Ischemic Stroke. *Int J Environ Res Public Health.* 2020. 17. (17):6014. IF:2,849.
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15. Juvinyà D,Espinal S,Pertierra B,Rodríguez I,Gállego J. Análisis descriptivo de la formación en participación comunitaria en salud en España. *GAC SANIT.* 2020. 34(6):p. 567-571. IF:2,139.
16. Salleras L,Fuentes C,Ballester D,Congost L,Delclós J,Fontova A. Development, Diagnostic Sensitivity, and Prognostic Accuracy of the Adult-Difficult Venous Catheterization Scale for Emergency Departments. *J EMERG NURS.* 2020. 46. (6):p. 827-8372. IF:1,836.

NON-INDEXED

University: University of Girona (UdG)

Date: 29/06/2020

1. Escobar B, Cid P, JUVINYÀ D, Sáez K. Estilo de vida promotor de salud y sentido de coherencia en adultos jóvenes universitarios. Hacia la Promoción de la Salud. 2020. 24. (2):p. 107-122.
2. MALAGON MDC, SUÑER R, BONMATI A, GELABERT S, BOSCH C, JUVINYÀ D. The Work engaged and burnout among long-term geriatric care nurses - Compromiso laboral y burnout de las enfermeras en el ámbito sociosanitario. Presencia. 2020.

GRANTS

Project: Redes de solidaridad con impacto en los procesos de recuperación de mujeres víctimas de violencia de género
Funding agency: Ministeri de Ciència, Innovació i Universitats - MCIU
Duration: From 01/01/2019 to 31/12/2021
Coordinator: Patricia Melgar Alcantud
Principal Investigator: Patricia Melgar Alcantud

Project: EFA019/15. Prospectiva transfronteriza sanitaria y social / Prospective transfrontalière sanitaire et sociale. Prospectaso
Funding agency: European Commission
Duration: 01/09/2016 - 31/08/2019 Start of prolongation: 01/09/2019 Final prolongation: 31/08/2020
Coordinator: Yves Gilbert
Principal Investigator: Anna Planas Llado

Project: El sentido de la coherencia en cuidadores de pacientes con demencia puede reducir los costes asistenciales
Funding agency: Instituto de Salud Carlos III
Duration: From 01/01/2018 to 31/12/2020
Coordinator: Oriol Turro Garriga
Principal Investigator: Oriol Turro Garriga

Project: Projecte pacient expert Catalunya en Esclerosis múltiple
Funding agency: Institut Català de la Salut del Departament de Salut de la Generalitat de Catalunya (ICS)
Duration: From 2017 to 2020
Coordinator: Carme Bertran Noguer
Principal Investigator: Carme Bertran Noguer

DOCTORAL THESIS

Title: Depresión, ansiedad y calidad de vida percibida en pacientes fumadores con ictus agudo
Student: Eduard Maldonado
Director: Rosa Suñer Soler; Joaquín Serena Leal; María Eugenia Gras Pérez

Health psychology

University of Girona

KEYWORDS

Risk behavior;
Addictions;
Stress and Health;
Quality of Life

GROUP LEADERS - R4

Montserrat Planes
M. Eugènia Gras

ESTABLISHED RESEARCHERS - R3

Sílvia Font-Mayolas

POST-DOCTORAL RESEARCHERS - R2

Natàlia Cebrià
Anna Salamó
Josefina Patiño
Maria Aymerich
Mònica Conill
Armand Grau
Francisco Calvo
Olga Hernández

PRE-DOCTORAL RESEARCHERS - R1

Francesc Prat
Laura Ballester

OVERVIEW

The group's researchers come from different fields of knowledge within the subjects of Psychology, Nursing and Medicine, and their research is interdisciplinary in nature.

The members of the group teach on the undergraduate and Master's degree programmes in their fields. One of the main tasks of the group's activity is the training of new researchers.

The research group has received recognition from the Catalan Autonomous Government by the following means and calls: - Recognized as a Consolidated Research Group by the Catalan Autonomous Government in the 2014-2016 call. Call No.: 2014 SGR 322. - Recognized as a Consolidated Research Group by the Catalan Autonomous Government in the 2009-2013 call. Call No.: 2009 SGR 618.

RESEARCH TOPICS

The research lines of the group are included in the field of health psychology. The perspective is, therefore, biopsychosocial. The priority lines of research are:

- Sexual behaviour of risk and prevention of AIDS, other STD and unwanted pregnancies.
- Behaviour of risk and prevention for users of motor vehicles and pedestrians.
- Substance dependence.
- Stress, pain and quality of life.
- Quality of life during aging.
- Processes of loss and mourning.
- Research in education in health Psychology.

PUBLICATIONS

INDEXED / I.F.: 17.46

1. Font J,Gras ME,Calvo L,Vilalta J. Scale for the Evaluation of Risk of Aggressiveness in Psychiatric Intensive Care Units. Actas Esp Psiquiatr. 2020. 48. (1):p. 8-18. IF:1,196.
2. Cunill M,Aymerich M,Serda B,Patino J. The Impact of COVID-19 on Spanish Health Professionals: A Description of Physical and Psychological Effects. Int. J. Ment. Health Promot. 2020. 22. (3):p. 185-198. IF:0,500.

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3. Sullman MJM,Gras ME,Kagialis A,Papageorgi I,Font S. Cigarette, E-Cigarette and Waterpipe Use among Young Adults: Differential Cognitions about These Three Forms of Smoking. *Int J Environ Res Public Health*. 2020. 17. (11):3787. IF:2,849.
4. Vilugrón F,Molina GT,Gras ME,Font S. Hábitos alimentarios, obesidad y calidad de vida relacionada con la salud en adolescentes chilenos. *Rev Med Chil*. 2020. 148. (7):p. 921-929. IF:0,553.
5. Malagón MC,Suñer R,Bonmatí A,Bosch C,Gelabert S,Fontova A,Grau A,Juvinyà D. Dispositional Optimism, Burnout and Their Relationship with Self-Reported Health Status among Nurses Working in Long-Term Healthcare Centers. *Int J Environ Res Public Health*. 2020. 17. (14):4918. IF:2,849.
6. Reverté S,Dávalos A,Font S,Berenguer M,Sauras E,López C,Sanjuan E,Muñoz L,Suñer R. Coping Strategies, Quality of Life, and Neurological Outcome in Patients Treated with Mechanical Thrombectomy after an Acute Ischemic Stroke. *Int J Environ Res Public Health*. 2020. 17. (17):6014. IF:2,849.
7. Hernández O,Ghita A,Figueras N,Fernández J,Monras M,Ortega L,Mondon S,Teixidor L,Gual A,Ugas L,Fernández M,Montserrat R,Porras B,Ferrer M,Gutiérrez J. Predictors of Changes in Alcohol Craving Levels during a Virtual Reality Cue Exposure Treatment among Patients with Alcohol Use Disorder. *J Clin Med*. 2020. 9. (9):3018. IF:4,241.
8. Aymerich M,Casas F. A contextualized measure of Overall Life Satisfaction among adolescents: differences by gender. *Child Indic. Res*. 2020. 13. (6):p. 2241-2260. IF:2,420.

DOCTORAL THESIS

Title: Efectes d'un programa d'intervenció psicoeducativa en les actituds i coneixements

sexuals i afectius de persones amb discapacitat intel·lectual que assisteixen a un servei de teràpia ocupacional

Student: Jordi Hernández Suriñach

Director: Dr. Montserrat Planes Pedra, Dr. Ana Belén Gómez Lima and Dr. Esther Sánchez Raja

University: Universitat de Girona (UdG)

Date: 28/07/2020

Title: Depresión, ansiedad y calidad de vida percibida en pacientes fumadores con ictus agudo

Student: Eduard Maldonado Manzano

Director: Dr. Rosa Suñer Soler, Dr. Joaquín Serena Leal and Dr. M^a Eugenia Gras Pérez

MICELab - Modelling, identification and control engineering

University of Girona

Recognised as a consolidated research group AGAUR (Generalitat de Catalunya) - 2017SGR01551

KEYWORDS

Artificial Pancreas;
Diabetes Technology;
Control Engineering;
Artificial Intelligence;
Machine Learning

GROUP LEADER - R4

Josep Vehí

ESTABLISHED RESEARCHERS - R3

Joaquim Armengol
Remei Calm
Luo Ningsu
Inés Ferrer

POST-DOCTORAL RESEARCHERS - R2

Iván Contreras

PRE-DOCTORAL RESEARCHERS - R1

Sayyar Ahmad
Aleix Beneyto
Alvis Cabrera
Adrià Parcerisas
Ernesto Estremera
Omer Mujahid

NON SCIENTIFIC RESEARCH SUPPORT STAFF

Anna Comas

OVERVIEW

The MICELab group is an interdisciplinary research group of the Institute of Informatics and Applications of the University of Girona involved in national and international research and technology transfer projects. The team is composed of experienced researchers from the control engineering field with expertise in systems and control theory, modelling and control of biomedical systems, computer science, robust and predictive control, machine learning and decision support systems.

The group has extensive experience in the field of diabetes and is one of the leading groups in the development of the artificial pancreas worldwide. Since January 1st, 2018 the group led by Prof. Vehí belongs to the prestigious centre of excellence in diabetes CIBERDEM: "Centro de Investigación Biomédica en Red de Diabetes y Enfermedades Metabólicas Asociadas", being one of the few engineering groups of the centre.

RESEARCH TOPICS

Diabetes medical devices. Artificial pancreas

The development of algorithms related to the different elements

involved in glycemetic control loop for the artificial pancreas has been one of the main research lines over the last years. In it we have developed algorithms to monitor and calibrate the continuous glucose monitors and have designed control systems, with special focus to the rejection of major disturbances such as food or exercise.

- Custom platform: Our Android-based AP platform (jAP) is a multivariable fully automated artificial pancreas. The jAP system stands out for its scalability, allowing the implementation of unihormonal / bihormonal systems and easily integrating additional devices such as physical activity monitors. It is one of the few platforms available internationally.

Fault detection and risk assessment

Within the framework of self-management of diabetes, interval predictive models combined with other methodologies, such as CBR, multivariate statistical control or data mining, have been used to develop tools to detect faults on devices (occlusions, insulin pumps losses, loss of sensitivity of the sensors, etc.), both for types 1 and 2. Risk assessment methods have also been used to assess and to predict the risks that are taken to perform an action.

Artificial Intelligence for Digital Health

Using advanced artificial intelligence algorithms to provide personali-

zed health services, improve user experience, increase the engagement of patients and move towards integrated health systems. This includes: the development of decision support tools based on machine learning methods to enhance patient safety by anticipating adverse glycaemic events, despite the difficulties of the large intra-individual variability and other factors that affect glycaemic control; development of advanced telemedicine systems and tools for chronic disease management, particularly diabetes and hypertension; and incorporation of prevention and prediction tools in the current systems for managing diabetes.

PUBLICATIONS

INDEXED / I.F.: 20.20

1. Bertachi A, Viñals C, Biagi L, Contreras I et al. Prediction of Nocturnal Hypoglycemia in Adults with Type 1 Diabetes under Multiple Daily Injections Using Continuous Glucose Monitoring and Physical Activity Monitor; *Sensors* 2020; 20(6):1705
2. A Beneyto, A Bertachi, J Bondia, J Vehi. A New Blood Glucose Control Scheme for Unannounced Exercise in Type 1 Diabetic Subjects; *IEEE Trans. On Control Systems Technology* 2020; 28(2):593-600
3. C Viñals, A Beneyto, J Martín-Sanjosé, C Furió-Novejarque, A Bertachi, J Bondia, J Vehí, I Conget, M Giménez. Automatic Control Of Blood Glucose Under Announced And Unannounced Exercise Using A New Multivariable Closed Loop Controller With Automatic Carbohydrate Suggestion And Mitigation Module; *Diabetes Technology & Therapeutics* 2020; 22(S1):A36
4. Bertachi A, Biagi L, Beneyto A, Vehi J. Dynamic rule-based algorithm to tune insulin on board constraints for a hybrid artificial pancreas system; *Journal Of Healthcare Engineering* 2020; Article ID:1414597
5. A Martinez-Marin, IR Cózar, T Pujol, N Luo, L Pacheco, I Ferrer, JR Gonzalez, et al. Comparative analysis of numerical models of plate-fin heat sinks with forced convection for thermoelectric energy generation; *Renewable Energy and Power Quality Journal* 2020; 18:500-504
6. CM Ramkissoon, A Bertachi, A Beneyto, J Bondia, J Vehi. Detection and Control of Unannounced Exercise in the Artificial Pancreas without Additional Physiological Signals; *IEEE Journal of Biomedical and Health Informatics* 2020; 24(1):259-267

GRANTS

Project: mSAFE-AP – Solutions for the improvement of efficiency and safety of the artificial pancreas by fault-tolerant multivariable control architectures

Funding agency: MINECO (Spain). DPI2016-78831-C2-2-R.

Duration: 2016-2020

Coordinator: Jorge Bondia

Principal Investigator: Josep Vehí

DOCTORAL THESIS

Title: Robust and fault-tolerant strategies for controlling blood glucose in patients with type 1 diabetes

Student: Aleix Beneyto Tantiña

Director: Josep Veí

University: Universitat de Girona (UdG)

Date: 2020

COLLABORATIONS

- Hospital Clínic Universitari de Barcelona
- Hospital Sant Joan de Déu
- Hospital Clínic Universitari de Valencia
- Universitat Politècnica de València
- Università degli Studi di Padova
- Imperial College London
- CONICET - U. Nacional de La Plata

Protein engineering

University of Girona

Recognised as a consolidated research group AGAUR (Generalitat de Catalunya) - 2017SGR00238

KEYWORDS

Cancer;
Proteinopathies

GROUP LEADERS - R4

Antoni Benito
Marc Ribó

ESTABLISHED RESEARCHERS - R3

Maria Vilanova

POST-DOCTORAL RESEARCHERS - R2

Jessica Castro

PRE-DOCTORAL RESEARCHERS - R1

Alex Romero
Marlon Bravo

TECHNICIANS

Imma Guardiola

OVERVIEW

Our research group is interested in the development of new effective antitumor drugs and in the study of protein oligomerization processes that are linked to proteinopathies. Specifically, we are developing new antitumor drugs based on nuclear-directed ribonucleases, on apoptin and on organometallic compounds of copper, ruthenium, manganese and iron. The protein cytotoxic drugs developed here are non-mutagenic compounds that exert their cytotoxic action on different targets that attack the malignant phenotype at multiple levels. TDP43 is associated with the amyotrophic lateral sclerosis (ALS) and with the frontotemporal lobar degeneration (FTLD), which constitute the third more important neurodegenerative disease. The use of inteins to selectively isotopically label different internal domains of the proteinopathic TDP43 protein allows studying the molecular determinants involved in its aggregation as well as the interactions to other cellular partners related to its function.

apoptosis-inducing protein apoptin

- Development of drug delivery systems for antitumor proteins based on the vault structure
- Characterization of the molecular determinants of aggregation of TDP43 by isotopic labeling of internal sequences using intein methodology

PUBLICATIONS

NON-INDEXED

1. Romero A, Gordo V, Castro J, Ribó M. Protein Splicing: From the Foundations to the Development of Biotechnological Applications. *Methods Mol Biol.* 2020. 2133. p. 15-29.

GRANTS

Project: Development of an antitumor protein delivery System into ovarian cancer cells using The sub cellular vault REF IDEAS18038BENI

Funding agency: Asociación Española contra el Cáncer

Duration: From 01/01/2018 to 28/02/2021

Principal Investigator: Antoni Benito

RESEARCH TOPICS

- Development of new antitumor drugs based on proteins that target RNA in the cell nucleus
- Development of new antitumor drugs based on the viral

Statistics and data analysis (CODA)

University of Girona

Recognised as a consolidated research group AGAUR (Generalitat de Catalunya) - 2017SGR00656

KEYWORDS

Statistical modeling;
Multivariate analysis;
Data analysis;
Compositional data;
Spatial statistics

GROUP LEADER - R4

Josep Antoni Martín-Fernández

ESTABLISHED RESEARCHERS - R3

M. Glòria Mateu

POST-DOCTORAL RESEARCHERS - R2

Iván Galván
Pepus Daunis-i-Estadella
Santiago Thió
Vera Pawlowsky
Marc Comas
Marina Vives

PRE-DOCTORAL RESEARCHERS - R1

Jordi Saperas

ADMINISTRATION AND PROJECT MANAGEMENT STAFF

Anna Mota

OVERVIEW

Compositional Data Analysis (CoDA) refers to the analysis of CoDa refers to the analysis of compositional data, random vectors with strictly positive components usually expressed as vectors whose sum is constant (e.g., 100, one, a million). Typical examples in different fields are: economy (income/expenditure distribution), medicine (body composition: fat, bone, lean), food industry (food composition: fat, sugar, etc), chemistry (chemical composition), health (physical activities), and genetics (genotype frequency). This type of data appears in most applications, and the interest and importance of consistent statistical methods cannot be underestimated.

RESEARCH TOPICS

The current aim of the group activities is to spread and transfer the CoDa methods in other scientific fields and, in particular, in the fields identified as societal challenges: climate change, health, wellness, and food quality. The final objective is to obtain results by using compositional methods and to transfer them to involved entities. This spread of results will be carried out by means of the following activities proposed: organisation of seminars, workshops

(CoDaWork), and courses (CoDaCourse); development of statistical packages (CoDaPack and R), and a specific website for CoDa (CoDaWeb); as well as the edition of specialized publications.

PUBLICATIONS

INDEXED / I.F.: 155.26

- Ramos R, Masana L, Comas M, García M, Martí R, Ponjoan A, Plana N, Alves L, Marrugat J, Elosua R, Dégano IR, Gomez MA, Zamora A. Derivation and validation of SIDIAP-FHP score: A new risk model predicting cardiovascular disease in familial hypercholesterolemia phenotype. *Atherosclerosis*. 2020. 292. p. 42-51. IF:5,162.
- Xiberta P, Boada I, Thió S, Ortuño P, Pedraza S. Introducing Online Continuing Education in Radiology for General Practitioners. *J MED SYST*. 2020. 44. (3):p. 55-55. IF:4,460.
- Alves L, Comas M, Ponjoan A, Garcia M, Martí R, Blanch J, Elosua M, Parramon D, Camós L, Guzmán L, Ramos R. Levels of ankle-brachial index and the risk of diabetes mellitus complications. *BMJ Open Diabetes Res Care*. 2020. 8. (1):e000977. IF:3,388.

4. Ritger AL, Fountain CT, Bourne K, Martin JA, Pierotti MER. Diet choice in a generalist predator, the invasive lionfish (*Pterois volitans/miles*). *J Exp Mar Biol Ecol*. 2020. 524. 151311. IF:2,171.
5. Dumuid D, Pedišić Ž, Palarea J, Martín JA, Hron K, Olds T. Compositional Data Analysis in Time-Use Epidemiology: What, Why, How. *Int J Environ Res Public Health*. 2020. 17. (7):2220. IF:2,849.
6. Ponjoan A, Garre J, Blanch J, Fages E, Alves L, Martí R, Comas M, Parramon D, Garcia M, Ramos R. Is it time to use real-world data from primary care in Alzheimer's disease?. *ALZHEIMERS RES THER*. 2020. 12. (1):p. 60-60. IF:6,982.
7. Puig J, Biarnes C, Pedraza S, Vilanova JC, Pamplona R, Fernández JM, Brugada R, Ramos R, Coll G, Calvo L, Serena J, Ramió L, Gich J, Gallart L, Portero M, Alberich A, Jimenez A, Camacho E, Mayneris J, Pineda V, Font R, Prats A, Gacto ML, Deco G, Escrichs A, Clotet B, Paredes R, Negredo E, Triaire B, Rodríguez M, Heredia A, Coronado R, de Graaf W, Prevost V, Mitulescu A, Daunis P, Thió S, Miralles F, Ribas V, Puig M, Essig M, Figley CR, Figley TD, Albensi B, Ashraf A, Reiber JHC, Schifitto G, Nasir MD, Leiva C, Wintermark M, Nael K, Vilalta J, Jordi B, Garre J. The Aging Imageomics Study: rationale, design and baseline characteristics of the study population. *Mech Ageing Dev*. 2020. 189. p. 111257-111257. IF:5,432.
8. Puig J, Ellis MJ, Kornelsen J, Figley TD, Figley CR, Daunis P, Mutch W, Essig M. Magnetic Resonance Imaging Biomarkers of Brain Connectivity in Predicting Outcome after Mild Traumatic Brain Injury: A Systematic Review. *J Neurotrauma*. 2020. 37. (16):p. 1761-1776. IF:5,269.
9. Boada I, Rodríguez A, Thió S, Soler J. A Serious Game on the First-Aid Procedure in Choking Scenarios: Design and Evaluation Study. *JMIR Serious Games*. 2020. 8. (3):e16655. IF:4,143.
10. Domenech B, Cuba V, Daunis P, Thió S, Jaldo F, Biarnes C, Molina X, Xifra G, Ricart W, Bardera A, Boada I, Essig M, Pedraza S, Federici M, Fernández JM, Puig J. Bariatric Surgery-Induced Changes in Intima-Media Thickness and Cardiovascular Risk Factors in Class 3 Obesity: A 3-Year Follow-Up Study. *Obesity (Silver Spring)*. 2020. 28. (9):p. 1663-1670. IF:5,002.
11. Perujo N, Romani AM, Martín JA. Microbial community-level physiological profiles: Considering whole data set and integrating dynamics of colour development. *ECOL INDIC*. 2020. 117. 106628. IF:4,958.
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NON-INDEXED

1. Egozcue JJ, Graffelman J, Ortego MI, Pawlowsky V. Some thoughts on counts in sequencing studies. *NAR Genom Bioinform.* 2020. 2. (4):p. 94-94.

GRANTS

Project: METHods for COMpositional analysis of DATA (CODAMET).
Funding agency: Ministerio de Ciencia, Innovación y Universidades (Ref: RTI2018-095518-B-C21, 2019-2021) €67.800,00.
Duration: From 2019 to 2021
Coordinator: José Antonio Martín Fernández, Glòria Mateu Figueras
Principal Investigator: José Antonio Martín Fernández, Glòria Mateu Figueras

Project: Research Group "Compositional and Spatial Data Analysis" (COSDA).
Funding agency: Agència de Gestió d'Ajuts Universitaris i de

Recerca (AGAUR), Generalitat de Catalunya (Ref: 2017SGR656).

Duration: From 2017 to 2020

Coordinator: José Antonio Martín Fernández

MEMBERSHIP OF COLLABORATIVE RESEARCH NETWORKS (NATIONAL & INTERNATIONAL)

INTERNATIONAL

- CoDa-Association

CATALAN

- Societat Catalana d'Estadística
- Societat Catalana de Biologia
- Sociedad Española de Biometría

DOCTORAL THESIS

Title: Compositional methodology and statistical inference of family relationships using genetic markers

Student: Iván Galván Femenía

Director: Dr. Jan Graffelman and Dr. Carles Barceló Vidal

Date: 10/07/2020

COLLABORATIONS

- Barcelona Supercomputing Center (BSC)
- Instituto de Investigación Biomédica de Bellvitge (IDIBELL)
- Instituto de Investigación del Sida IrsiCaixa
- Eurecat Centro Tecnológico de Cataluña
- Institut Universitari de Recerca en Atenció Primària Jordi Gol i Gurina
- Research Centre in Sustainable Energy, Queens University Belfast
- United States Geological Survey

Statistics, econometrics and health (GRECS)



Recognised as a consolidated research group AGAUR (Generalitat de Catalunya) - 2017SGR00656

MEMBER OF CIBER-ESP

GROUP LEADER - R4

Marc Saez

ESTABLISHED RESEARCHERS - R3

Maria Antònia Barceló

Germà Coenders

Lluís Coromina

Diego Varga

POST-DOCTORAL RESEARCHERS - R2

Marta Solans

Gemma Renart

Laura Vall-Ilosera

Laura Serra

PRE-DOCTORAL RESEARCHERS - R1

Anna Mota

Somnath Chaudhuri

COLLABORATORS

Gerard Giménez

OVERVIEW

The Research Group of Statistics, Econometrics and Health (GRECS) at the University of Girona is a multidisciplinary group made up mainly of statisticians, but also specialists in biomedicine, the environment, epidemiologists and economists. It is a doubly accredited group both at autonomous level (consolidated group of the Catalan Government) and nationally, through our membership in the CIBER of Epidemiology and Public Health (CIBERESP) (Instituto de Salud Carlos III, Government of Spain).

RESEARCH TOPICS

Our lines of research are both methodological (spatial statistics, Bayesian statistics, analysis of compositional data, mixed models, survival analysis, etc.) and applied. These later focus on Real World Data, environmental epidemiology, cancer epidemiology, and clinical epidemiology. In the latter, our research efforts have recently focused on COVID-19 and Motoneuron disease (MND). We approach both from the environmental epidemiology and apply the most appropriate statistical methods for their study.

PUBLICATIONS

INDEXED / I.F.: 123.89

- Solans M, Romaguera D, Gracia E, Molinuevo A, Benavente Y, Saez M, Marcos R, Costas L, Robles C, Alonso E, de la Banda E, Gonzalez E, Llorca J, Rodriguez MM, Lozano M, Aymerich M, Campo E, Gimeno E, Castaño G, Aragonés N, Pollán M, Kogevinas M, de Sanjose S, Amiano P, Casabonne D. Adherence to the 2018 WCRF/AICR cancer prevention guidelines and chronic lymphocytic leukemia in the MCC-Spain study. *Cancer Epidemiol.* 2020. 64. p. 101629-101629. IF:2,984.
- Munuera E, Saez M, Juvinyà D, Rodríguez A, Barrot JF, Franch J, Romero P, Barceló MA, Coll G. Analysis of the location of retinal lesions in central retinographies of patients with Type 2 diabetes. *ACTA OPHTHALMOL.* 2020. 98. (1):p. 13-21. IF:3,761.
- Bayó J, Dalfó A, Barceló MA, Saez M, Roca C, Pallozzi J, Coll G. The Role First-Day Readings Play in a 3-Day Schedule of Self-Monitoring Home Blood Pressure Based on Prognostic Data. *VAMPAHICA Study. Am J Hypertens.* 2020. 33. (2):p. 154-160. IF:2,689.

4. Solans M, Benavente Y, Saez M, Agudo A, Jakszyn P, Naudin S, Hosnijeh FS, Gunter M, Huybrechts I, Ferrari P, Besson C, Mahamat Y, Boutron MC, Kühn T, Kaaks R, Boeing H, Lasheras C, Sánchez MJ, Amiano P, Chirlaque MD, Ardanaz E, Schmidt JA, Vineis P, Riboli E, Trichopoulou A, Karakatsani A, Valanou E, Masala G, Agnoli C, Tumino R, Sacerdote C, Mattiello A, Skeie G, Weiderpass E, Jerkeman M, Dias JA, Späth F, Nilsson LM, Dahm CC, Overvad K, Petersen K, Tjønneland A, de Sanjose S, Vermeulen R, Nieters A, Casabonne D. Inflammatory potential of diet and risk of lymphoma in the European Prospective Investigation into Cancer and Nutrition. *Eur J Nutr.* 2020. 59. (2):p. 813-823. IF:5,614.
5. Solans M, Chan DSM, Mitrou P, Norat T, Romaguera D. A systematic review and meta-analysis of the 2007 WCRF/AICR score in relation to cancer-related health outcomes. *Ann Oncol.* 2020. 31. (3):p. 352-368. IF:32,976.
6. Saez M, Tobias A, Varga D, Barceló MA. Effectiveness of the measures to flatten the epidemic curve of COVID-19. The case of Spain. *Sci Total Environ.* 2020. 727. p. 138761-138761. IF:7,963.
7. Mota P, Saez M, Selby K, Bodenmann P. Longitudinal panel data study of self-rated health among migrants in French-speaking Switzerland, 2003-2017. *BMJ Open.* 2020. 10. (8):e035812. IF:2,692.
8. Saberi F, Kolijs PM, Casabonne D, Nieters A, Solans M, Naudin S, Ferrari P, McKay JD, Weiderpass E, Perduca V, Besson C, Mancini FR, Masala G, Krogh V, Ricceri F, Huerta JM, Petrova D, Sala N, Trichopoulou A, Karakatsani A, La Vecchia C, Kaaks R, Canzian F, Aune D, Boeing H, Schulze MB, Perez A, Langerak AW, van der Velden VHJ, Vermeulen R. Mediating effect of soluble B-cell activation immune markers on the association between anthropometric and lifestyle factors and lymphoma development. *Sci Rep.* 2020. 10. (1):p. 13814-13814. IF:4,379.
9. Naudin S, Solans M, Saberi F, Nieters A, KYRØC, Tjønneland A, Dahm CC, Overvad K, Mahamat Y, Besson C, Boutron MC, Kühn T, Canzian F, Schulze MB, Peppia E, Karakatsani A, Trichopoulou A, Sieri S, Masala G, Panico S, Tumino R, Ricceri F, Chen SLF, Barroso LL, Huerta JM, Sánchez MJ, Ardanaz E, Menéndez V, Amiano P, Spaeth F, Jerkeman M, Jirstom K, Schmidt JA, Aune D, Weiderpass E, Riboli E, Vermeulen R, Casabonne D, Gunter M, Brennan P, Ferrari P. Healthy lifestyle and the risk of lymphoma in the European Prospective Investigation into Cancer and Nutrition study. *INT J CANCER.* 2020. 147. (6):p. 1649-1656. IF:7,396.
10. López G, Saez M. Saved by Wealth? Income, Wealth, and Self-Perceived Health in Spain during the Financial Crisis. *Int J Environ Res Public Health.* 2020. 17. (19):7018. IF:2,849.
11. Solans M, Chan DSM, Mitrou P, Norat T, Romaguera D. Response to the letter to the editor 'Conceptual and clinical interpretation of 2007 WCRF/AICR Score in relation to cancer-related health outcomes', by R. Jayaraj, et al. *Ann Oncol.* 2020. 31(10):p. 1414-1415. IF:32,976.
12. González M, Saez M, Casas F. Subjective Well-Being in Early Adolescence: Observations from a Five-Year Longitudinal Study. *Int J Environ Res Public Health.* 2020. 17. (21):8249. IF:2,849.
13. Villavicencio A, Solans M, Auñon C, Dr R, Marcos R. Population-based survival of lymphoid neoplasms: Twenty years of epidemiological data in the Girona province, Spain. *Cancer Epidemiol.* 2020. 69. p. 101841-101841. IF:2,984.
14. Saez M, Tobias A, Barceló MA. Effects of long-term exposure to air pollutants on the spatial spread of COVID-19 in Catalonia, Spain. *Environ Res.* 2020. 191. p. 110177-110177. IF:6,498.
15. Cirera L, Ballesta M, Márquez S, Chirlaque MD, Saez M, Salmerón D, Mortality working group of the Spanish Epidemiological A. Partial contributions and temporal trends of leading causes of death during the last four decades in Spain. *Public Health.* 2020. 189. p. 81-90. IF:2,427.
16. Díaz C, Juan P, Chaudhuri S, Saez M, Serra L. Association between the New COVID-19 Cases and Air Pollution with Meteorological Elements in Nine Counties of New York State. *Int J Environ Res Public Health.* 2020. 17. (23):9055. IF:2,849.

BOOKS

Franquet A, Plaja P, Iglesias E, Barceló MA, Saez M. *Indicadors clau de l'alt Empordà 2020*. Figueres, Girona: Departament de Comunicació de la Fundació Salut Empordà. Depósito legal: GI 1302-2020.

GRANTS

Project: Pfizer Global Medical Grants. COVID-19 Competitive Grant Program 'Seroprevalence and the socioeconomic and health impact of COVID-19 on general and vulnerable populations'.

Duration: From 2020 to 2022

Principal Investigator: Marc Saez and Maria Antònia Barceló

Project: WASABY European Commission DG SANTE PP-2-5- 2016

Duration: From 2018 to 2020

Principal Investigator: Marc Saez and Rafael Marcos-Gragera

Project: Projecte H2020 European Union Funding for Research & Innovation (topic SFS-39-2017: Sustainable Food Security – Resilient and resource efficient value) 'Science and technology in childhood

ASSOCIATED GROUPS

obesity policy (STOP)

Duration: From 2018 to 2021

Principal Investigator: Marc Saez

Project: 'IMPSEROCOVID19. Impacto y Seroprevalencia de la enfermedad COVID-19'. Fondo SUPERA COVID-10 (SAUN: Santander Universidades-CRUE).

Duration: From 16/07/2020 to 31/12/2021

Principal Investigator: Marc Saez and M. Antònia Barceló

MEMBERSHIP OF COLLABORATIVE RESEARCH NETWORKS (NATIONAL & INTERNATIONAL)

SPANISH

- CIBER_ESP (Epidemiología y Salud pública) - CB06/02/1002

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