

2021

Annual report

Biomedical Research
Institute of Lleida



Presentation

This year 2021 has once again been a challenge for all of us due to the global pandemic situation we have experienced, where the importance of biomedical research has been highlighted even more. Health research is of high value to society and for this reason, we offer this report where you can find the scientific contributions and outstanding activities of all the people working at IRBLleida. A report that includes the main milestones of all the IRBLleida staff, whom we must thank for their work, as well as to the members of the different committees and commissions that have contributed to the growth of the institute with their effort and generosity.

During this year, the scientists at IRBLleida have made significant contributions: a total of 368 articles published in 2021 and almost 60% of them in the first quartile of their field of research, reflecting the efforts of our researchers to reach higher quality objectives; 66 active observational studies and 143 active clinical trials; with a budget that have raised to 7,3 M € and an increase of the generosity of the local society making significant donations for biomedical research with 155 collaborating companies.

As the last years, our proposal for the future is to support the growth of the Institute, focus on the internationalisation of our research and the promotion of the innovation. Two aspects on which we are working hard. As I have said last year, we are ready to face the new challenges. We have to take advantage of this new opportunity where research is gaining more prominence to position IRBLleida as a leading centre at european level and take advantage take advantage of all the funding opportunities that are available from the local, national and EU administrations.

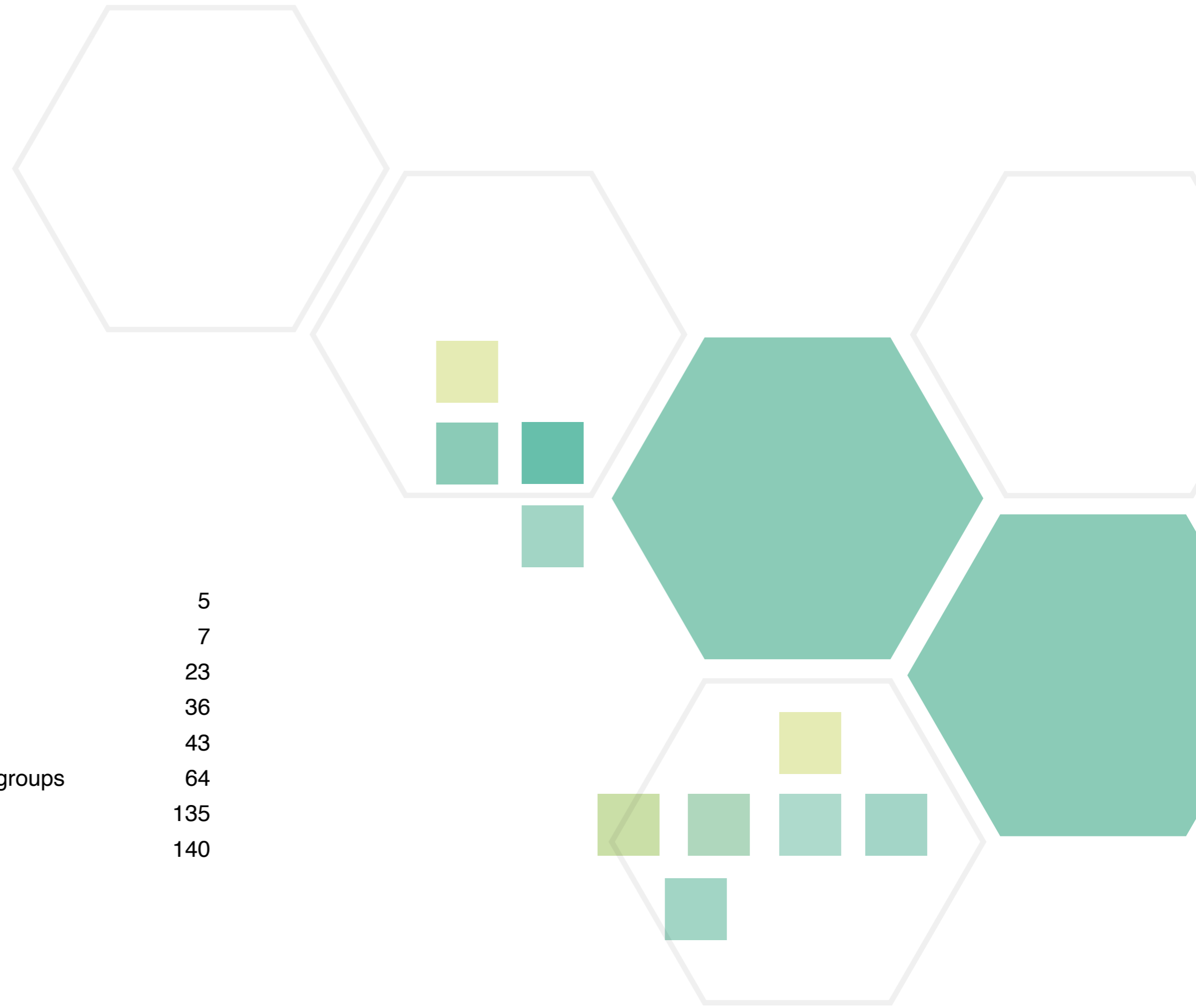


Main achievements



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Healthcare framework





Healthcare and teaching framework

IRBLleida acts as a cluster of all biomedical research carried out in Lleida and belongs to two players that conduct health research and implement innovation policies:

- The University of Lleida (UDL) includes researchers from the Faculties of Medicine and Nursing and Physiotherapy.
- The Department of Health, which includes research professionals from its suppliers:
 - Catalan Health Institute (ICS): Arnau de Vilanova University Hospital (HUAV), the Lleida Primary Care and Community and the Alt Pirineu-Aran Primary Care.
 - Gestió de Serveis Sanitaris (GSS): Santa Maria University Hospital (HUSM), Pallars Regional Hospital and Mental Health, and others.

It also interacts with the Lleida Agri-Food Science and Technology Park and Agrotecnio, the research centre for agriculture, animal production and food technology at the ETSEA campus of the University of Lleida. The Lleida Health Region includes the counties of Les Garrigues, La Noguera, Pla d'Urgell, La Segarra, El Segrià and L'Urgell. The provision of health, educational, cultural, commercial and professional services to people living in other municipalities in the district of Lleida, and in part of the 'La Franja', the Pyrenees and even the Terres de l'Ebre, make Lleida a centre of attraction that goes beyond the district itself (with 370,000 inhabitants) to cover the needs of its inhabitants. In terms of teaching, the IRBLleida receives support from the Health Sciences area of the University of Lleida with the degrees of Medicine, Nursing and Physiotherapy, and Human Nutrition and Dietetics. UdL lecturers and IRBLleida researchers also participate in the teaching of the Biotechnology degree, which belongs to the field of science. Since September 2009, the bachelor's degree in Biomedicine has been taught in coordination with the University of Marburg, a pioneer in this degree in the world. The IRBLleida has a large animal facility located in Torrelameu, equipped with state-of-the-art experimental operating theatres, with the main objective of training surgeons, and facilities to carry out research activity in the porcine model.

Healthcare activity in data

With regard to the Arnau de Vilanova University Hospital (HUAV), the available data shows 386,704 outpatient consultations. There have been 38,839 day hospital sessions. It has received 85,349 emergency visits and has registered a total of 24,995 discharges.

It is a hospital with 456 stable beds (369 conventional beds, 38 adult critical care beds, 34 adult semi-critical care beds and 15 neonatal ICU beds).

With regard to the Santa Maria University Hospital (HUSM), the available data show 158,594 outpatient consultations. It has had an annual activity of 7,326 hospital discharges. There have been 5,386 day hospital sessions and 160,693 rehabilitation sessions. There have been 1,391 discharges in the mental health area and 892 discharges to the socio-health area.

It is a hospital with 92 beds available for specialised care (78 beds for conventional hospitalisation, 6 semi-critical adult beds and 8 critical beds), 30 beds for socio-health care and 64 beds for mental health care.

The Teaching Unit for the training of residents (MIR, PIR, IIR, EIR, etc.) of the HUAV and the HUSM has been accredited since 1984.



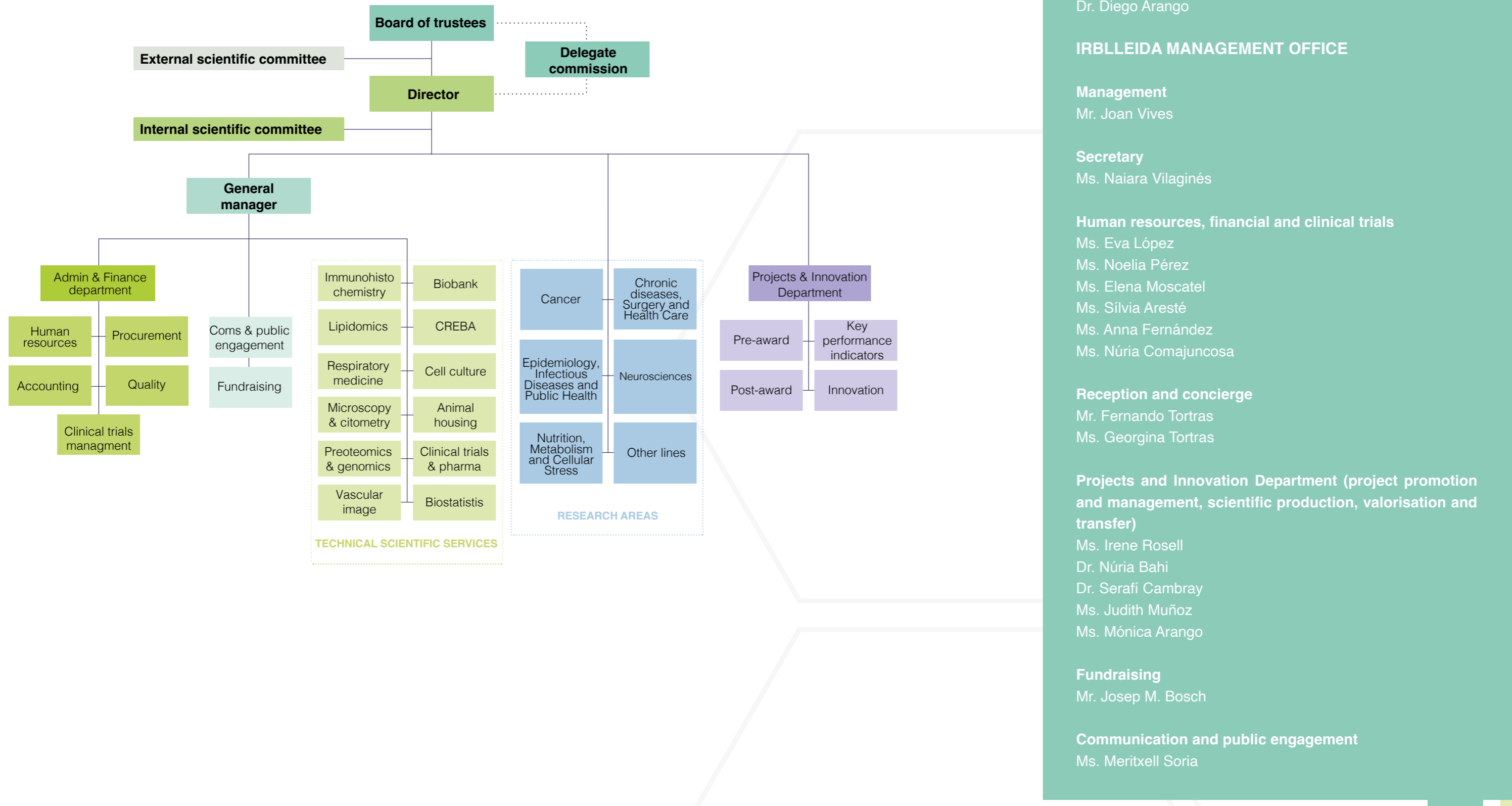


Organization

1. Board of trustees
2. Delegate commission
3. Internal scientific committee
4. External scientific committee
5. Drug research ethical committee
6. Animal experimentation ethics committees
7. Internal commissions

IRBLleida, in accordance with its statutes, is structured into the following bodies:

- Governing: board of trustees and the delegate commission.
- Consultative: the internal scientific committee and the external scientific committee.
- Direction and management.



SCIENTIFIC DIRECTION

Director
Dr. Diego Arango

IRBLLEIDA MANAGEMENT OFFICE

Management
Mr. Joan Vives

Secretary
Ms. Naiara Vilaginés

Human resources, financial and clinical trials
Ms. Eva López
Ms. Noelia Pérez
Ms. Elena Moscatel
Ms. Sílvia Aresté
Ms. Anna Fernández
Ms. Núria Comajuncosa

Reception and concierge
Mr. Fernando Tortras
Ms. Georgina Tortras

Projects and Innovation Department (project promotion and management, scientific production, valorisation and transfer)
Ms. Irene Rosell
Dr. Núria Bahi
Dr. Serafí Cambray
Ms. Judith Muñoz
Ms. Mónica Arango

Fundraising
Mr. Josep M. Bosch

Communication and public engagement
Ms. Meritxell Soria



1. Board of trustees

The governance, representation and senior management of IRBLleida will correspond to the board of trustees, which has all the necessary powers to achieve its foundational aims. Its composition in 2021 was as follows:

President

Hon. Ms. Alba Vergés i Bosch and Hon. Dr. Josep Maria Argimon i Pallàs

Counselor of the Department of Health of the Generalitat of Catalonia

First Vice-President

Dr. Gemma Geis i Carreras

Counselor of the Department of Research and Universities of the Generalitat of Catalonia

Hon. Mr. Ramon Tremosa i Balcells

Counselor of the Department of Business and Knowledge of the Generalitat of Catalonia

Second Vice-President

Dr. Jaume Puy Llorens

Chancellor of the University of Lleida

Member

Ms. Ana Maria Plaza Tesías

General director for health planning of the Generalitat of Catalonia

Ms. Montserrat Llavayol Giralt

General deputy director of health research of the Health Department of the Generalitat of Catalonia

Mr. Joan Talarn i Gilabert

President of the Diputació de Lleida

Dr. Joan Gómez Pallarès

General director of research of the Department of Business and Knowledge of the Generalitat of Catalonia

Dr. Josep Pifarré Paredero

General manager of the Lleida Health Region

Dr. Francesc Xavier Grau Vidal

Secretary for universities and research of the Department of Business and Knowledge of the Generalitat of Catalonia

Dr. Lluís Rovira Pato

Director CERCA

Ms. Iolanda Font de Rubinat

General deputy director of research of the Research and Universities Department of the Generalitat of Catalonia

Mr. Ramon Saladrígues Solé

General manager of the University of Lleida

Dr. Joaquim Ros Salvador

Vice-chancellor of research at the University of Lleida

Dr. Albert Sorribas Tello

Professor on statistics and operations research at University of Lleida

Dr. Ramon Sentís Berges

Territorial general manager of the Catalan Institute of Health in Lleida

Dr. Pilar Vaqué Castilla

Director of primary health care of the Catalan Health Institute in Lleida

Dr. Ferran Barbé Illa

Professor of medicine at the University of Lleida/Chief of the pneumology department at Hospital Universitari Arnau de Vilanova

Last meeting: 16/12/2021



2. Delegate commission

The board of trustees will appoint, from among its members, a delegate commission. Its functions are to carry out the agreements adopted by the board of trustees, the periodic monitoring of the management tasks and of the agreements and conventions subscribed by the foundation, and to propose to the board of trustees the adoption of the agreements that correspond to this body, among others.

Ms. Ana Maria Plaza Tesías

General director for health planning of the Generalitat of Catalonia

Dr. Joan Gómez Pallarès

General director of research of the Department of Business and Knowledge of the Generalitat of Catalonia

Dr. Lluís Rovira Pato

Director CERCA

Mr. Ramon Saladrígues Solé

General manager of the University of Lleida

Dr. Joaquim Ros Salvador

Vice-chancellor of research at the University of Lleida

Dr. Ramon Sentís Berges

Territorial general manager of the Catalan Institute of Health in Lleida

Last meeting: 01/12/2021



3. Internal scientific committee

The internal scientific committee is the IRBLleida's advisory body for its strategic and operational lines, which serves to promote and coordinate its scientific activity. The members of internal scientific committee in 2021 were:

President

Dr. Diego Arango del Corro

Scientific director

Member

Dr. Ferran Barbé Illa

Group leader, Translational research in respiratory medicine group

Dr. Esther Rubinat

Principal investigator, Research group of health care (GRECS)

Dr. Josep Montserrat Capdevila

Primary care representative

Dr. Josep Pifarré Paredero

Medical director of the department of mental health, Gestió de Serveis Sanitaris

Dr. José Manuel Porcel Pérez

Group leader, Cancer biomarkers (GReBiC)

Dr. Manel Portero Otín

Principal investigator Metabolic physiology group

Dr. Francesc Purroy García

Group leader, Clinical neurosciences group

Dr. Joaquim Ros Salvador

Group leader, Oxidative stress biochemistry

Dr. Eduard Solé Mir

Chairman of the committee of ethics and clinical research (CEIC) of the Arnau de Vilanova University Hospital in Lleida

Dr. Alfons Segarra Medrano

Principal investigator, Vascular and renal translational research group

Dr. Albert Sorribas Tello

Group leader, Systems biology and statistical methods for biomedical research

Dr. Jordi Torres Rosell

Group leader, Cell cycle group

Dr. Jorge Juan Olsina

CREBA director

Ms. Eva López Truco

Quality manager

Dr. Serafí Cambray Carner

Chief of Innovation

Dr. José Manuel Valdivielso Revilla

President of the technical training commission

Last meeting: 22/11/2021



4. External scientific committee

The scientific advisory board made up of several members of recognized scientific expertise acts as an advisory body to the board of trustees in the tasks entrusted to it in order to ensure the scientific quality of the IRBLleida, and to advise the Scientific Director in the development of its functions.

The members of the External Scientific Committee in 2021 were:

Dr. Ángeles Almeida Parra

Doctor of Pharmacy. Scientific assistant director of the Biomedical Research Institute of Salamanca (IBSAL). Head of the Molecular Neurobiology Group in the IBSAL and the Institute of Biology and Functional Genomics (IBFG). Associate Professor of the University of Salamanca

Dr. Ernest Arenas

Doctor in Neuroscience, Karolinska Institutet (KI), Department of Medical Biochemistry and Biophysics (MBB). Area of research on stem cells in the fight against Parkinson's Disease

Dr. Cristina Casals Carro

Professor at the Complutense University of Madrid, Department of Biochemistry and Molecular Biology. Director of the Master's Degree in Biochemistry, Molecular Biology and Biomedicine at the Complutense University of Madrid

Dr. Antonio Guasch-Vallverdú

Nephrologist, Emory University Hospital, Atlanta, Georgia, USA. Research area: hypertension, kidney transplant

Dr. Anna Lluch Hernández

Professor of Medicine at the Faculty of Medicine of the University of Valencia and Head of Hematology and Medical Oncology at the University Hospital of Valencia

Dr. Teresa Moreno Casbas

Director, Nursing and Healthcare Research Unit (Investén-ISCIII)

Dr. Josep Rodés-Cabau

Director of the Catheterization and Interventional Laboratories of the Quebec Heart & Lung Institute, Quebec City, Canada; Associate Professor of Medicine at Laval University, Quebec City, Canada; Director of Research and Innovation at the Clinic University Hospital of Barcelona, Barcelona, Spain.

Dr. Carlos Rodríguez-Galindo

Member, St. Jude Faculty; Executive Vice President; Chair, Department of Global Pediatric Medicine; Director, St. Jude Global; Co-Associate Director, Outreach, Comprehensive Cancer Center, Memphis, Tennessee, USA.

Dr. Mariano Rodríguez Portillo

Nephrologist, Professor of Nephrology, Queen Sofia Hospital (Córdoba), Coordinator of Teaching and Research, Group Leader, IP Maimonides Cordoba Biomedical Research Institute

Last meeting: 06/10/2021



5. Drug research ethical committee

The Drug Research Ethical Committee (CEIm) evaluates clinical drug trials in accordance with the provisions of RD1090/2015. The mission of this committee is to contribute to the improvement of the quality and relevance of the research projects, clinical trials and observational studies that are carried out in our institution, taking as a reference the main international bioethical codes.

The members of the CEIm in 2021 were:

President

Dr. Eduard Solé Mir

Paediatrician

Vice-president

Dr. Xavier Gómez Arbonés

Physician

Secretariat

Ms. Núria Badia SanMartin

Biologist

Members

Dr. José Ramón Casas Iglesias

Physician

Ms. Montse Salanilla Puértolas

Administrative Secretary

Dr. Joan Costa Pagès

Physician, clinical pharmacologist

Ms. Lourdes Echevarria Cortada

User attention unit

Ms. Concepció Fonayet

Nurse

Ms. Assumpta Fortuny Capafons

Patients representative

Dr. Xavier Galindo Ortego

Physician

Mr. Leonardo Galván Santiago

Primary care pharmacist

Dr. Marta Ortega Bravo

Primary care pharmacist

Dr. Eugeni Joan Paredes Costa

Primary care pharmacist

Patients representative

Dr. Manel Portero Otín

Physician

Dr. Francesc Purroy García

Neurologist

Ms. Esther Ribes Murillo

Primary care pharmacist

Dr. Joan Antoni Schoenenberger Arnaiz

Hospital pharmacist

Mr. Francesc Vergés Agustí

Law graduate

Dr. Oriol Yuguero Torres

Representative of the healthcare ethics committee

Mr. Raül Llevot Pérez

Lawyer

Last meeting: 09/11/2020



6. Animal experimentation ethics committees

The animal experimentation ethics committee (CEEA) of the UdL was created with the aim of supporting researchers and teachers in their scientific and teaching work involving laboratory animal experimentation. Its function is to provide information on the performance of the procedures, prior assessment of the suitability of the procedure in relation to the objectives of the study, the possibility of obtaining valid conclusions with as few animals as possible and consideration of alternative methods.

The members of the UdL CEEA in 2021 were:

President

Dr. Olga Martín Belloso

Vice-rector for Research and Transfer

Secretariat

Dr. Carme Piñol Felis

SCT animal welfare advisor - rodent/reptile animal facility - Departament of Medicine, UdL

Members

Dr. José A. Moreno Martínez

Animal welfare advisor ETSEA center - Department of Animal Science of the UdL

Dr. Daniel Babot Gaspà

Researcher at ETSEA, Department of Animal Science of the UdL

Dr. Xavier Gómez Arbonés

Researcher in Medicine at the Department of Medicine of the UdL

Dr. Frederic Casals Martí

Researcher at ETSEA, Department of Animal Science of the UdL

Last meeting: 09/12/2021

The CEEA of the Center for Applied Biomedical Experimental Research (CREBA) is the body in charge of overseeing the welfare of animals used in teaching and scientific tasks that involve experimentation in a porcine model.

The members of the CREBA CEEA in the year 2021 were:

President

Dr. Dolores C. García Olmo

Veterinarian in charge of animal welfare and health at CREBA

Vice-president

Dr. Serafí Cambray Carner

Projects and Innovation manager at IRBLLeida and associate professor at the University of Lleida

Members

Dr. Carme Mias Carballal

CREBA surgical coordinator, general surgeon at the Hospital Universitari Arnau de Vilanova and associate professor at the University of Lleida

Dr. José Manuel Valdivielso Revilla

Group leader at IRBLLeida and associate professor at the University of Lleida

Dr. Marcelino Bermúdez López

Principal investigator at the IRBLLeida and associate professor at the University of Lleida

Dr. Sara Puy López

Veterinarian in charge of animal health at CREBA

Carlos Alberto Rombola

Thoracic surgery section chief at the Arnau de Vilanova Hospital of Lleida and associate professor at the University of Lleida

Ester Desfilis Barceló

Group leader at IRBLLeida and professor at the University of Lleida

Last online evaluation: September 2021



7. Internal commissions

IRBLleida is structured into different committees and commissions to organize its activity.

7.1. Internal commission of scientific evaluation

The IRBLleida Internal Scientific Evaluation Commission (hereinafter CIAC), is the permanent evaluation commission and its function is to supervise the processes of evaluation and prioritization of proposals that are submitted to different calls, both coordinated by the IRBLleida and by other funding sources.

Functions

- To establish the appropriate evaluation criteria for applications to calls that require prioritisation and/or selection of internal candidates.
- To evaluate and prioritise the proposals received in accordance with the established criteria.
- To establish the terms and conditions for internal calls, which will subsequently be reviewed and, if necessary approved by the Internal Scientific Committee.
- To communicate the results of the assessment to the IRBLleida management.
- To respond to possible complaints and/or grievances related to calls evaluated or prioritised by the CIAC.
- To review and approve proposals submitted to ISCIII calls.
- To monitor periodically the internal grants that may be required.
- To produce reports on the evaluations carried out (feedback).

MEMBERS

Dr. Manel Portero Otín
President

Dr. Serafí Cambray Carner
Secretariat

Dr. Núria Bahi Pla
Member

Dr. Joan Blanco Blanco
Member

Dr. Silvia Bielsa Martín
Member

Dr. Cristina Martínez Martínez
Member

Dr. José Manuel Valdivielso Revilla
Member



7.2. Biosafety commission

The concept of biosafety encompasses a broad and diversified set of regulations related to the protection of living beings and the environment from biological agents, factors and risks. These include regulations on plant health, animal health, food safety, human health and safety, environmental safety and biodiversity protection. The IRBLleida's Biosafety Commission is responsible for assessing the biosafety risk of projects initiated at the institution, providing support in training activities for users of tissue culture facilities with biosafety level 2 or higher, proposing improvements to processes or protocols and advising the centre's management on biosafety issues.

Functions

- To participate, while verifying the degree of compliance with current legal and internal regulations, in the assessment, identification, review and approval of facilities and research and teaching activities related to the export or import, the release into the environment, contained use, production, transport, commercialisation, packaging, destruction and/or elimination of biological agents, whether genetically modified or not, and the derivatives, products or samples that contain them. The commission is entitled to request from the research personnel responsible for a given project or procedure with biosafety implications, any additional information considered necessary to carry out its functions.
- To carry out a prior assessment of the installations and activities that require authorisation, before notifying the competent authority, as well as to establish a register and custody of the legally required documentation.
- To control and guarantee that the IRBLleida's activities and installations comply with current legal and internal regulations.
- To establish the biosafety procedures to be applied by the IRBLleida Biosafety Commission.
- To issue the certificates that are required in accordance with its competences.
- Proposing, when necessary, the improvement of facilities/equipment in terms of biosafety.
- To register the reception and packaging of biological agents, GMOs and/or their derivatives classified in risk group two or higher.
- To review information on biological incidents or accidents and notify the competent authorities of any incident, contamination or serious accident involving biohazardous material.
- To disallow the initiation and suspend any activity that is not in accordance with current regulations.
- To assess and inform IRBLleida management of any complaints submitted by any member of the research community regarding possible irregularities in areas within the Commission's remit.
- To assess and train research teams working in laboratories on aspects related to biosafety.
- To ensure that the confidentiality of the data and information provided to the Commission is guaranteed.
- To guarantee the necessary coordination with the scientific and technical services of the IRBLleida, the Ethics and Animal Experimentation Committee (CEEAA) of the University of Lleida, the Ethics and Animal Experimentation Committee (CEEAA) of CREBA and the Drug Research Ethical Committee (CEIm).
- Any other function attributed to it by law or by the governing bodies of the IRBLleida.

The biosafety aspects of 10 projects and 10 application forms to work in the BSL2+ (3.16) containment room have been evaluated during 2021.

Last meeting: 08/11/2021

MEMBERS

Dr. Maria Ruiz Miró
President

Dr. Marta Rafel Borrell
Secretariat

Dr. Núria Bahi Pla
Member

Dr. Marcellí Bermúdez López
Member

Dr. Eloi Garí Marsol
Member

Ms. Eva López Truco
Member

Dr. Carme Piñol Felis
Member

Dr. Judith Ribas Fortuny
Member

✉ Contact

comitebioseguret@irbllleida.cat



7.3. Equality commission

The aim of the IRBLleida Equality commission is to facilitate compliance with existing legislation on equalities and diversity management. The members of the commission have a confidentiality agreement, as this body is a facilitator in the management of issues related to equality of gender, race, religious beliefs or geographical origin.

Functions

- To guarantee an egalitarian selection process and guarantee equal opportunities in the access, selection and permanence of staff.
- To promote staff participation in the area of equal opportunities.
- To raise awareness and train staff on issues of equality.
- To encourage a non-sexist or discriminatory use of language and images.
- To guarantee the conciliation of work, personal and family life.
- To implement measures for prevention, detection and intervention in cases of sexual harassment and harassment on the grounds of sex.
- To incorporate the gender perspective in the mission, vision and values of the organization.

MEMBERS

Dr. Águeda Martínez Barriocanal
President

Ms. Elena Moscatel Mendelsohn
Secretariat

Mr. Iván Hidalgo Muñoz
Member

Dr. Marcelí Bermúdez López
Member

Dr. Serafí Cambray Carner
Member

Ms. Irene Rosell Mena
Member

Ms. Meritxell Soria Yenez
Member

 **Contact**
igualtat@irbllleida.cat



7.4. Quality commission

The IRBLleida Quality commission is the central body for IRBLleida's quality policy and assumes responsibility for the design, implementation and enforcement of the Quality Plan. It is also the assessment body and consults government bodies on quality policy issues.

Functions

- In relation to the Quality Plan:
 - a) To write the Quality Plan.
 - b) Review and verify compliance with the Quality Plan annually.
 - c) To write an annual report on the Quality Plan.
- Others functions related to the quality management system:
 - a) To analyse non-conformities and formulate the corresponding corrective and/or preventive actions.
 - b) To propose initiatives for the improvement (objectives) of quality.
 - c) To propose quality assessment methods and instruments.
 - d) To carry out an evaluation of the actions.
 - e) To inform the IRBLleida's governing bodies of the processes and results of quality assessment.
 - f) To assess quality issues.

Last meeting: 16/12/2021

MEMBERS

Mr. Joan Vives Tomas

President

Ms. Elena Moscatel Mendelsohn

Secretariat

Ms. Laura Batalla Peinado

Member

Mr. Xavier Cabré Ollé

Member

Dr. Anna Casanovas Llorens

Member

Ms. Eva López Truco

Member

Dr. Maria Ruiz Miró

Member

Dr. Joan Antoni Schoenenberger Arnaiz

Member

Mr. Eduard Solé Mir

Member

Working group

Mr. Joan Vives Tomas

President

Ms. Elena Moscatel Mendelsohn

Secretary

Ms. Eva López Truco

Member

Dr. Maria Ruiz Miró

Member

Ms. Meritxell Soria Yenez

Member



Contact

qualitat@irbllleida.cat



7.5. Teaching committee

The IRBLleida teaching committee facilitates the compliment of the Institute's Training Plan and gives answers to the directorate's questions on training-related aspects.

Functions

- Organisation of external seminars and, friday seminars.
- Identification of training needs in scientific aspects for IRBLleida staff.
- Establishment of a Training Plan and prioritisation of training activities.

MEMBERS

Dr. Diego Arango del Corro
President

Mr. Lluís Surroca Bertran
Secretariat

Dr. Rui Alves Vaqueiro de Castro
Member

Dr. Glòria Arqué Fusté
Member

Dr. Sílvia Bielsa Martín
Member

Dr. Anna Casanovas Llorens
Member

Dr. Fabien Delaspre
Member

Dr. Esther Desfilis Barceló
Member

Ms. Maria Alba Gairí Burgués
Member

Dr. Dolores García Olmo
Member

Dr. Cristina Martínez Martínez
Member

Ms. Aurora Pérez Gómez
Member

Ms. Meritxell Soria Yenez
Member

Dr. José Manuel Valdivielso Revilla
Member



7.6. Works council

The IRBLleida Works council is the representative body of the company's employees. The members of the council are elected democratically for 4-year mandates and the number of representatives to be appointed is related to the number of staff contracted by the company.

Functions

- Advice and defense of workers' rights.
- Ordinary meetings with management.
- Negotiation of the collective agreement or other collective agreements with the management.
- Inspection of the decisions, actions and omissions of the management in labor matters.

MEMBERS

Ms. Meritxell Martín Garí
President

Ms. Raquel Martí Cabús
Secretariat

Dr. Marta Rafel Borrell
Member

Ms. Laura Rumi Carrera
Member

Dr. M. Alba Sorolla Bardaji
Member

Ms. Meritxell Soria Yenez
Member

Mr. Fernando Tortras Pastor
Member

Mr. Rubén Tejero Narbona
Member

Dr. José Manuel Valdivielso Revilla
Member



7.7. Technical training commission

The IRBLleida technical training commission is responsible for preparing and managing the training of staff with a contract with IRBLleida.

Functions

- To design the training plan for staff under contract with the IRBLleida linked to the Institute's general objectives.
- To monitor training activities, to control their quality and the access to training activities.
- To control the cost derived from the training activities through the tripartite training fund or FUNDAE.

MEMBERS

Dr. José Manuel Valdivielso Revilla

President

Mr. Lluís Surroca Bertran

Secretariat

Ms. Meritxell Martín Garí

Member

Ms. Elena Moscatel Mendelsohn

Member

Mr. Joan Vives Tomàs

Member



7.8. Joint commission

The joint commission is integrated by the management and executive staff of IRBLleida and the heads of the departments of Basic Medical Sciences, Medicine and Surgery, and Experimental Medicine of the University of Lleida (UdL).

Functions

- Advise the management of the IRBLleida in all those departmental matters and that may generate conflicts of competences.
- Manage the allocation and distribution of spaces in the biomedicine building.
- Advise on everything that refers to the maintenance and improvement of the facilities of the biomedicine building.
- Advise on everything that refers to the organization and operation of the biomedicine building.
- Manage the repair, maintenance or new acquisition, if necessary, of common equipment of the biomedicine building.
- Any other function that by mutual agreement derives from the previous ones.

MEMBERS

Dr. Diego Arango del Corro
President

Mr. Joan Vives Tomas
Secretary

Dr. Olga Tarabal Mostazo
*Director of the Department of Experimental Medicine at the UdL,
Member*

Dr. Elisa Cabiscol Catalan
*Director of the Department of Basic Medical Sciences at the UdL,
Member*

Dr. Carme Piñol Felis
*Director of the Department of Medicine and Surgery of the UdL,
Member*



Core facilities

1. Biobank
2. Microscopy and citometry
3. Biostatistics core
4. Cell culture core
5. Animal housing facility
6. Clinical trial support core - SCT Pharma
7. Immunohistochemistry core
8. Lipidomics
9. Respiratory medicine and chronic pathologies core
10. Proteomics and genomics core
11. Vascular image core - UDETMA
12. Centre for Applied Biomedical Experimental Research (CREBA)



1. Biobank

The IRBLleida's Biobank, **authorized by the Department of Health of Catalonia on April 29 2013 and entered in the ISCIII National Register of Biobanks with reference B.0000682**, is the unit in charge of the central management of human samples and associated personal data for research purposes. Biobank's tasks are focused on the procurement, storage, management and distribution of large collections of human biological samples for the scientific community, guaranteeing the quality of samples at each step, promoting, facilitating and performing collaborative biomedical research using human biological samples in accordance with current Spanish law.

IRBLleida's Biobank is a member of the regional Tumour Bank Network of Catalonia (XBTC) and the Spanish Biobanks Network (RNBB).

The IRBLleida Biobank includes biomedical research in Lleida, from the healthcare system (Arnau de Vilanova University Hospital and Santa Maria University Hospital), and from the University of Lleida. The Biobank started as a cancer tumour bank, thanks to a special initiative of the Spanish Ministry of Education and Science in 2004. During the years 2008, 2013 and 2017, the Carlos III Institute of Health has granted various grants for the adaptation, maintenance, improvement and participation in the Biobank Platform (RNBB). During this time the Biobank has created different types of sample collections from neurology, endocrinology, internal medicine, respiratory medicine, oncology and others with different types of samples such as serum, plasma, blood, nucleic acids, pleural fluid, etc. From 2020, the Biobank has adapted to the current SARS-CoV2 pandemic by modifying the sample processing room with increased biosecurity and creating new sample collection circuits for patients with COVID-19.

At the end of 2020, the Biobank became part of the new ISCIII Platform, the Biobank and Biomodels Platform.

The Biobank is UNE EN ISO 9001: 2015 certified. The scope of application of the IRBLleida Biobank's quality management system covers all activities of analysis and service, from the reception, processing, storage and sending of biological samples from donors for biomedical research.

The IRBLleida Biobank is attached to the Clinical Research Ethics Committee of the Arnau de Vilanova University Hospital.

The members of the External Scientific Committee of the Biobank are:

- 1) Dr. Judith Pallarès
- 2) Dr. Jordi Tarragona
- 3) Dr. Rosa M^a Martí Laborda
- 4) Dr. Joan Viñas

Services platform

- 1) Assignment of human biological samples for research projects
- 2) Project management and collections of human biological samples
- 3) Automated extraction of nucleic acids from human biological samples.
- 4) Ethical, scientific and legal advice for the treatment of samples and clinical data



Scientific coordinator
Dr. Xavier Matias-Guiu

Core facility coordinator
Dr. Maria Ruiz Miró

Staff
Ms. Anna Serrate
Ms. Ingrid Prats
Dr. Catherine Fleitas
Ms. Sara Serrano
Dr. Irene Pociño

New biological samples during 2021:

- TUMOR BANK - 604
- PLEURAL LIQUID BANK - 101
- STROKE - 365
- ALZHEIMER – 194
- SLEPP APNEA – 32
- COVID-19 - 955
- EL BUS DE LA SALUT – 984



2. Microscopy and cytometry core

Flow Cytometry Core. The Flow Cytometry Core at IRBLleida provides technical expertise and training to access the state-of-the-art instrumentation, as well as technical and scientific advice to develop efficient and reliable flow cytometric assays with the highest quality control standards. Funding was obtained in 2021 for a new CytoFLEX SRT Cell Sorter with Violet-Blue-Yellow Green-Red (V-B-Y-R) lasers and 15 fluorescent detectors within a biosecurity cabin.

The Flow Cytometry Core also offers software for different applications such as ModFit LT for the analysis of cell cycle FCAP Array experiments CBA (BD) and two analysis software file licenses for FlowLogic cytometry (Denovo Software).

Some services provided are cell cycle studies, oxidative stress (various fluorescent probes) studies for immunophenotyping, apoptosis (annexin V, caspase 6, phosphorylated histone H3, etc), analysis concentration of cytokines by cytometric bead array (CBA BD), among others.

Microscopy core. The main objective of the Microscopy Core Facility is to offer the research community, either at IRBLleida or public/private external institutions, a unique set of equipment to help them prepare, visualize and analyze samples for optical and electronic microscopy. Funding was obtained in 2021 to acquire a new state-of-the-art high-contrast transmission electron microscope (TEM) of 120 Kv with LaB6 thermoion gun, equipped with CMOS digital camera for image acquisition. This core is managed by the University of Lleida.



Flow Cytometry Unit scientific coordinator
Dr. Conchi Mora

Core facility coordinator
Dr. Anaïs Panosa

Confocal Microscopy unit managers:
Dr. Jordi Calderó
Dr. Anaïs Panosa



3. Biostatistics core

Biostatistics Core. Statistical methods are essential for designing studies, analyzing data and interpreting results. The Biostatistics Core has the mission of generating knowledge contributing to improve health, working with researchers to turn their data into useful information to advance research. To achieve this goal, the Biostatistics Core provides advice and methodological support for the design and data analysis of studies by the research groups at IRBLleida and external organizations. Participates to improve the processes of data collection, validation and integration for the research groups at IRBLleida, and actively participates in Biostatistics networks in Spain and abroad. This core also organizes and participates in training courses of statistics and research methodology at IRBLleida and other institutions.



Core facility coordinator
Dr. Montserrat Martínez

Team
Dr. Joan Valls



4. Cell culture core

The cell culture service (SCT-CC) is a research support infrastructure, ensuring the proper functioning of the different spaces and equipment intended to work with cell and tissue cultures, as well as training its users in good practices, preservation of asepsis and biosecurity, advising them, if necessary, both in technical matters and experimental design. The service also supports the accreditation of the ministry of activities with type II GMOs, and is in charge of the supervision, maintenance and training of the facilities with biological containment of level 2+ for the manipulation of human samples in general or sars-cov-2 +.

The services provided include:

- Maintenance, expansion and freezing of stable or primary cell cultures.
- Treatment of cell cultures with specific drugs.
- Transfection / infection / electroporation of cell cultures with foreign or suppressive genes.
- Production of genetically transformed cell lines in a stable way
- Lentivirus production
- Production 3D cell cultures
- Observation of kinetics and cell migration
- Cell Culture preparation for subsequent studies of fluorescence, cytometry, immunoprecipitation, etc.



Scientific coordinator
Dr. Judit Ribas

Core facility coordinator
Dr. Marta Rafel

Staff
Mr. Ivan Hidalgo/ Ms. Laia Beà
Ms. Rosa Vaquera

Users: 105 users, 30 groups, 1 external user



5. Animal housing facility

Animal models are essential for the advancement of biomedical research. The purpose of this facility is to produce and maintain the animals (rodents) required for the different research projects carried out by scientists in our center. The animal facilities occupy an area of 1,200 m² distributed in two floors, and has the capacity to house approximately 40,000 rodents. The facility includes 3 experimental areas that allow animal housing and research in different biosafety (BSL1 and BSL2) and microbiological conditions: 1) a barrier area operating under Specific Pathogen Free (SPF) conditions; 2) a conventional area operating under clean conditions; and 3) a quarantine for animals with improper or undefined microbiological profile. These experimental areas contain 12 animal housing and husbandry rooms (5 in the SPF barrier, 6 in the conventional area and 1 in the quarantine area) and 9 fully-equipped laboratories/surgery rooms (4 in the SPF barrier and 5 in the conventional area). The facility also has 2 technical areas (sterilization/management of materials and a warehouse). Importantly, all the research projects carried out in this animal facility are supervised, evaluated and approved by the Ethics Committee for Animal Research and Welfare.

Some of the services provided by the Animal Housing Facility are:

- Breeding of different species and strains of rodents (mouse and rat) for teaching and research.
- Advice on the import of special models from authorized external suppliers and other research centres.
- Installations for the maintenance of rodents in the course of the experimental procedure.
- Advice for compliance with the legislation regulating the use of animals for teaching and research: facilities, operation, records, staff, ethics committees, project processing and procedures with experimental animals.
- Advice on the handling, care and handling of animal animals and anesthesia procedures.
- Advice to researchers on issues related to animal welfare regarding their acquisition, housing, care and use.
- Advice to researchers on the application of the requirement for replacement, reduction and refinement, and information on technical and scientific advances in the application of this requirement.
- Advisory functions in relation to the state of health and treatment of animals.
- Training of animal user staff with the functions of experimenter and design of projects and procedures.



Scientific coordinator
Dr. Carme Piñol

Appointed veterinarian
Dr. José Antonio Moreno

Staff

Mr. Albert Ardèvol
Ms. Leticia Fabre
Ms. Núria Moix
Ms. Jéssica Pairada
Mr. Marc Collado
Mr. Iván Larroya



6. Clinical trial support core - SCT Pharma

This core facility aims at providing all the necessary support required to carry out clinical trials within our Institute. We have fully equipped facilities to carry out clinical trials of almost 400 m², including medical offices for the examination and monitoring of participating patients, a laboratory for processing clinical samples and a laboratory for drug preparation. Our staff provides support for all stages of a clinical trial, including assistance to research groups with the design of their own studies, administrative support, promoting patient recruitment, study coordination, nursing and data entry, ensuring compliance with the Standards of Good Clinical Practice (GCPP) in clinical studies.



Scientific coordinator
Dr. Joan A. Schoenenberger

Core facility coordinator
Ms. Laura Rumi Carrera

Staff
Ms. Raquel Martí Cabus
Ms. Mónica Baldrich Mora
Ms. Judit Herrera Duran
Dr. Amalia Zapata Rojas
Ms. Alba García Ribas
Ms. Laia Martínez Ribot
Ms. Aida Moroba Estor



7. Immunohistochemistry core

This core facility offers the research groups high quality technical support in histological and immunohistochemical labeling of cells or tissue sections of human or animal origin.

Some services provided include:

- Preparation of paraffin and frozed blocks
- Microtomy
- Histological staining (Hematoxylin-Eosin)
- Special stains (Histochemistry)
- Immunohistochemical protocol for the detection of proteins in human, porcine and mouse tissues using concentrated or prediluted antibodies.
- Construction of Tissue Micro Arrays (TMA Grand Master, 3D HISTECH).
- Immunohistochemical protocol of double staining. Detection of two proteins simultaneously in the same tissue section.
- Immunofluorescence technique.
- Digital scanning of slices (Pannoramic® 250 Flash III, 3D HISTECH) and Analysis of immunohistochemical images using the specific software Quant modul (3D HISTEC).
- Analysis of immunohistochemical images using the ACIS® III Instrument.
- In situ hybridization using FISH (Fluorescent In Situ Hybridization) or CISH (Chromogenic In Situ Hybridization).
- Optical microscopy.
- Quality controls.



Scientific coordinator
Dr. Xavier Matias-Guiu

Core facility coordinator
Dr. Maria Santacana

Staff
Ms. Maria Carrelé

Collaborating medical staff
Dr. Sònia Gatius
Dr. Judit Pallarés

Nº of immunohistochemical stainings: 1.610



8. Lipidomics

Lipidomics is a newly emerged discipline that studies lipid species and their metabolism on a large scale. The Lipidomics Service has state-of-the-art equipment and technology to perform lipidomics and metabolomics analyzes with high sensitivity, selectivity and specificity.

Services

- Experimental design and advice for sampling
- Sample processing with standardized protocols
- Quality controls at every step
- Lipid profile analysis with GC-FID
- Undirected lipidomic analysis with LC-MS type QTOF
- Directed lipidomic analysis with LC-MS type QQQ
- Non-targeted metabolomic analysis with QTOF-type LC-MS
- Targeted metabolomic analysis with LC-MS type QQQ
- Data processing, bioinformatics and statistical analysis
- Access to databases and interpretation of results

Applications

- Biomarkers discovering and development of diagnostic tests
- Identification of targets for drug development
- Monitoring of the effects caused by nutrients and drugs
- Integration of results with other omics

Equipment

- A GC equipment for gas chromatography (Agilent 7890A) coupled to an FID flame ionization detector (Agilent Technologies, Barcelona, Spain)
- A GC equipment for gas chromatography coupled to a mass spectrometer single quadrupole detection system (Agilent 6890, Agilent Technologies)
- Two HPLC for liquid chromatography equipment (Cap Pump 1200 Series G1376A, Nano Pump 1200 Series G2226A, Agilent Technologies)
- Two UPLC liquid chromatography equipment (Agilent 1290 Infinity Quaternary Pump)
- Two QTOF mass detection systems (QTOF LC / MS G6520A and 6545, Agilent Technologies)
- Two QQQ mass detection system (Triple Quad 6420 LC / MS Agilent Technologies)
- Ionization system in nanoelectrospray using Chip Cube technology (HPLC Chip Cube G4240A, Agilent Technologies)
- Specific software for bioinformatics analysis (MassHunter Data Acquisition, MassHunter Qualitative Analysis, MassHunter Quantitative Analysis, MassHunter Mass Profiler, Agilent Technologies).



Scientific coordinators

Dr. Reinald Pamplona
Dr. Mariona Jové

Core facility coordinator

Dr. Èlia Obis

Staff

Ms. Meritxell Martín
Dr. Natàlia Mota

Samples Analyzed: 6.000



9. Respiratory medicine and chronic pathologies core

The Scientific and Technical Service of Respiratory Medicine and Chronic Pathologies core provides specialized support for performing respiratory functional tests and monitoring and monitoring activities specializing in the field of respiratory medicine and chronic diseases.

The service has access to specific technical equipment and has polysomnography, respiratory polygraphy, actigraphy, spirometers, devices for ambulatory blood pressure monitoring (MAP), among others, for the provision of the services offered .

Applications

1. The study of respiratory diseases.
2. Promote health and learning new techniques for exploring and treating respiratory diseases.
3. Advance in the study of personalized medicine.
4. Encourage the development and implementation of new technologies to assess respiratory diseases
5. Provide technical support and advice, under request, to research groups on possible experimental applications as well as the processing of samples for each of the applications.
6. Contribute to the training in diagnostic techniques of health professionals in general and in particular to Pneumology physicians, especially in teaching programs and progressive evaluation, as well as in the professional development of all professionals related to respiratory diseases (technical, statistical, nursing and medical...).
7. Provide expert advice in the field of respiratory diseases to researchers inside and outside IRBLleida.
8. Promote a cross-cutting interaction between research, innovation and knowledge transfer.
9. Develop and exploit the clinical, analytical, image and biobank databases of all the populations studied and make them available to other research groups.



Scientific coordinator
Dr. Ferran Barbé Illa

Staff
Dr. Esther Sapiña
Dr. Adriano Targa
Dr. David de Gonzalo
Dr. Lola Martínez
Ms. Anna Moncusí



10. Proteomics and genomics core

This service offers technology for the study of genes and gene expression or proteome. The equipment of the unit integrates technological platforms to perform genotypic analysis, gene expression analysis and proteomic analysis of complex samples, techniques that are an essential tool for current basic and clinical research in the field of cellular and molecular biology. This core facility is managed by the UdL.

The services provided include:

Genomic studies

- Gene and miRNA expression
- Genotyping on basis of different molecular markers
- Gene copy number variation
- DNA methylations
- NGS applications
- Genotyping of SNPs by MALDI-TOF mass spectrometry
- Detection and quantification of microorganisms and GMOs
- Determination of viral load

Proteomic studies

- Quantification of proteins by Western Blot
- Protein expression studies using antibody microchips
- Differential or expression proteomics based on two-dimensional gels
- Determination of the molecular mass of proteins / peptides by MALDI-TOF/TOF mass spectrometry
- Identification of proteins on a large scale, in samples of medium complexity (eg subproteomes, protein complexes, ...) by means of LC-MALDI-MS / MS



Scientific coordinators

Dr. Eloi Garí

Dr. Joaquim Ros

Core facility coordinator

Ms. Isabel Sánchez



11. Vascular imaging core - UDETMA

This core provides support for the diagnosis of subclinical or asymptomatic atheromatosis, by means of techniques specific and validated instruments, non-invasive, in population with cardiovascular risk factors.

Objectives

1. Diagnosis of subclinical or asymptomatic atheromatosis using specific techniques and validated non-invasive instruments in a population with cardiovascular risk factors.
2. Moving towards personalized medicine: seeing individually the health of the arteries and the impact of risk on them.
3. Calculate the vascular age and whether there is a dissociation with the chronological age due to the action of risk factors (accelerated arterial aging)
4. Change the paradigm in the assessment and treatment of cardiovascular risk taking into account the existence of asymptomatic target organ injury (presence of arterial atheroma plaque)
5. Research into the development and implementation of new technologies for the evaluation of atheromatosis, its prevention and evolution: composition of the plaque, atheromatous burden (total plaque area, number of affected territories).
6. Training on diagnostic techniques for atheromatous disease for health professionals (technicians, nurses, doctors ...)
7. Provide expert advice in the field of atherothrombotic disease to IRBLleida researchers and external researchers
8. Support research, innovation and transfer of knowledge
9. Build clinical, analytical, image and biobank databases of all the populations studied, and make them available to different research groups (internal and external).



Scientific coordinator
Dr. Jose Manuel Valdivielso

Staff
Ms. Eva castro Boqué
Ms. Virtudes Maria del Amo



12. Centre for Applied Biomedical Experimental Research (CREBA)

CREBA is dedicated to research and training in the field of Biomedicine. The CREBA facilities have teaching and simulation classrooms, as well as three individual operating rooms equipped with 3D technology and indocyanine green detection. They also comprise a training operating room with capacity for five simultaneous groups of open, laparoscopic surgery, or other interventional technicians. CREBA provides state-of-the-art research facilities for experimental porcine models. It is located adjacent to the Swine Research Center (CEP), an institution dedicated to controlled pig breeding, allowing CREBA to easily carry out long-term survival studies based on pig models with high quality standards.

Facilities:

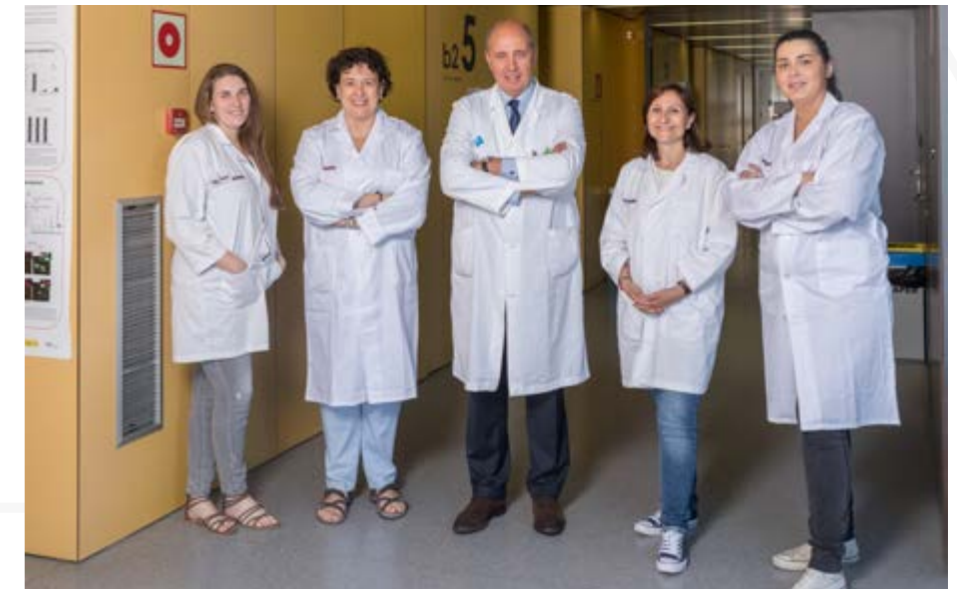
- Three operating rooms equipped with 3D laparoscopic technology, indocyanine green detection, and other surgical techniques.
- Surgical training room with five fully equipped tables.
- Complete equipment for conventional surgery, endoscopic surgery and interventional radiology.
- Simulation room with devices for learning laparoscopic surgery.
- Laboratory for the conservation and handling of biological samples.
- Facilities for porcine animals.
- Teaching room connected to a videoconferencing system (capacity for 30 people).
- Meeting room (capacity for 10 people).

www.creballeida.org

Twitter: @creballeida

Facebook: creballeida

LinkedIn: Company/creba



Scientific coordinator
Dr. Jorge J. Olsina

Core facility coordinator
Dr. Dolores C. García Olmo

Staff
Ms. Sara Puy
Ms. Sara Castañé
Ms. Marta Farré
Ms. Silvia López Bellón

Training activities: 25
Students: 375
Activities with schools and social groups: 14



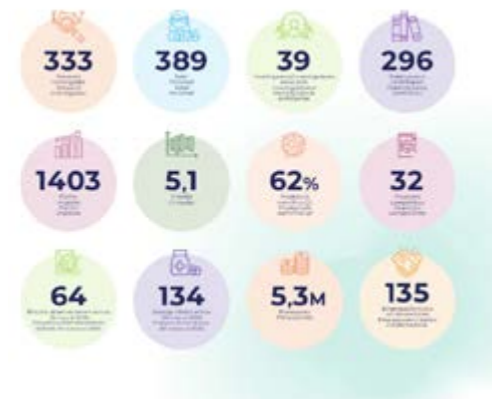
Communication

1. Promotional material
2. Outreach
3. Internal communication
4. External communication



1. Promotional material

1. IRBLleida general leaflet



2. IRBLleida Roll-ups



3. IRBLleida's corporate social responsibility report 2020 and bookmark.





2. Outreach

The communication area is responsible for organising different types of events such as external visits and conferences, internal events, collaborating in the organisation of informative activities (seminars, conferences, workshops, etc.), among others.

Summary of activities 2021

VISITS

- 24/10/2021: *Casal de la Dona, Paeria de Lleida*. General tour of the IRBLleida and its facilities: SCT Microscopy and the Vascular and Renal Translational Research Group



CONFERENCE/WORKSHOPS

- 24/09/2021: *Nit de la Recerca*.
 - Talks: 5
 - Guided tours IRBLleida: 4
 - Workshops: 1 CREBA
 - Stands: 10
 - Total number of people attending: 600



EDUCATIONAL WORKSHOPS

The Institute for Biomedical Research of Lleida (IRBLleida), with the collaboration of the La Caixa Foundation and the Department of Education, has launched the organisation of workshops aimed at secondary school students to promote the biomedical research that will be carried out in Lleida's counties and to encourage scientific vocations.



SYMPOSIUMS

- 02/12/2021: *First IRBLleida Annual Scientific Symposium*. "First Annual Scientific Symposium" was held at the Lotja de Lleida. The aim of this symposium is to improve the visibility of the research carried out by the different IRBLleida research groups.



3. Internal communication

Monthly electronic bulletin with the news of the month, as well as an interview with a person from the centre and a collaborating organizations and companies.



Social activities



Expansion of the exhibition on the occasion of the International Day of Women and Girls in Science.



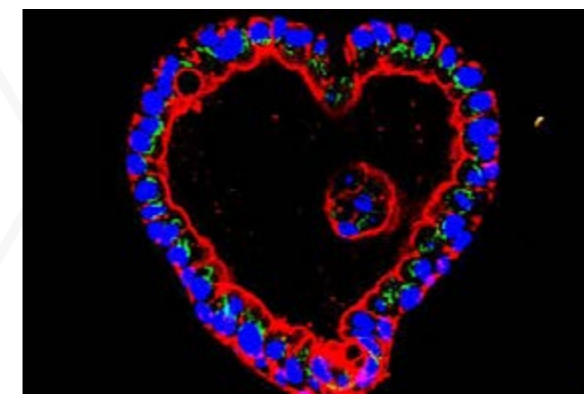
COVID vaccination campaign



Blood Donation Marathon



Adhesion to the European Mobility Week



IRB Lleida photography competition



Own campaigns on social networks

4. External communication

During the year 2021 the IRBlleida has released 537 press notes, mainly through web and newspapers. In addition, there has been a significant increase in the number of followers on social networks compared to previous years.

Press

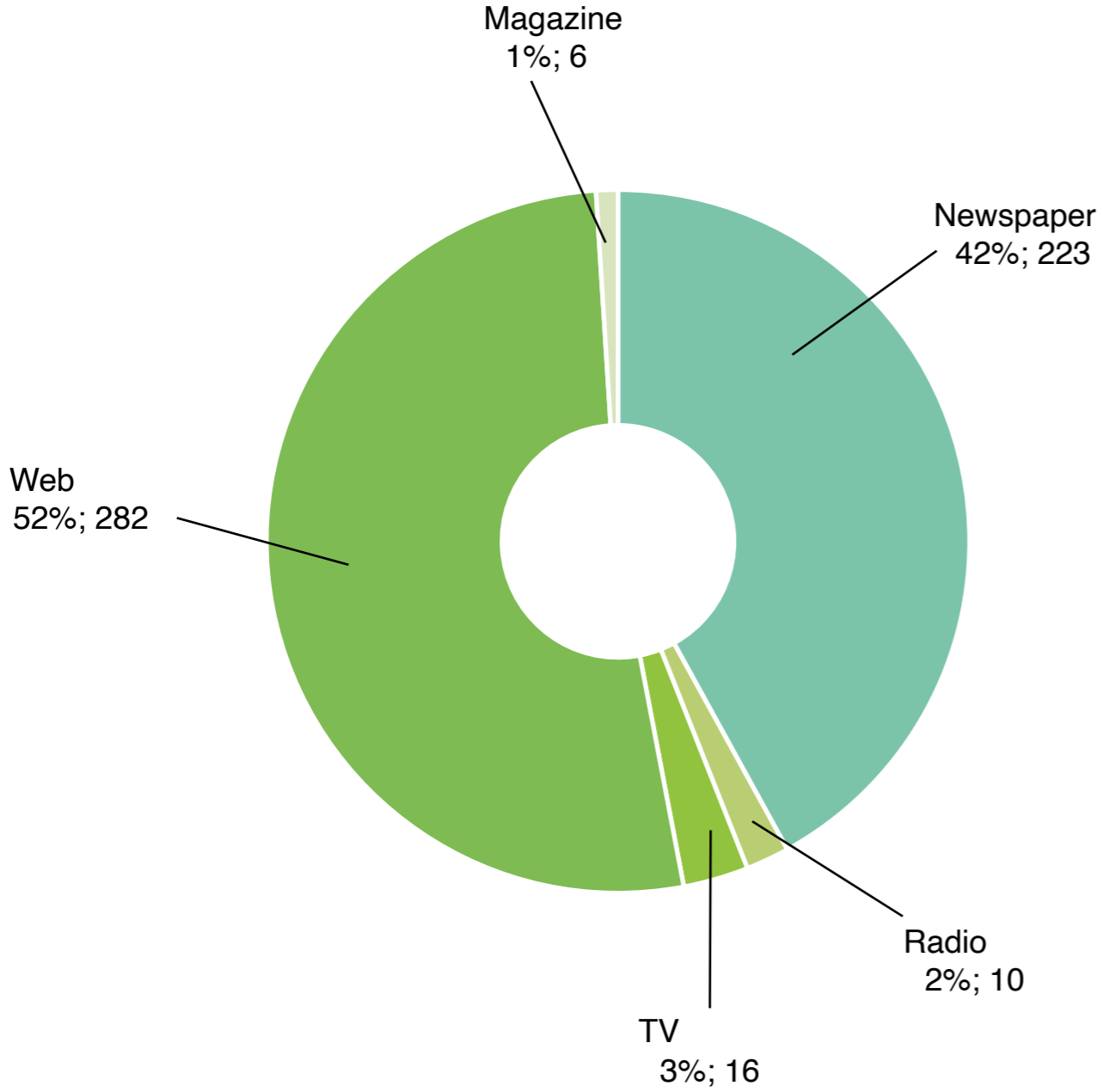


Figure 1. Press releases during 2021

Social networks

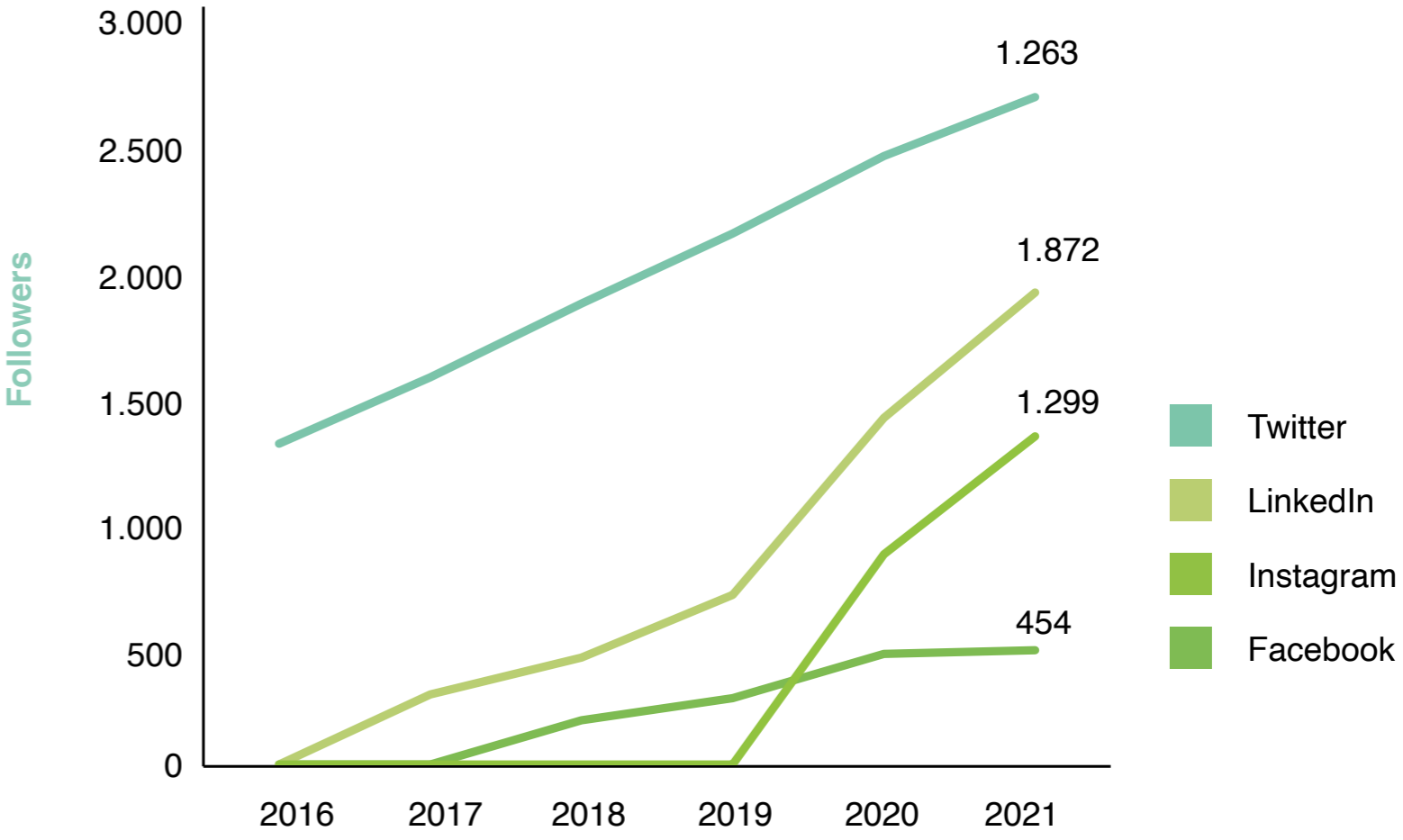


Figure 2. Historical data on social networks followers








4. External communication

Web

	2019	2020	2021
Users	36.988	45.803	36.362
Sessions	71.377	87.473	76.651
Pages/ session	3,04	2,72	2,71

Podcasts

- 
 Lleida ConCiencia: speaking with Reinald Pamplona and Mariona Jové.
Duration 25:57 - Published: December 22th, 2021
- 
 Lleida ConCiencia: speaking with José Manuel Valdivielso.
Duration 30:21 - Published: December 22th, 2021
- 
 Lleida ConCiencia: speaking with Xavier Matias-Guiu.
Duration 30:40 - Published: November 3rd, 2021
- 
 Lleida ConCiencia: speaking with Jéssica González.
Duration 25:52 - Published: October 8th, 2021
- 
 Lleida ConCiencia: speaking with Manuel Sánchez de la Torre.
Duration 26:51 - Published: September 21st, 2021

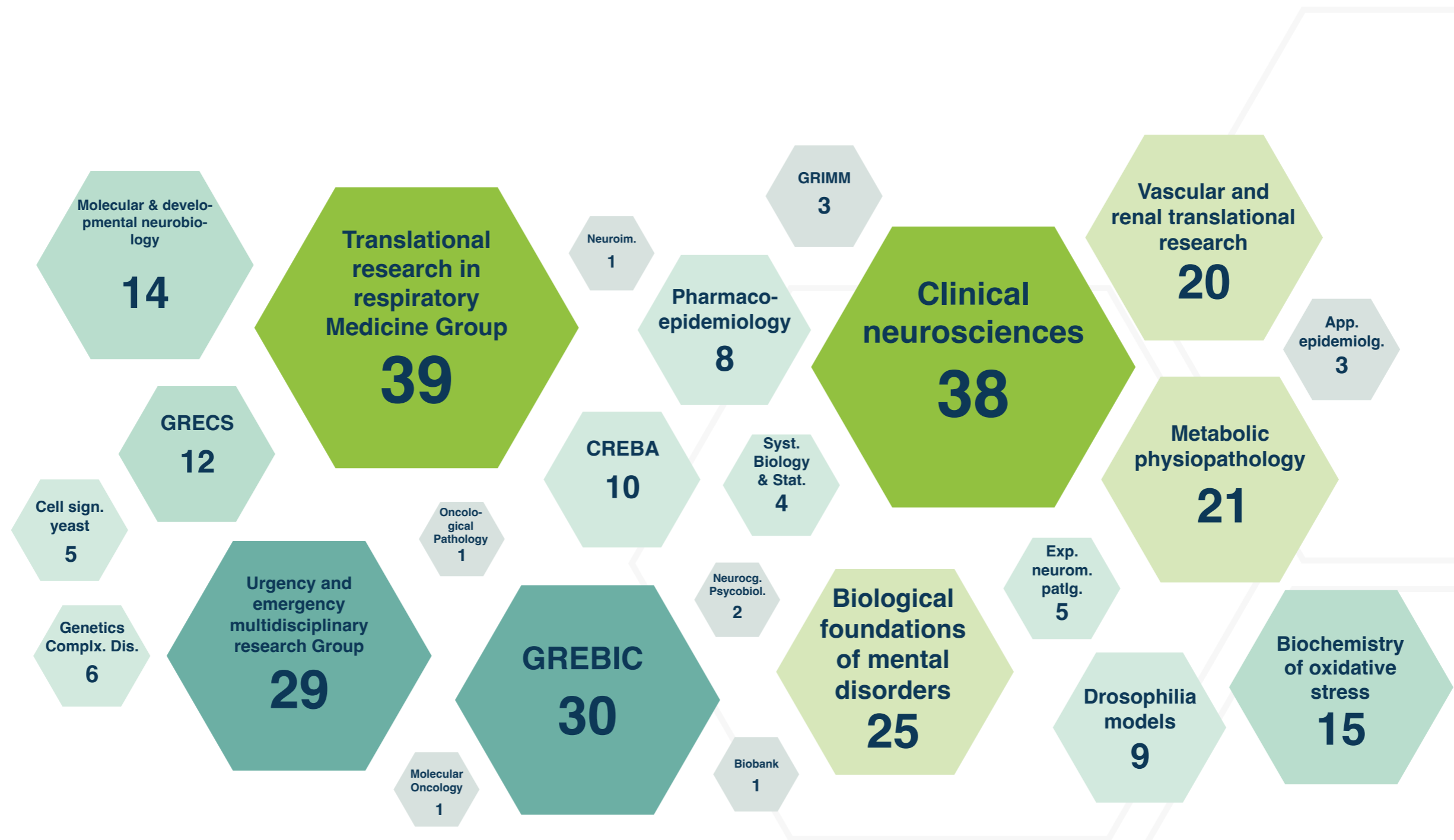
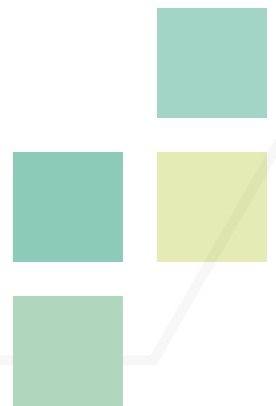


Figure 3. Press impact by research group





Research activity

IRBLleida Staff

IRBLleida comprises 474 professionals, of which 422 are personnel devoted to research. The research staff are distributed in the following profiles: First Stage Researcher (R1), Recognised Researcher (R2), Established Researcher (R3) and Leading Researcher (R4). The support staff are distributed in: administrative support (Sup. Ofc.) and core facilities support.

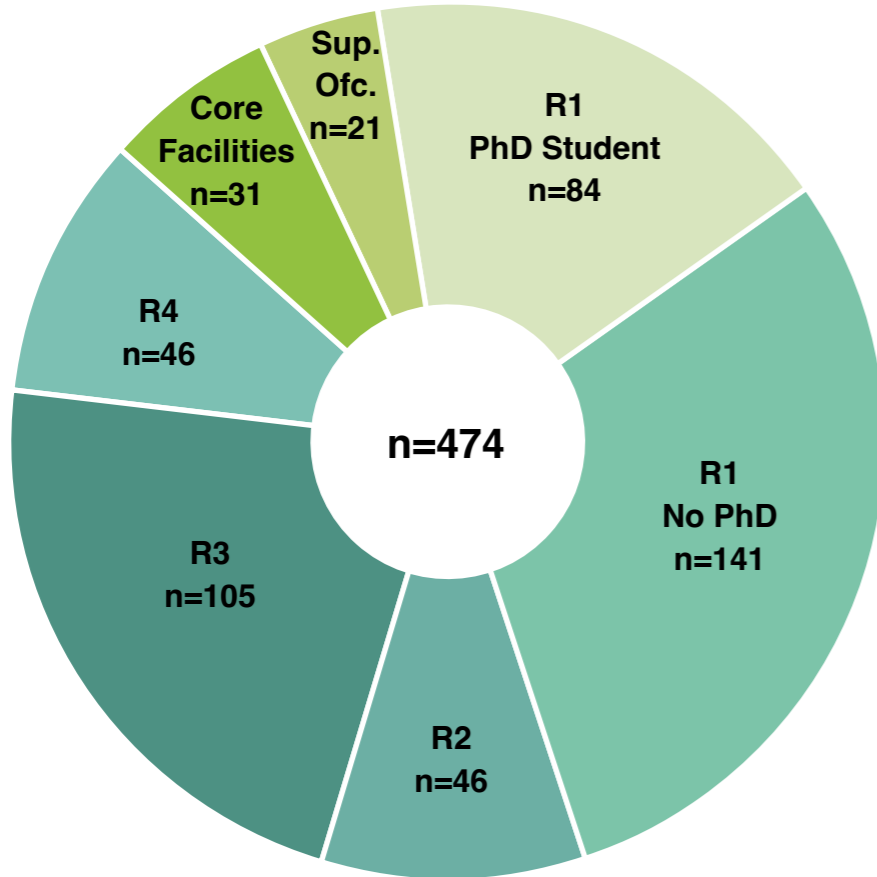


Figure 4. Distribution of IRBLleida staff by professional category.

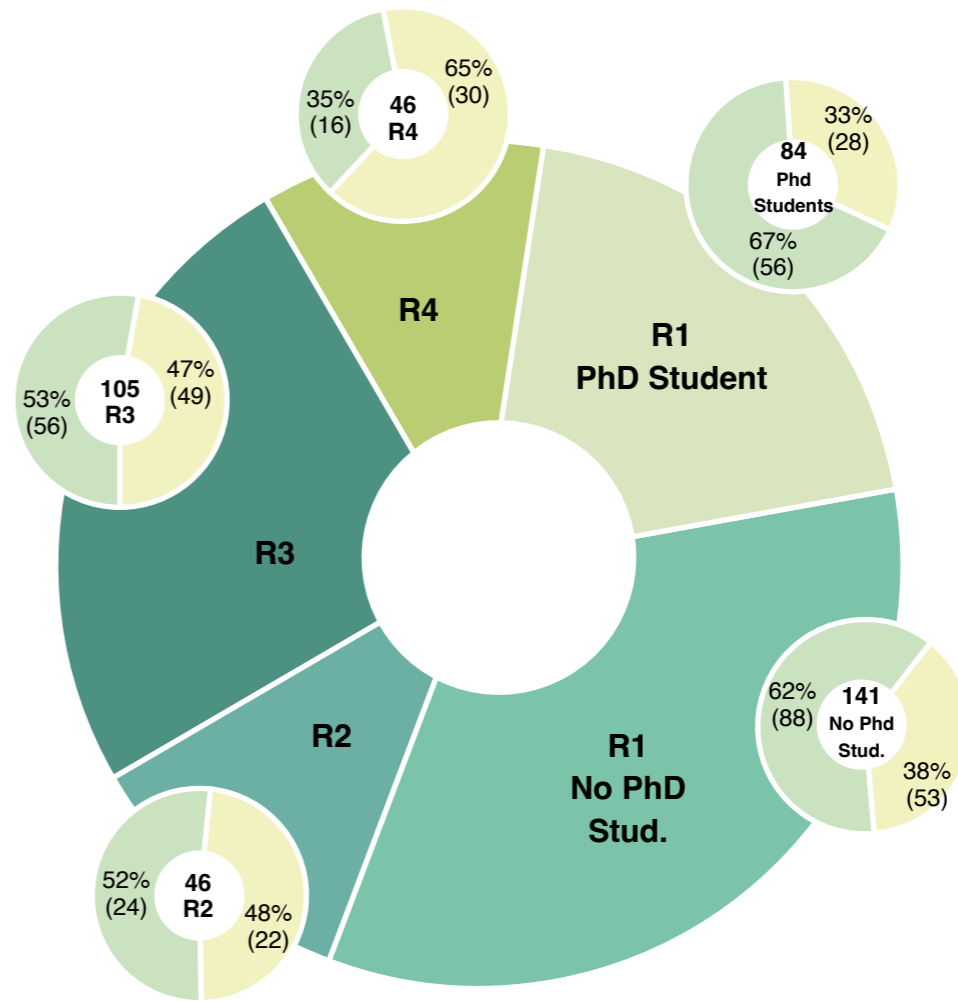


Figure 5. Distribution of IRBLleida researchers by professional category and sex (women in green, men in pale green).



Global Data on Scientific Production

In 2021, IRBLleida researchers produced a total of 368 scientific publications, of which 344 are original publications, 15 review articles and 9 letters.

	Publications	Average IF	IF Cummulative
Article	344	5,30	1825
Reviews	15	4,53	68
Letters	9	4,79	43
Total	368	5,26	1936

Table 1. Scientific production 2021. Number of publications and accumulated impact factor (IF), according to the 2020 Journal Citation Report.

Publications according to typology

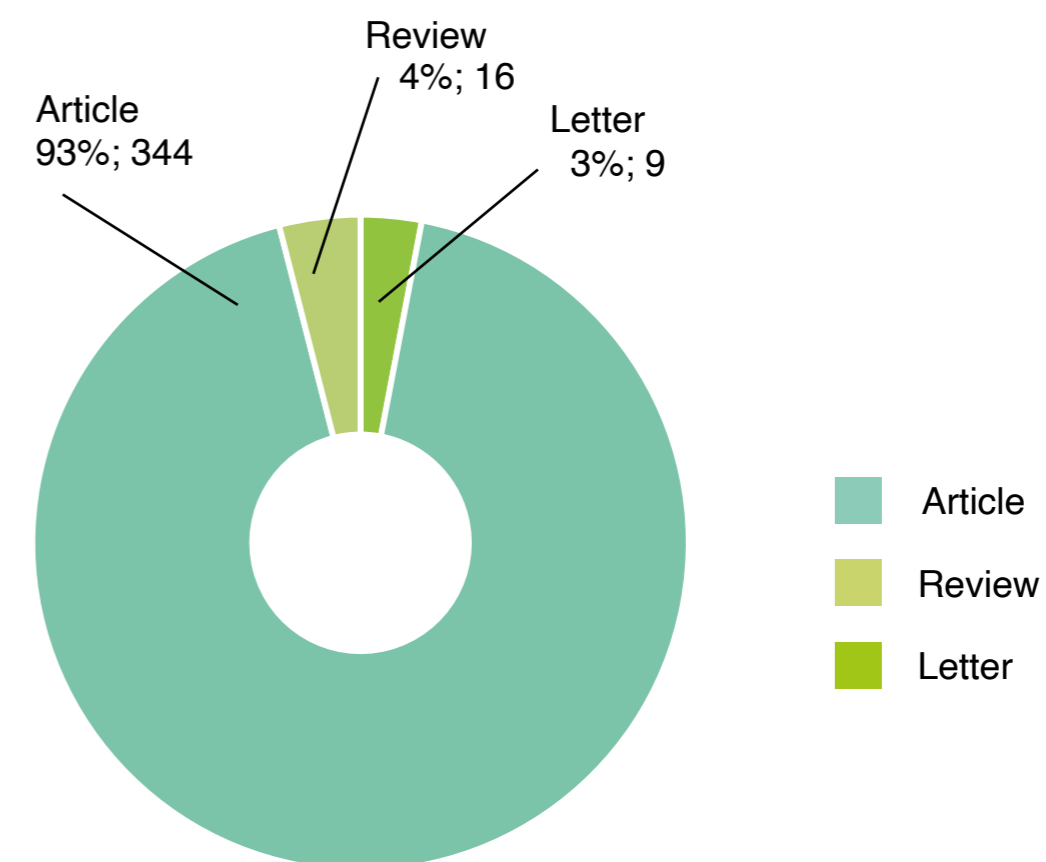


Figure 6. Scientific production in percentage of publications according to typology (article, review and letters).

Of the total number of indexed publications in 2021, 59% belong to the first quartile of the specialty (216 publications) and 25% to the second quartile (92 publications). 17% of the indexed scientific publications of 2021 have been published in journals in first decile.

Publications by Quartile

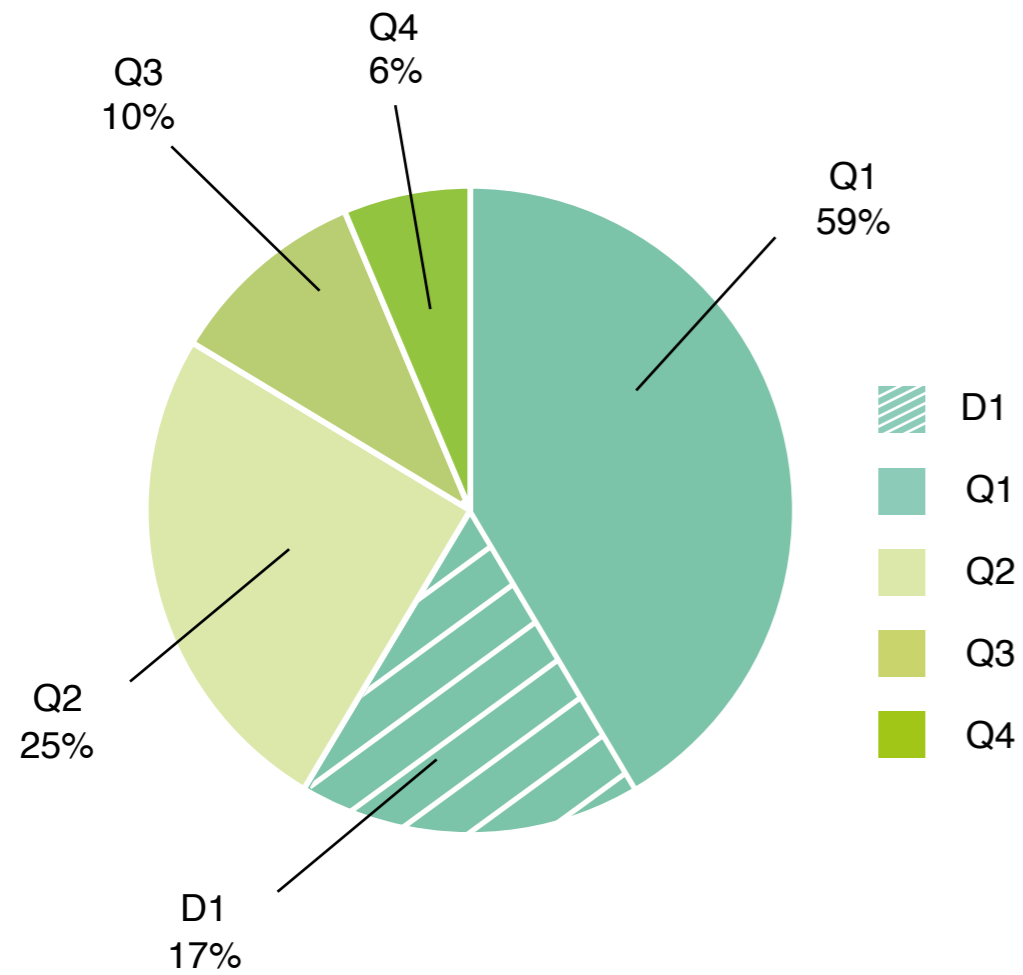


Figure 7. Scientific production for 2021 by specialty quartiles. Percentage of publications per quartile (Q). The stripped bands inside the Q1 correspond to the 17% of publications in D1

N° Publications by Quartile

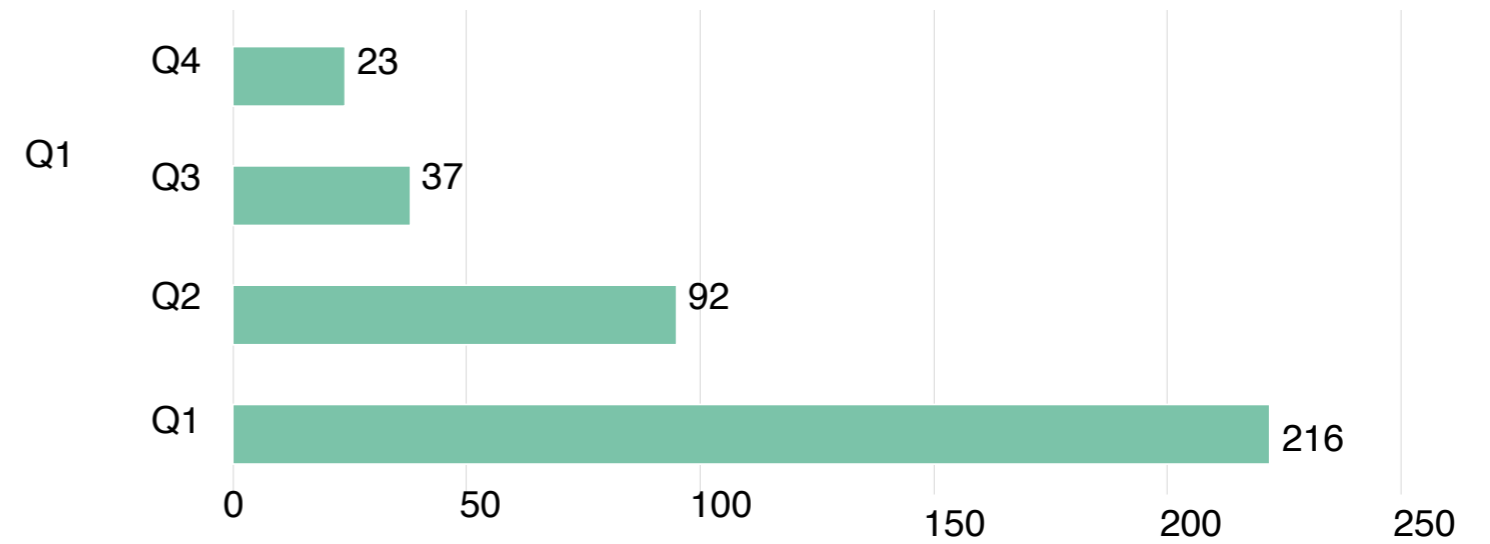


Figure 8. Total number of scientific publications per specialty quartile (Q).

Historical data on quartile publications

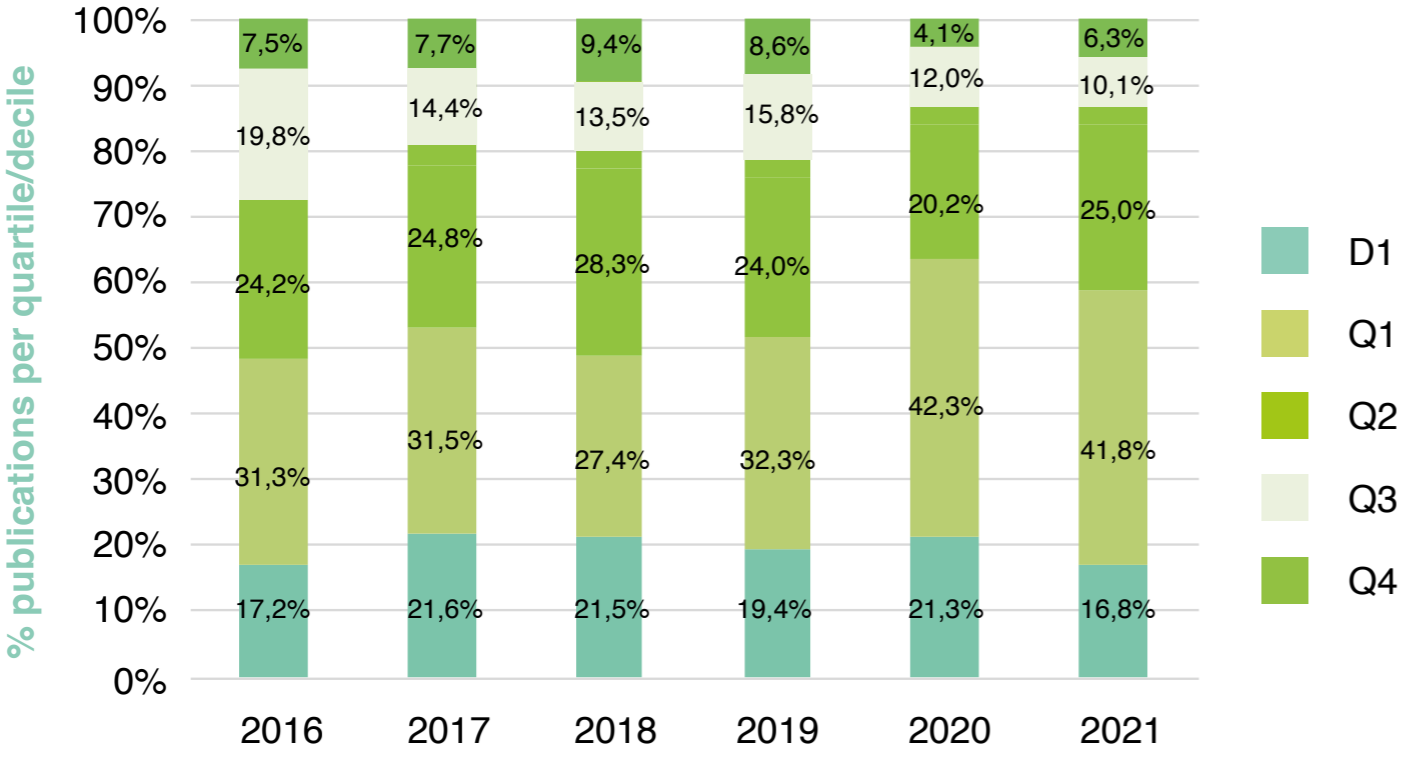


Figure 9. % Quartile and % decile papers historical series.

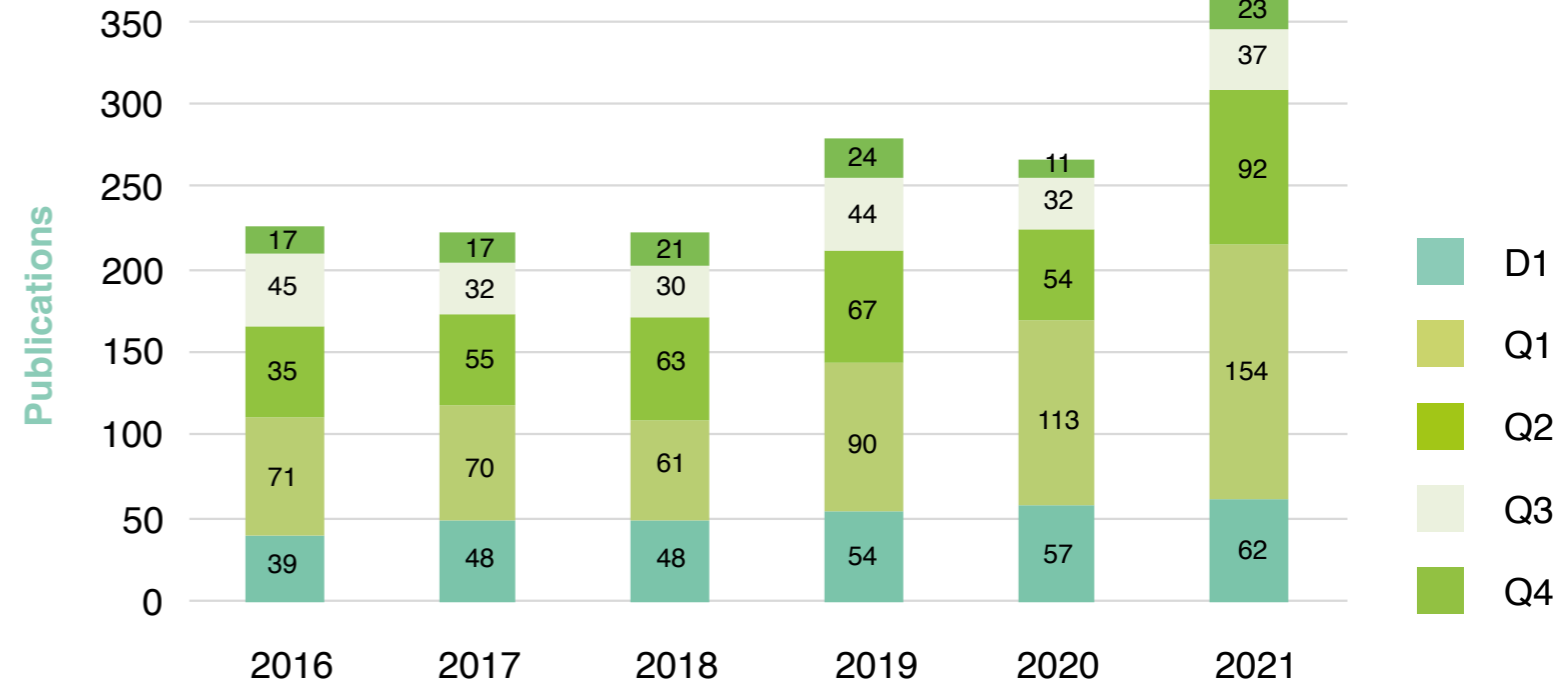


Figure 10. Quartile and decile papers historical series.

The accumulated impact factor and the number of publications have markedly increased in 2021 compare to any other year of our historical record. However, the average impact is lower than that achieved in 2020, and similar to that of 2019. Figures 11 and 12 show the evolution of scientific production in the last 6 years, in number of publications, number of cumulative citations and average and cumulative impact factor (JCR).

Publications and citations historical series

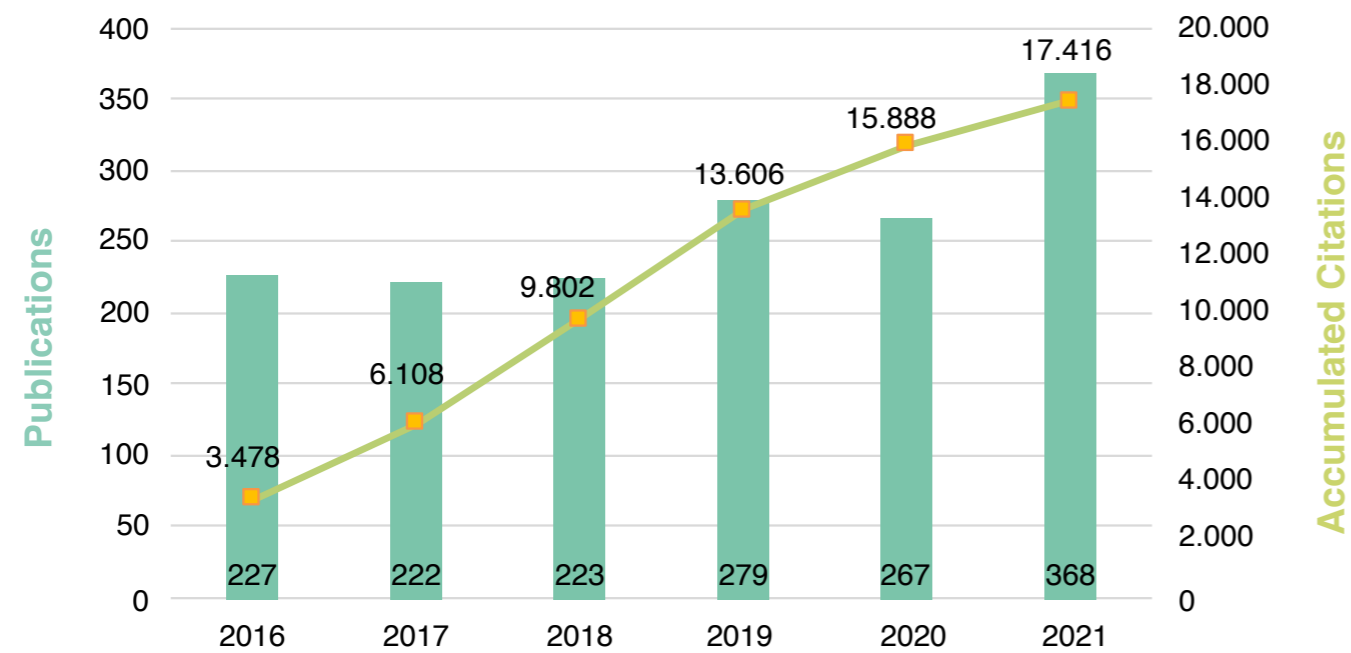


Figure 11. Total number of publications in the last 6 years. The green line indicates the cumulative number of citations per year.

Impact factor historical series

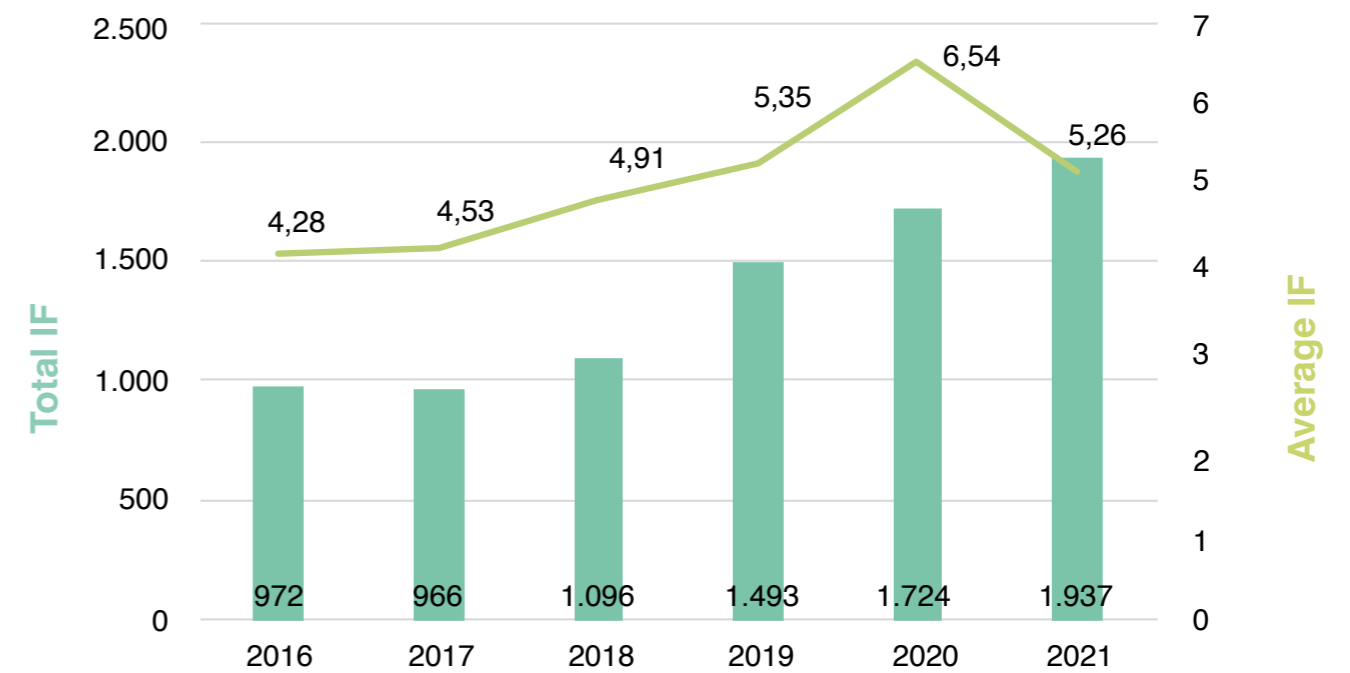


Figure 12. Evolution of the accumulated Impact Factor (IF) (bars) and average Impact factor (green line). The 2021 FI has been calculated according to the 2020 Journal Citation Report.

In 2021 49% of the publications have been led by IRBLleida researchers (Fig. 13), considering leadership as the first and/or last author or corresponding. The remaining 51% correspond to publications in which IRBLleida researchers participate in the research team. International collaborations account for 36% of publications in 2021 (Fig. 14).

Publication Leadership

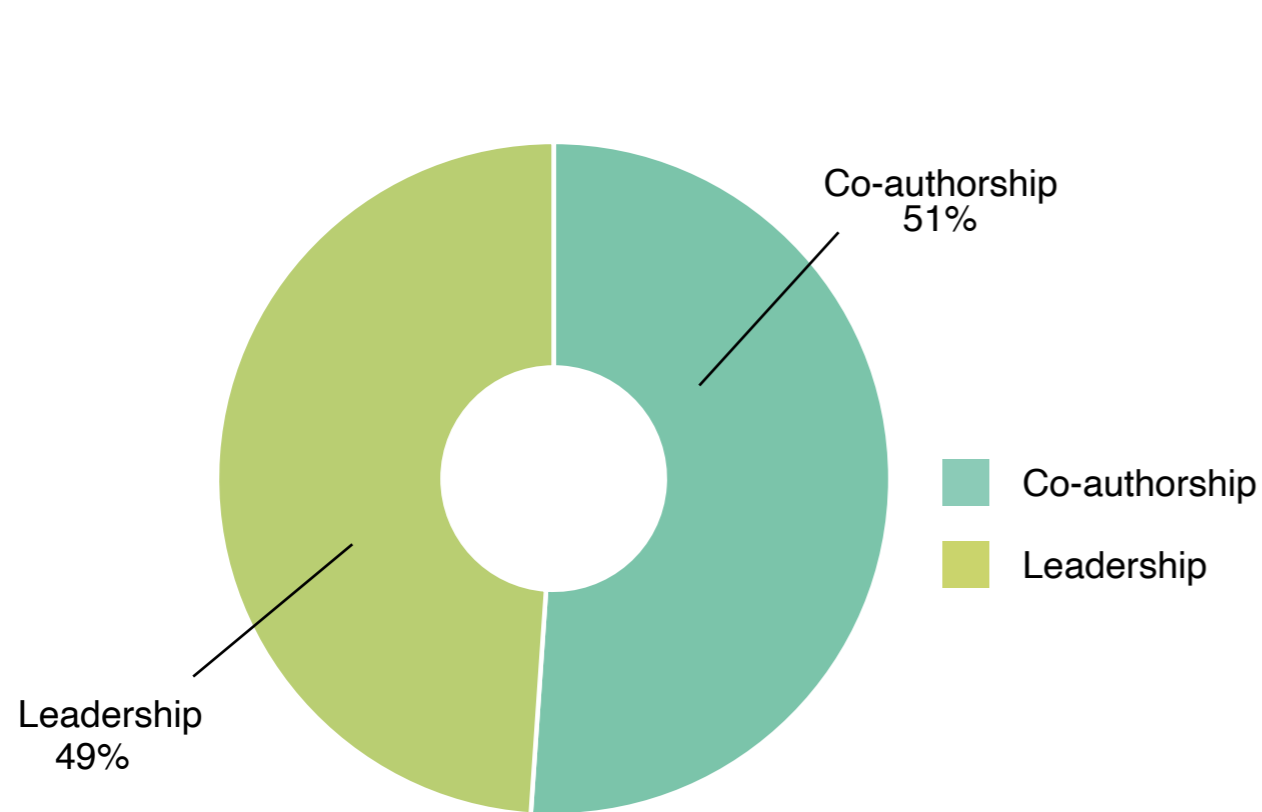


Figure 13. Distribution of 2021 publications according to IRBLleida research leadership.

Publication Collaborations

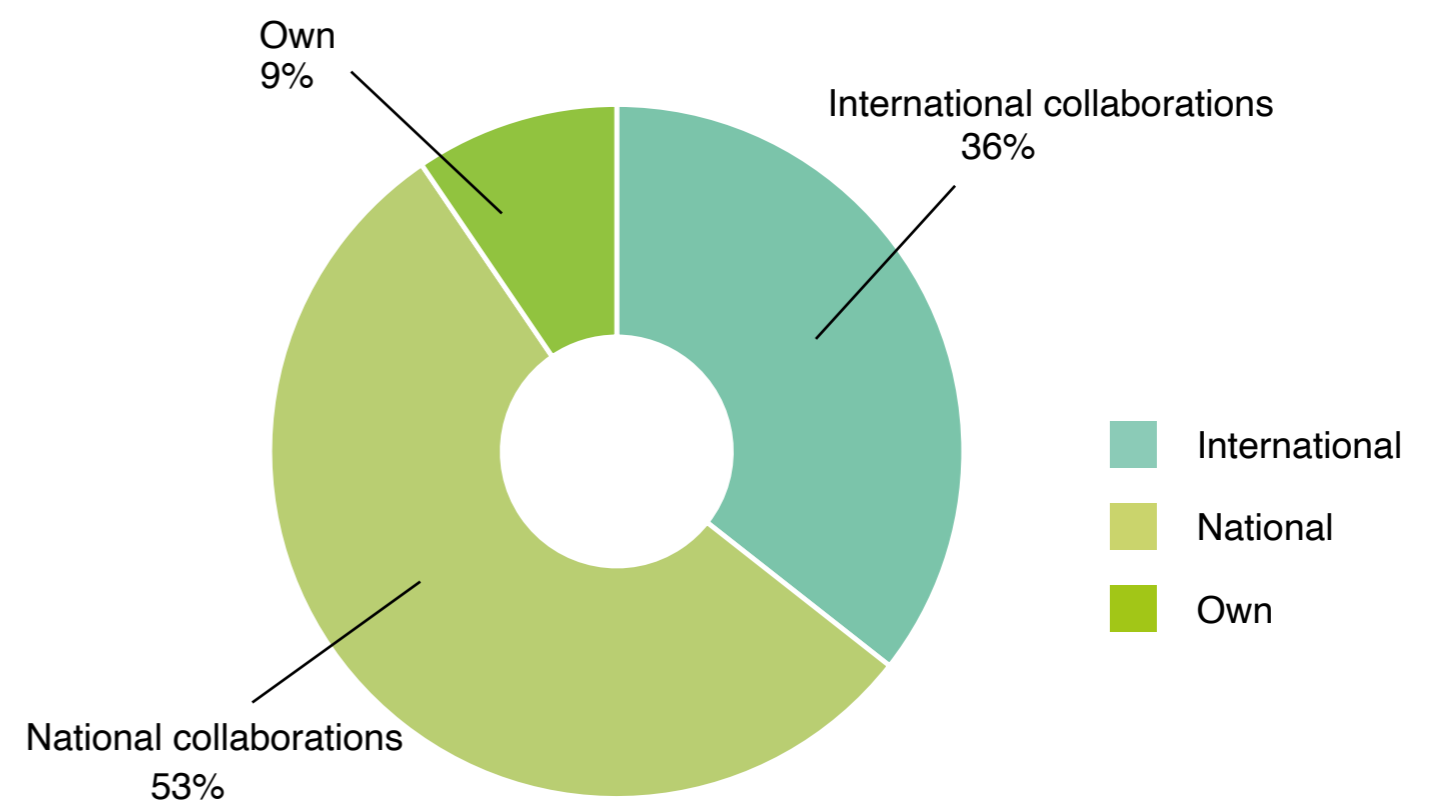


Figure 14. Distribution of 2021 publications according to procedence of collaborators. International means publications of IRBLleida groups with participation of international groups, national means publications of IRBLleida with participation of national groups, own means publications of IRBLleida groups with participation only of other IRBLleida groups.

In 2021 IRBLleida researchers have applied for a total of 70 national public grants, of which 27 have been granted.

National grants success rate

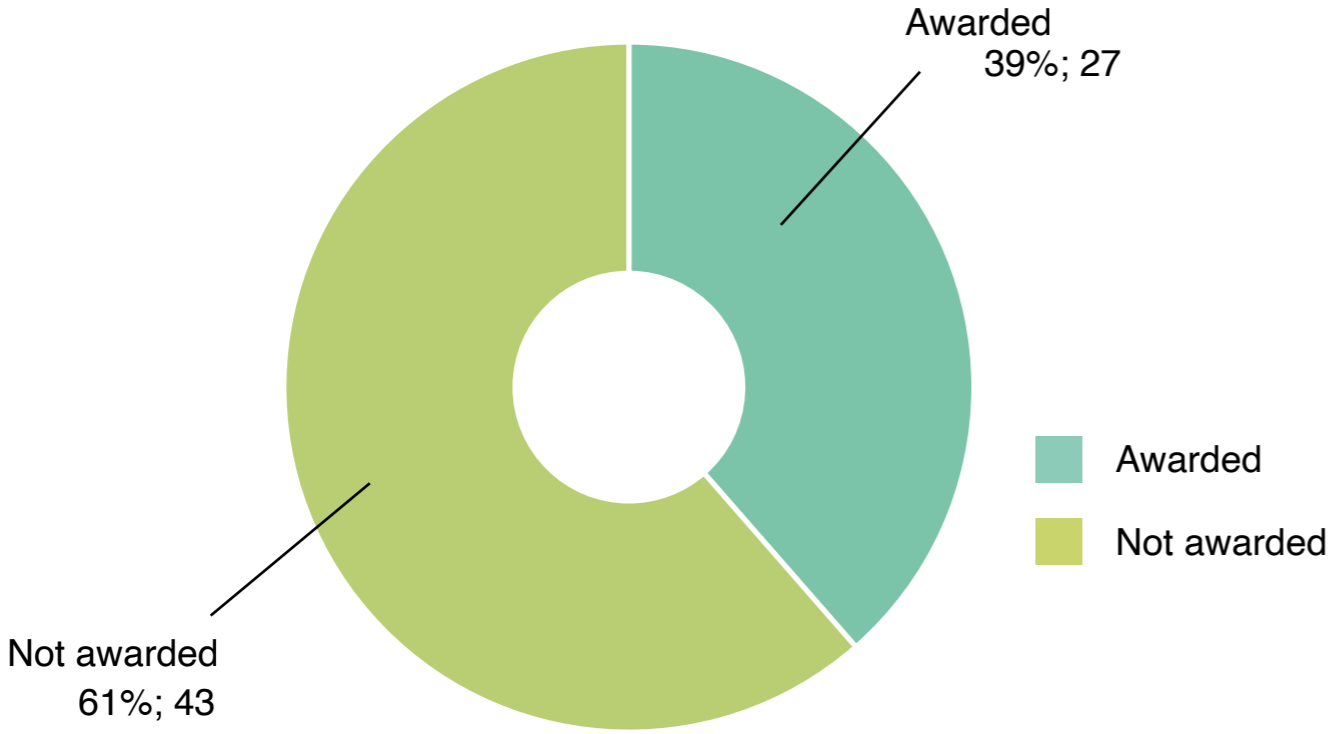


Figure 15. Success Rate on national grants requested in 2021.

International grants success rate

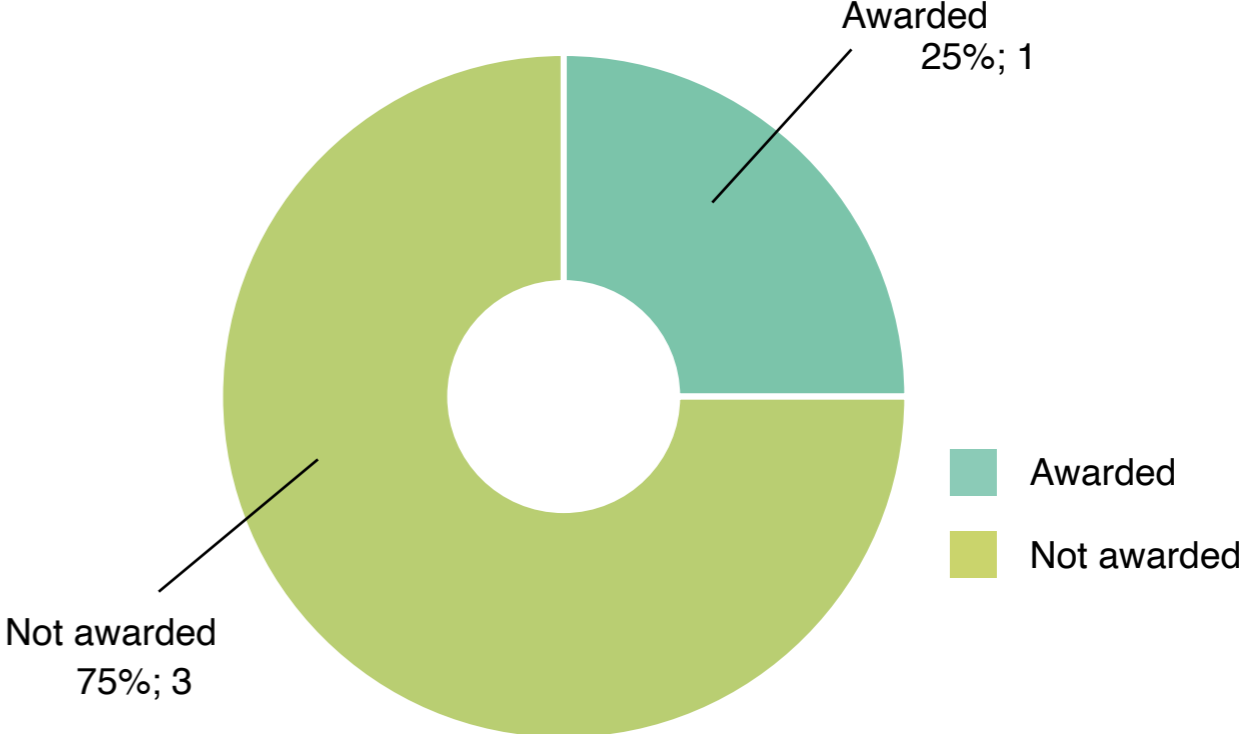


Figure 16. Success rate on International grants obtained in 2021

Human resources success rate

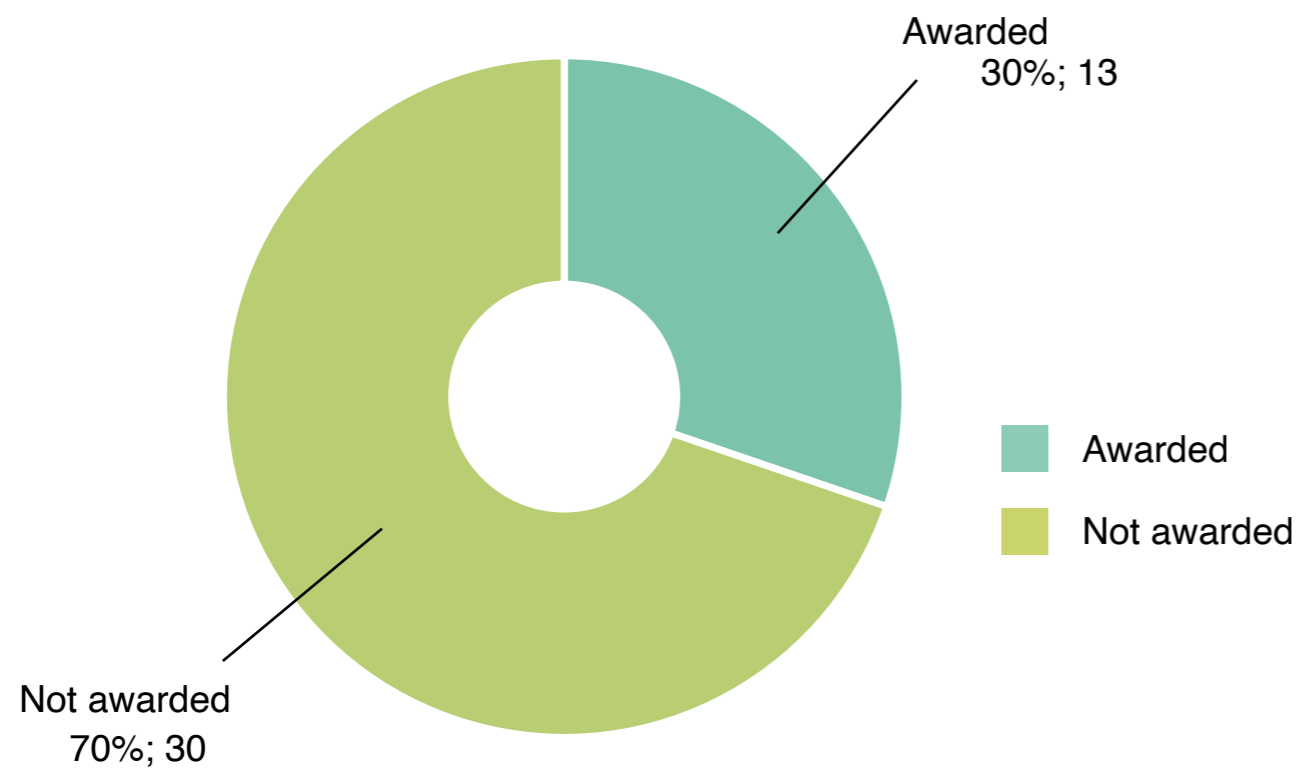


Figure 17. Success rate on public competitive human resources obtained in 2021

Competitive funding raised

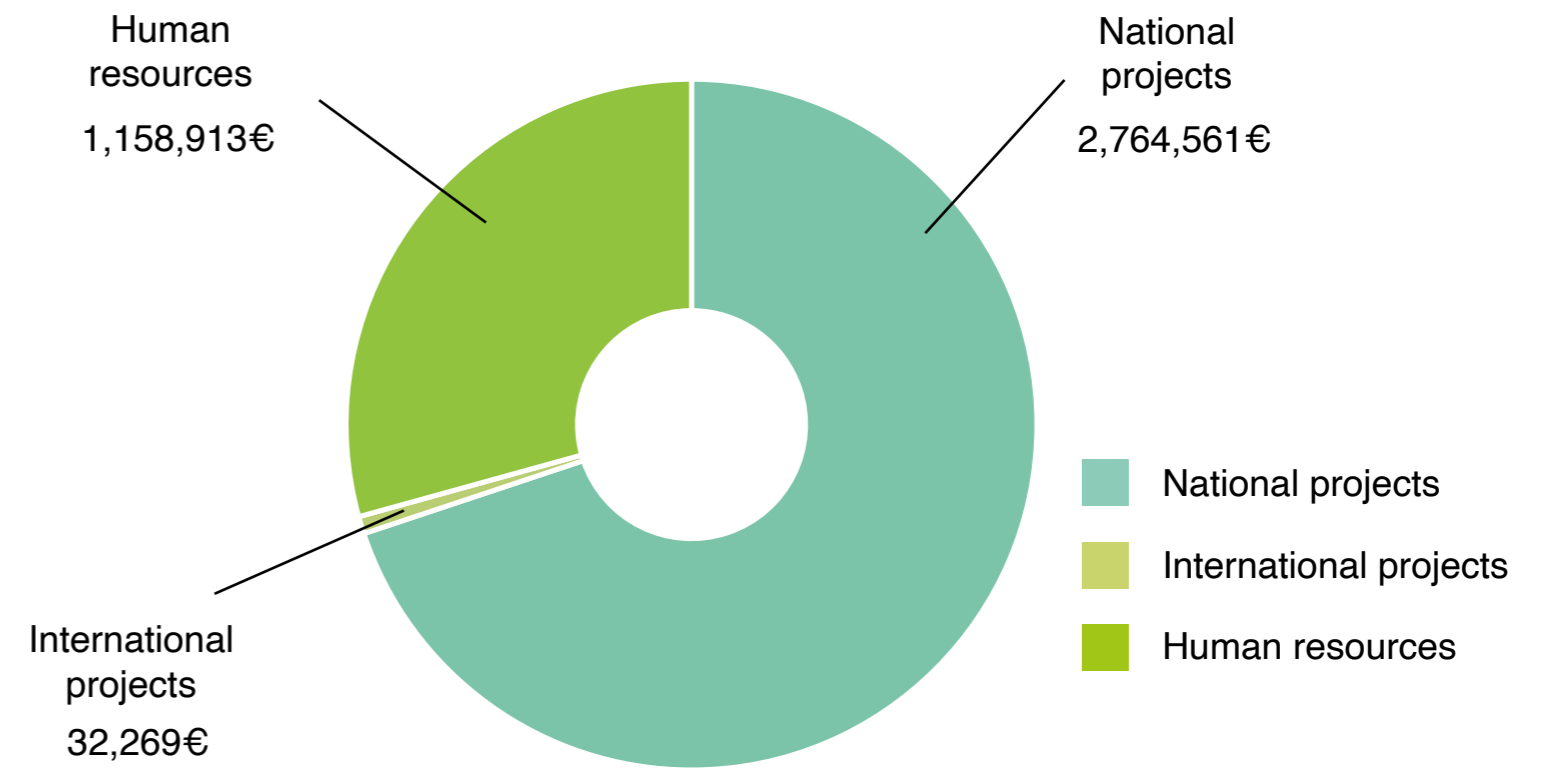


Figure 18. Funds obtained from competitive sources

Historical data on funds obtained from competitive calls

In 2021 IRBLLeida researchers obtained 3.955.743€ from public competitive calls and human resources.

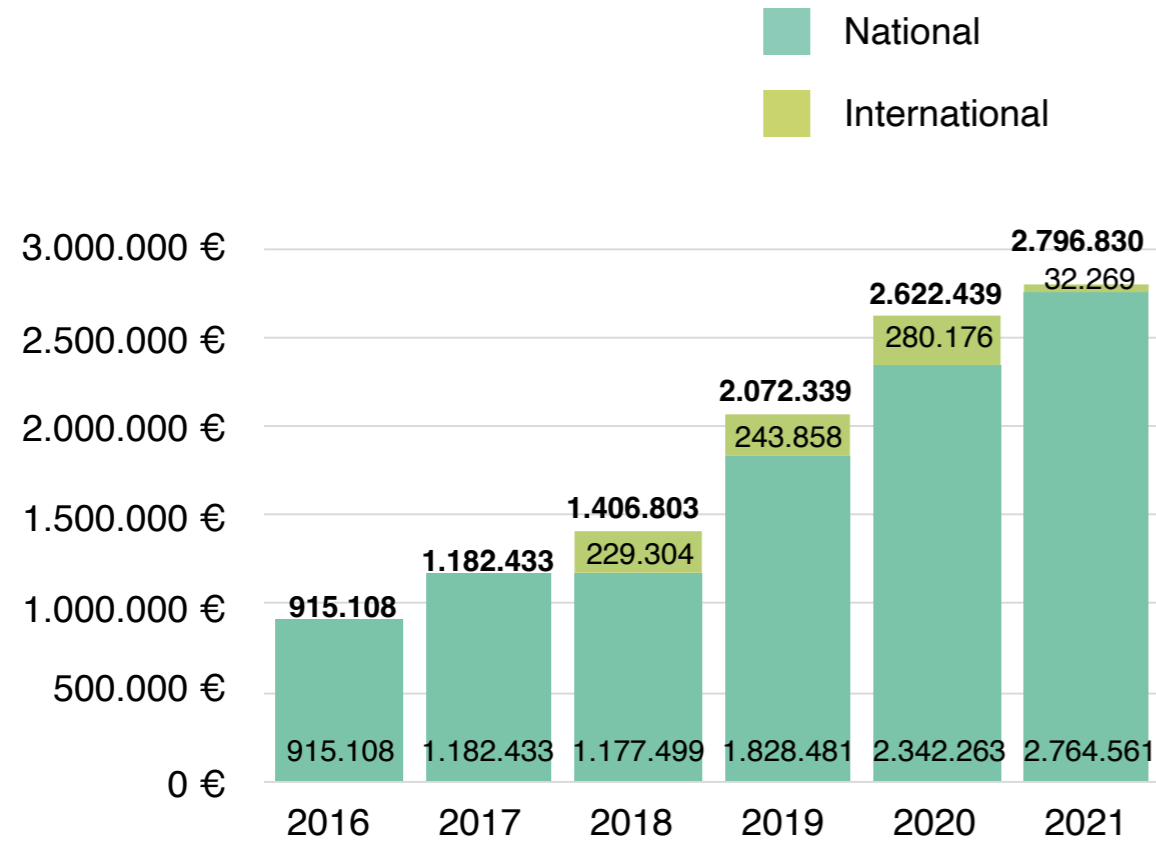


Figure 19. Historical data on funds obtained from public competitive projects

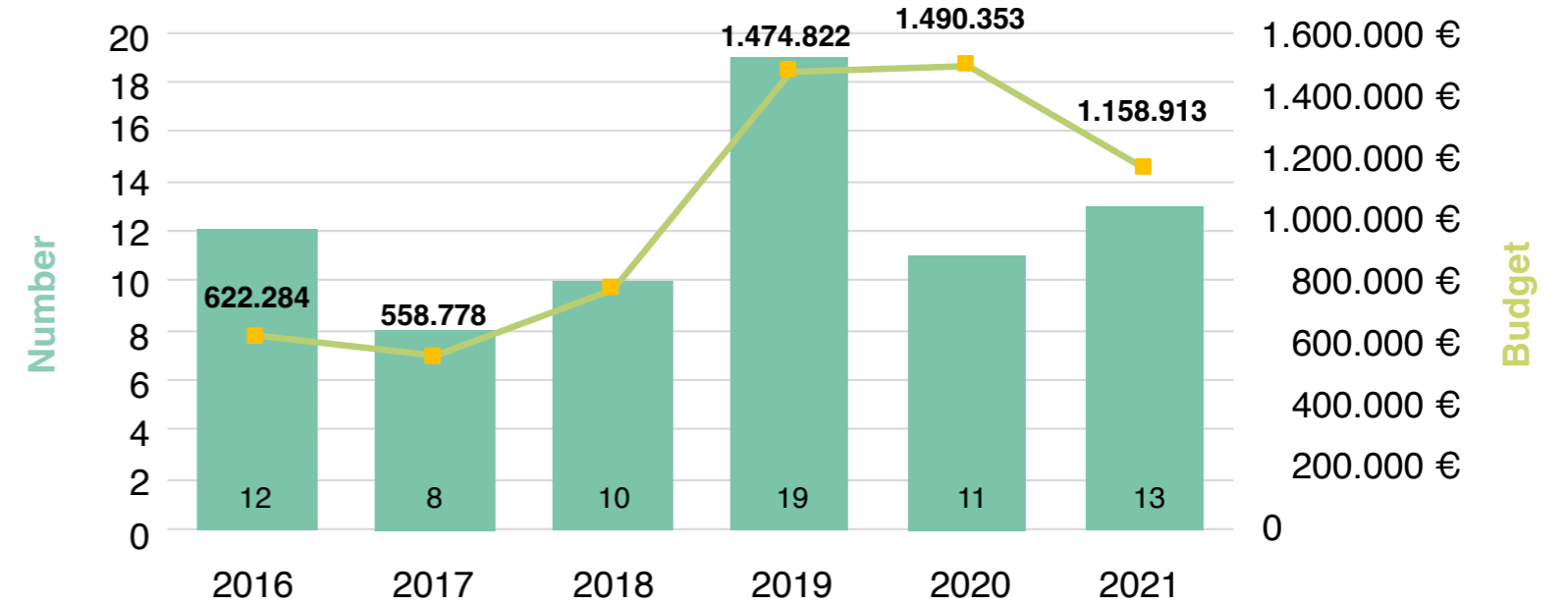


Figure 20. Historical data on funds obtained from public competitive human resources

Clinical trials and observational studies

The total number of clinical trials and observational studies started during 2021 was 50 (32 clinical trials and 18 observational studies). The active clinical trials and observational studies were 209 (143 clinical trials and 66 observational studies).

New clinical trials and observational studies

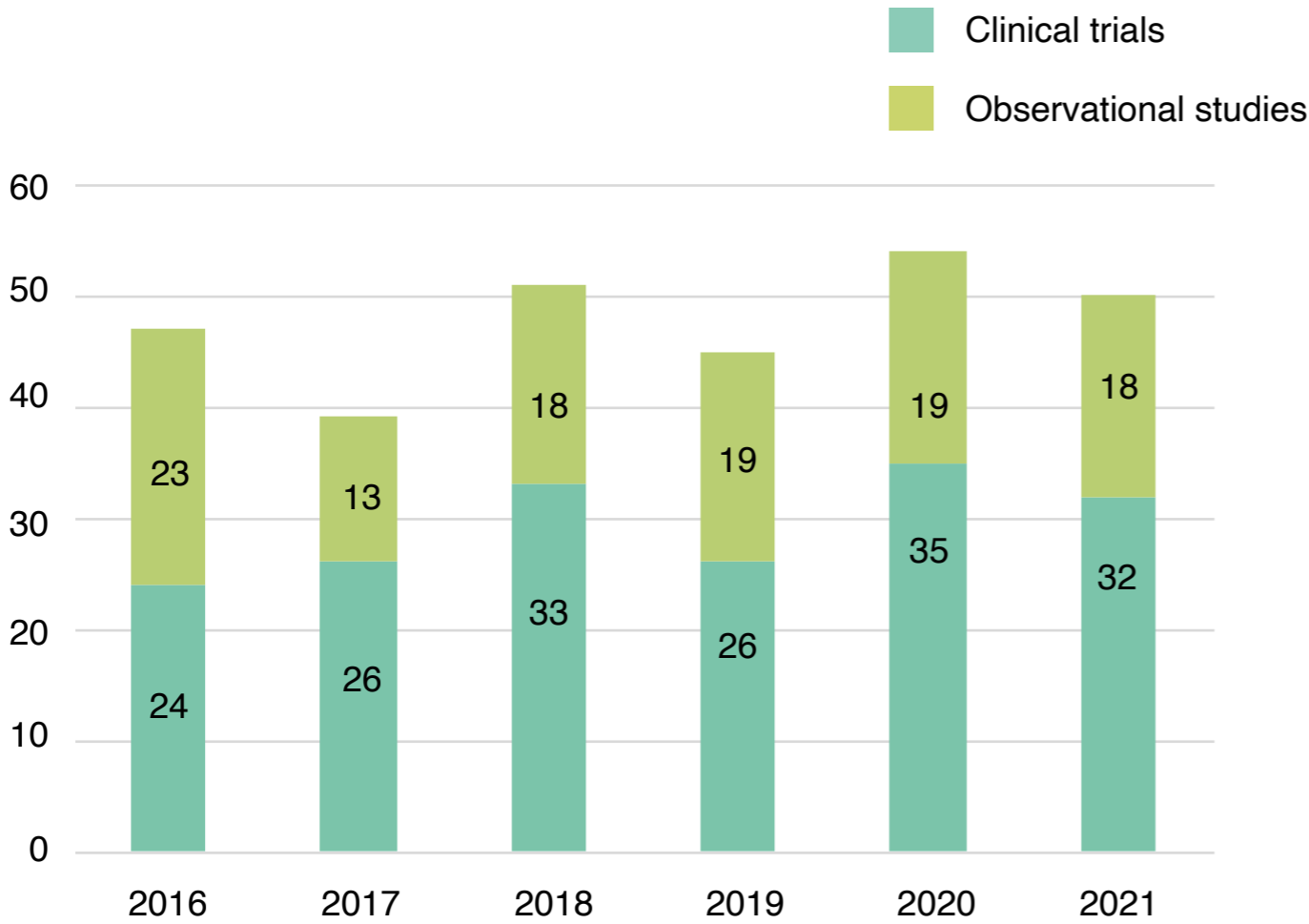


Figure 21. Historical data on new clinical trials and observational studies

Active clinical trials and observational studies

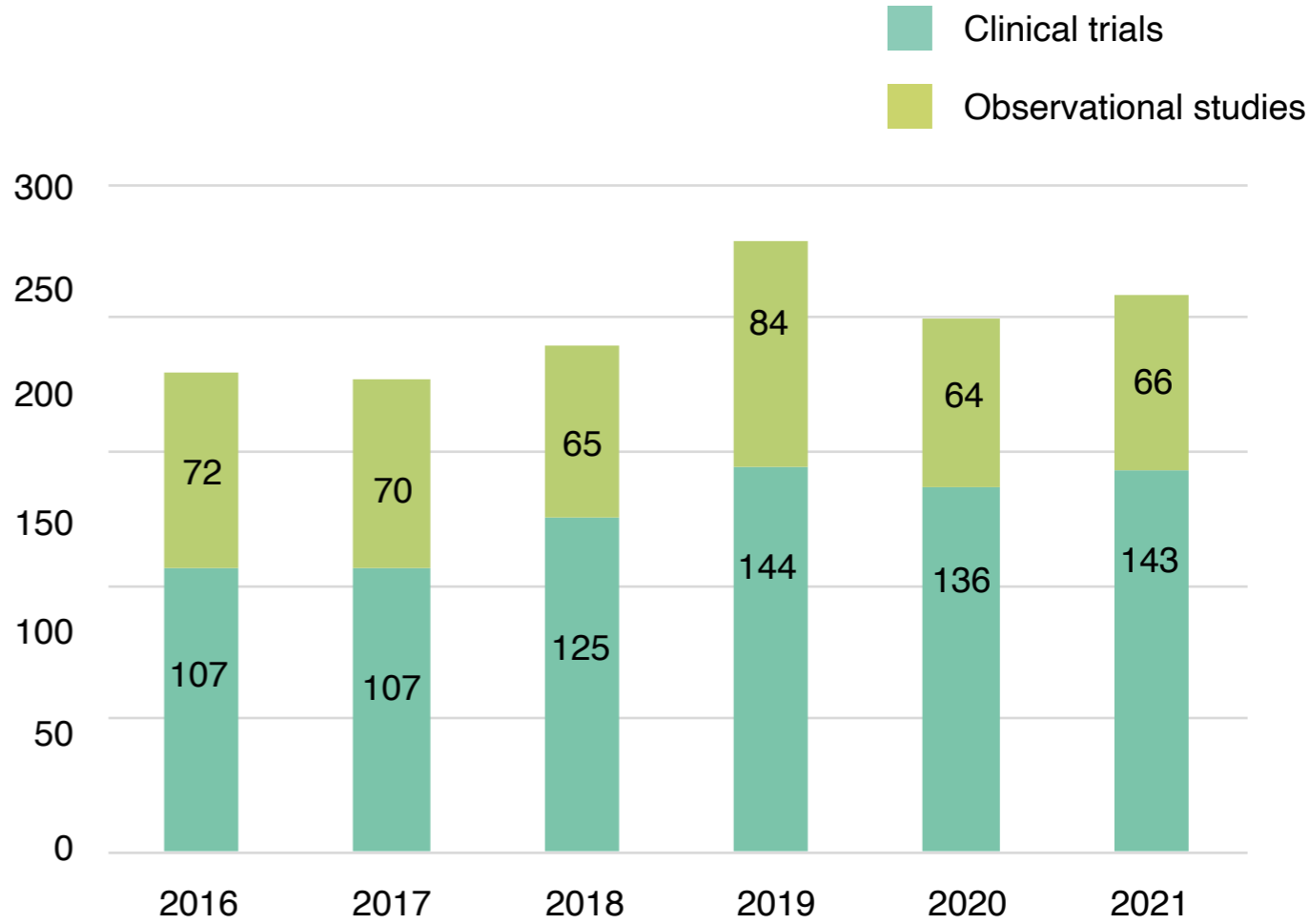


Figure 22. Historical data on active clinical trials and observational studies

Clinical trials and observational studies

The total income from clinical trials and observational studies was 2,050,826€.

Funds from clinical trials and observational studies

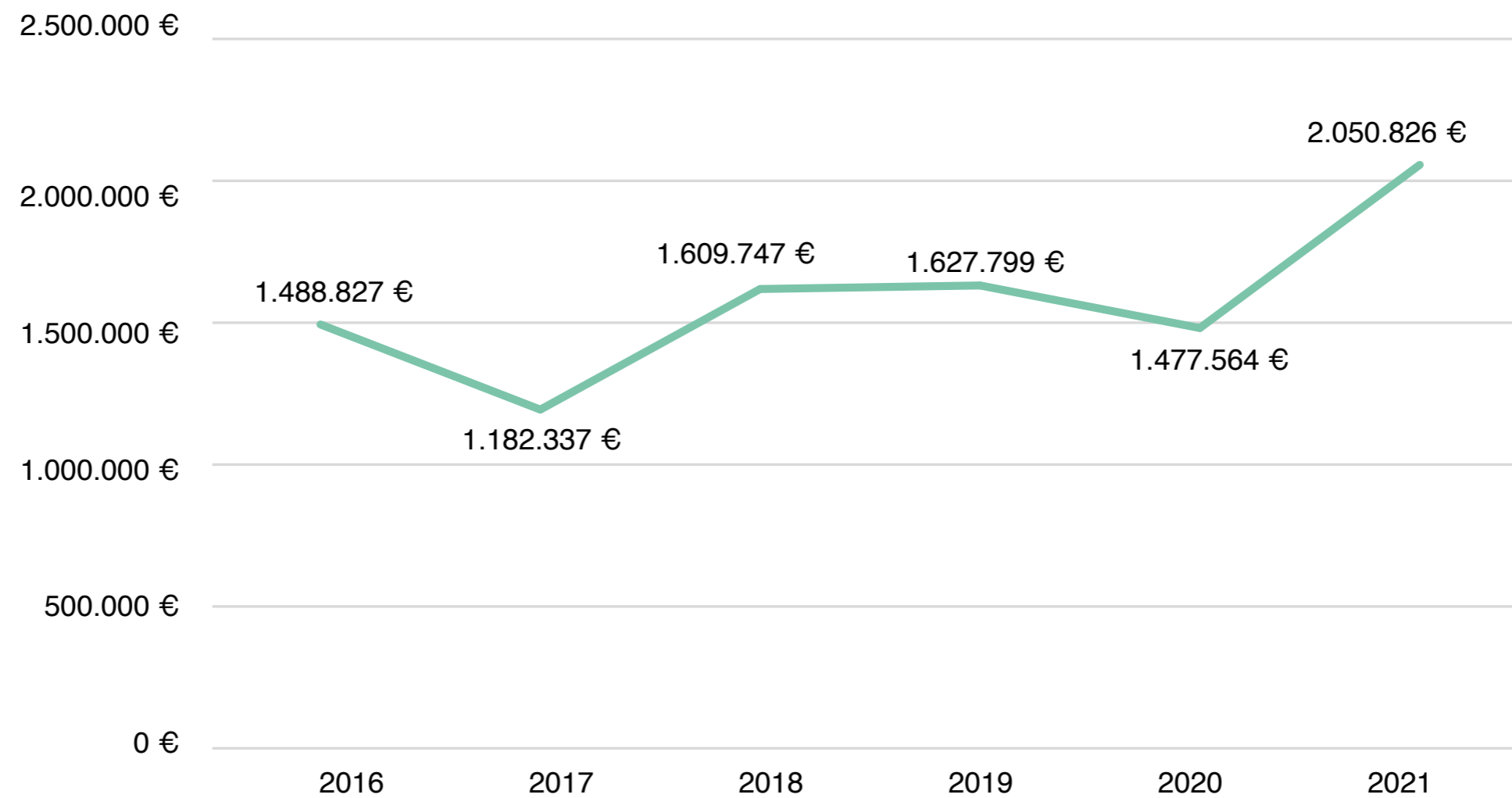


Figure 23. Historical data on funds obtained from clinical trials and observational studies



Clinical practice guidelines 2021

The researchers affiliated to IRBLleida have published 9 Clinical Practice Guidelines in 2021 (table 2).

Type of document	Title	Researcher	Research Group	Impact	Additional Info
Article	Guidelines on controlling latent tuberculosis infection to support tuberculosis elimination.	Godoy García, Pere	Epidemiology	International	10.18176/resp.00028
Article	Recommendations for vaccination in patients with multiple sclerosis who are eligible for immunosuppressive therapies: Spanish consensus statement.	Brieva Ruiz, Luis	Neuroimmunology	International	10.1016/j.nrl.2020.02.006
Article	Obesity and COVID-19. A necessary position statement.	Lecubé Torelló, Albert	GRIM	International	10.1016/j.en-dinu.2021.02.001
Article	Consensus on basic conduct during the hospital admission of patients with acute heart failure.	Morales Rull, Jose Luis	NUTRIMIC	International	10.1016/j.rce.2020.01.002
Article	European Stroke Organisation (ESO) guidelines on management of transient ischaemic attack	Purroy Garcia, Francesc	Intensive Medicine	International	10.1177/2396987321992905
Article	Recommendations for the Diagnosis and Treatment of Multiple Sclerosis Relapses.	Brieva Ruiz, Luis	Neuroimmunology	International	10.3390/jpm12010006
Article	ESGO/ESTRO/ESP Guidelines for the management of patients with endometrial carcinoma (co-chairman)	Matias-Guiu Guia, Xavier	Oncological pathology	International	10.1136/ijgc-2020-002230
Clinical Guide	Endometrial Cancer Histopahtology Reporting Guide	Matias-Guiu Guia, Xavier	Oncological pathology	International	ISBN: 978-1-922324-26-9
Technical Report	Lanadelumab i inhibidor de la C1 esterasa d'administració subcutània per a la profilaxi a llarg termini de l'angioedema hereditari	Marques Amat, Lluís	TRIDLE	National	http://hdl.handle.net/11351/6413

Table 2. Clinical Practice Guidelines published in 2021.

Masters and theses

Through the 2021 the IRBLleida researchers have defended 9 master theses and 23 doctoral theses

Master theses

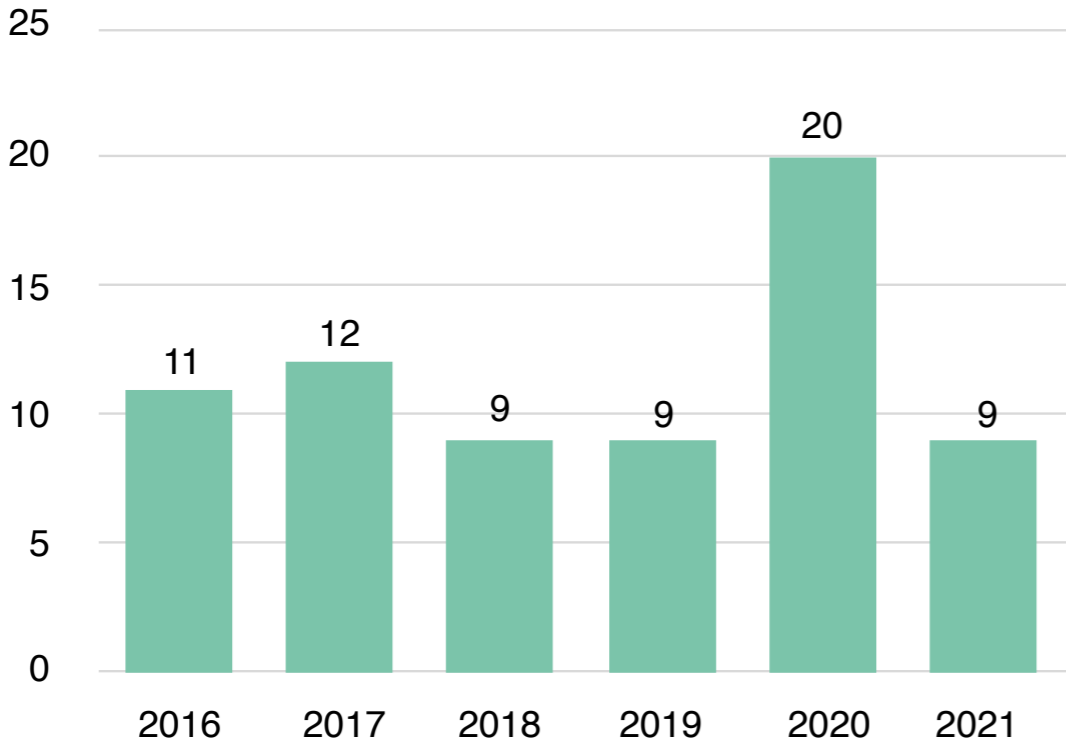


Figure 24. Historical data on master theses defended at IRBLleida.

Doctoral theses

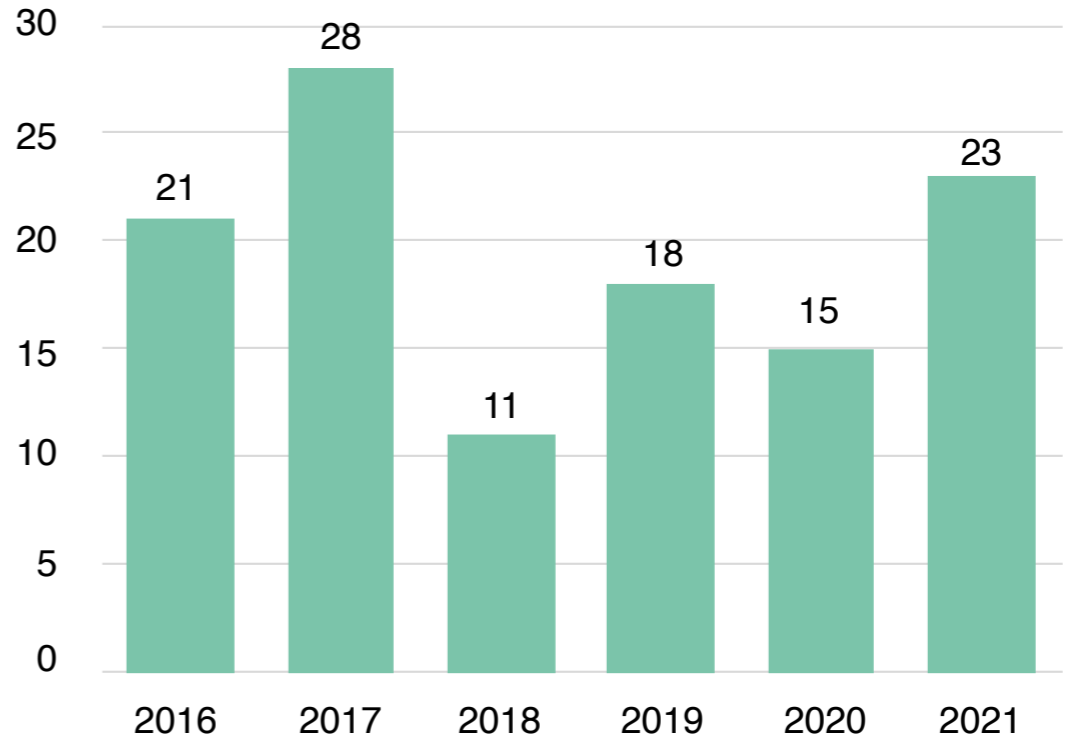


Figure 25. Historical data on doctoral theses defended at IRBLleida.



Theses directed by IRBLleida researchers in 2021

During 2021, IRBLleida researchers have defended 23 doctoral theses.

PhD Student	Thesis	Director/s	Group
Cancer			
Anna Visa Petrel	Valoració dels canals tipus T com a diana terapèutica en el glioblastoma: silenciament gènic versus bloqueig farmacològic	Carles Cantí & Judith Herreros	Calcium cell signaling
Clara Matas Nadal	Carcinomes de queratinòcits: aspectes epidemiològics a Catalunya i caracterització proteica del seu fluid intersticial tumoral	Eloi Garí & Rafael Aguayo	Cell cycle
Eva Irene Ibars Estiarte	Molecular analysis of Smc5/6-dependent sumoylation and ubiquitination	Jordi Torres & Gemma Bellí	Cell cycle
Maria Teresa Santamaría Gómez	Ensayo piloto de trasplante pulmonar porcino para el análisis de la lesión de isquemia-reperfusión tras isquemia fría prolongada	Sonia Gatus & Amaya Ojanguren	Oncological pathology
Sonia Nikolova Apostolova	The RING domain of Nse1: roles in Smc5/6 complex stability and genomic integrity in human cells	Neus Colomina & Jordi Torres	Cell cycle
Chronic diseases, Surgery and Health Care			
Anabel Lourdes Castro Grattoni	Remodelación cardiovascular inducida por hipoxia intermitente: Reversibilidad y efecto de la edad.	Ferran Barbé & Manuel Sánchez	Prec. med. chro. dis. & Transl. res. resp. med.
Carla Segovia Saiz	Techo de Cristal en I+D+i en salud en España	Esther González & Montserrat Gea	Research group of health care (GRECS)
Carolina Climent Sanz	Conceptualization of poor sleep quality in the context of fibromyalgia: from patient experience to management	Maria Teresa Moreno & Cristina Esquinas	Research group of health care (GRECS)
Cecilia Turino	A new approach to obstructive sleep apnoea management	Ferran Barbé	Translational research in respiratory medicine
Ester Sapiña Beltrán	Estudio del efecto del síndrome de apneashipopneas del sueño y su tratamiento con CPAP en diferentes fenotipos de presión arterial	Manuel Sánchez & Mireia Dalmases	Precision medicine in chronic diseases

Table 3. List of doctoral theses defended during 2021 at the University of Lleida and directed by IRBLleida researchers.



Theses directed by IRBLleida researchers in 2021

Francisco Ignàcio Torres Bondia	Factores de riesgo farmacológicos para el desarrollo de la enfermedad de Alzheimer y otras demencias: benzodiazepinas, Z-drugs e inhibidores de la bomba de protones	Jordi de Batlle	Translational research in respiratory medicine
Liliana Patricia Gutiérrez Carrasquilla	Diabetes, función pulmonar y respiración durante el sueño. ¿Qué ocurre en la prediabetes y cuál es el impacto de la dieta, el ejercicio y la mejora del control glucémico?	Albert Lecube	Research group in immunology and metabolism (GRIM)
Maite Caus Enríquez	La ausencia de VDR en CMLV previene la calcificación vascular en ERC: potencial rol del miR-145a.	José Manuel Valdivielso & Milica Bozic	Vascular and renal translational research
Marta Corral Pujol	Estudis de la resposta immunitària en els contextos d'autoimmunitat i immunitat tumoral: models de diabetis tipus 1 i melanoma cutani	Joan Verdaguer	Research group in immunology and metabolism (GRIM)
Epidemiology, Infectious Diseases and Public Health			
Juan Manuel Gracia Baena	Estenosi aòrtica quirúrgica: factors de risc i qualitat de vida	Pere Godoy	Applied epidemiology
Neurosciences			
Juan Gil Rodríguez	Uso y creencias sobre los medicamentos para dejar de fumar	Francesc Abella	Biological foundations of mental disorders
Maria Irigoyen	Letalidad y reincidencia en la conducta suicida	Enrique Baca & Maria Mur	Biological foundations of mental disorders
María José Ruiz Montilla	Cuestionario sobre conocimientos en bioética y actitud moral en alumnos universitarios y profesionales sanitarios	Josep Pifarré & Montserrat Esquerda	Biological foundations of mental disorders
Nutrition, Metabolism and Cellular Stress			
Aida Beà Tàrrega	Caracterització de la biologia dels fibroblasts cardíacs i la seva resposta a estrès cel·lular	Daniel Sanchís	Cell signaling and apoptosis
Elena Britti	Dorsal root ganglion neurons as a model of Friedreich Ataxia: cellular alterations and therapeutic approaches	Joaquim Ros	Biochemistry of oxidative stress
Gisel Barés Junqué	Estudi de les funcions biològiques de les nucleases apoptòtiques EndoG, ExoG i TatD	Marta Llovera & Daniel Sanchís	Cell signaling and apoptosis
Natàlia Mota Martorell	Oxidative stress homeostasis and longevity in mammals	Mariona Jové & Reinald Pamplona	Metabolic physiopathology
Pascual Torres Cabestany	Cell stress and RNA splicing in Amyotrophic Lateral Sclerosis: novel opportunities for therapeutic development	Manuel Portero & Reinald Pamplona	Metabolic physiopathology

Table 3. List of doctoral theses defended during 2021 at the University of Lleida and directed by IRBLleida researchers.



Research networks and platforms

Reference	Acronym	Funder/Entity	Researcher Member	Research Group
PT17/0015/0027	Plataforma nacional de Biobancos	ISCIII (Plataformas)	X. Matias-Guiu	Biobank IRBLleida CB16/12/00231
RED2018-102372-T	INESGEN	MICIUN (Research Networks)	J. Torres	Cell cycle
SAF2017-90900-REDT	UbiRed	MICIUN(Research Networks)	J. Torres	Cell cycle
RD21/0006/0023	RICORS-ICTUS	ISCIII (RETICS)	F. Purroy	Clinical neurosciences
CA19137	COST	European Cooperation in Science & Technology (COST)	O. Yuguero	ERLab, research in emergency medicine
H2020-MSCA-ITN-2018-812777	CHICKENSTRESS	European Commision- MSCA - ITN -2019	L. Medina	Evolutionary and developmental neurobiology
RED2018-102457-T	MetaboRed	MICIUN (Research Networks)	M. Jové	Metabolic physiopathology
COST CA19105	epiLipidNET	European Cooperation in Science & Technology (COST)	R. Pamplona	Metabolic physiopathology
	INFECMOL	Grupo de acción Iberus	G. Belli	Molecular biology of yeast
RD16/0015/0008	REMM	ISCIII (RETICS)	L. Brieva	Neuroimmunology
COST CA15203	MitoEAGLE	European Cooperation in Science & Technology (COST)	Jordi Boada, Lara Nogueras	Neuroimmunology and Metabolic physiopathology
CB16/12/00231	CIBERONC	ISCIII (CIBER)	X. Matias-Guiu	Oncological pathology
PT20/00021	Plataforma de Biobancos y Biomodelos	ISCIII (Platforms)	X. Matias-Guiu, D. Arango	Oncological pathology, Molecular oncology
	APORED	Various Organizations	J.Boix, J. Ribas	Pharmacology unit
CB07/06/2008	CIBERES	ISCIII (CIBER)	M. Sánchez	Precision medicine in chronic diseases group
	INCOSACT		M. Sánchez	Precision medicine in chronic diseases group
	BESTPRACT	Various Organizations	S. Cambray	Projects unit
CB07/08/0024	CIBERDEM	ISCIII (CIBER)	A. Lecube	Research group in immunology and metabolism (GRIM)
COST Action B26	ESADA	European Cooperation in Science & Technology (COST)	F. Barbé	Translational research in respiratory medicine group
CB07/06/2008	CIBERES	ISCIII (CIBER)	F. Barbé, M. Sanchez	Translational research in respiratory medicine group
RD16/0009/0011	REDINREN	ISCIII (RETICS)	J.M. Valdivielso	Vascular and renal translational research group
812699	IMPROVE-PD	European Commision- MSCA - ITN - 2018	J.M. Valdivielso	Vascular and renal translational research group
COST CA18216	VascAgeNet	European Cooperation in Science & Technology (COST)	J.M. Valdivielso	Vascular and renal translational research group

Table 4. Research Networks and Researchs Platforms with IRBLleida researchers.



Scientific production by areas

Research areas	Number of publications	Total IF	Average IF	D1 publications	Q1 publications
Cancer	58	395	6,81	19.0% (11)	72.0% (41)
Chronic diseases, surgery and health care	138	642	4,65	16.6% (23)	43.8% (60)
Epidemiology, infectious diseases and public health	64	321	5,00	15.6% (10)	42.2% (27)
Neurosciences	57	284	5,00	15.8% (9)	45.6% (26)
Nutrition, metabolism and cellular stress	52	317	6,10	15.4% (8)	44.2% (23)

Table 5. Publications, IF and quartile of IRBlleida research areas in 2021.



Scientific production by group

Group	Total Publications	D1	%D1	Q1	%Q1	Total IF	Average IF
Translational research in respiratory medicine group	56	12	21,4%	34	60,7%	351,22	6,27
Vascular and renal translational research group	45	3	6,7%	32	71,1%	223,54	4,97
Precision medicine in chronic diseases group	37	13	35,1%	26	70,3%	292,23	7,90
Research group of health care (GRECS)	37	13	35,1%	19	51,4%	119,48	3,23
Clinical neurosciences	36	5	13,9%	21	58,3%	166,06	4,6
Metabolic physiopathology	30	5	16,7%	24	80,0%	201,59	6,72
Cancer biomarkers research group (GReBiC)	29	4	13,8%	19	65,5%	205,46	7,08
Research group in immunology and metabolism (GRIM)	27	0	0,0%	13	48,1%	108	4
Oncological pathology	26	5	19,2%	18	69,2%	146,07	5,61
Translational research group on infectious diseases of Lleida	16	3	18,8%	3	18,8%	69,69	4,35
Applied epidemiology	15	3	20,0%	10	66,7%	71,05	4,73
Pharmacoepidemiology and pharmacodynamics	13	0	0,0%	6	46,2%	55,72	4,28
Clinical and experimental research in digestive and hematological pathology	12	3	25,0%	7	58,3%	93,68	7,80
Experimental surgery	12	0	0,0%	5	41,7%	43,08	3,59
Intensive medicine	11	2	18,2%	8	72,7%	89,5	8,13
Neuroimmunology	8	2	25,0%	4	50,0%	35,8	4,47
ERLab, research in emergency medicine	8	0	0,0%	6	75,0%	31,36	3,92
Neurocognition, psychobiology of the personality and behavioral genetics	8	0	0,0%	2	25,0%	28,3	3,53
Biological foundations of mental disorders	7	1	14,3%	4	57,1%	46,61	6,65
Genetics of complex diseases	6	1	16,7%	3	50,0%	26,25	4,37
Indicators and specifications of the quality in the clinical laboratory	5	3	60,0%	5	100,0%	53,78	10,7
Cell cycle	5	1	20,0%	5	100,0%	37,6	7,52

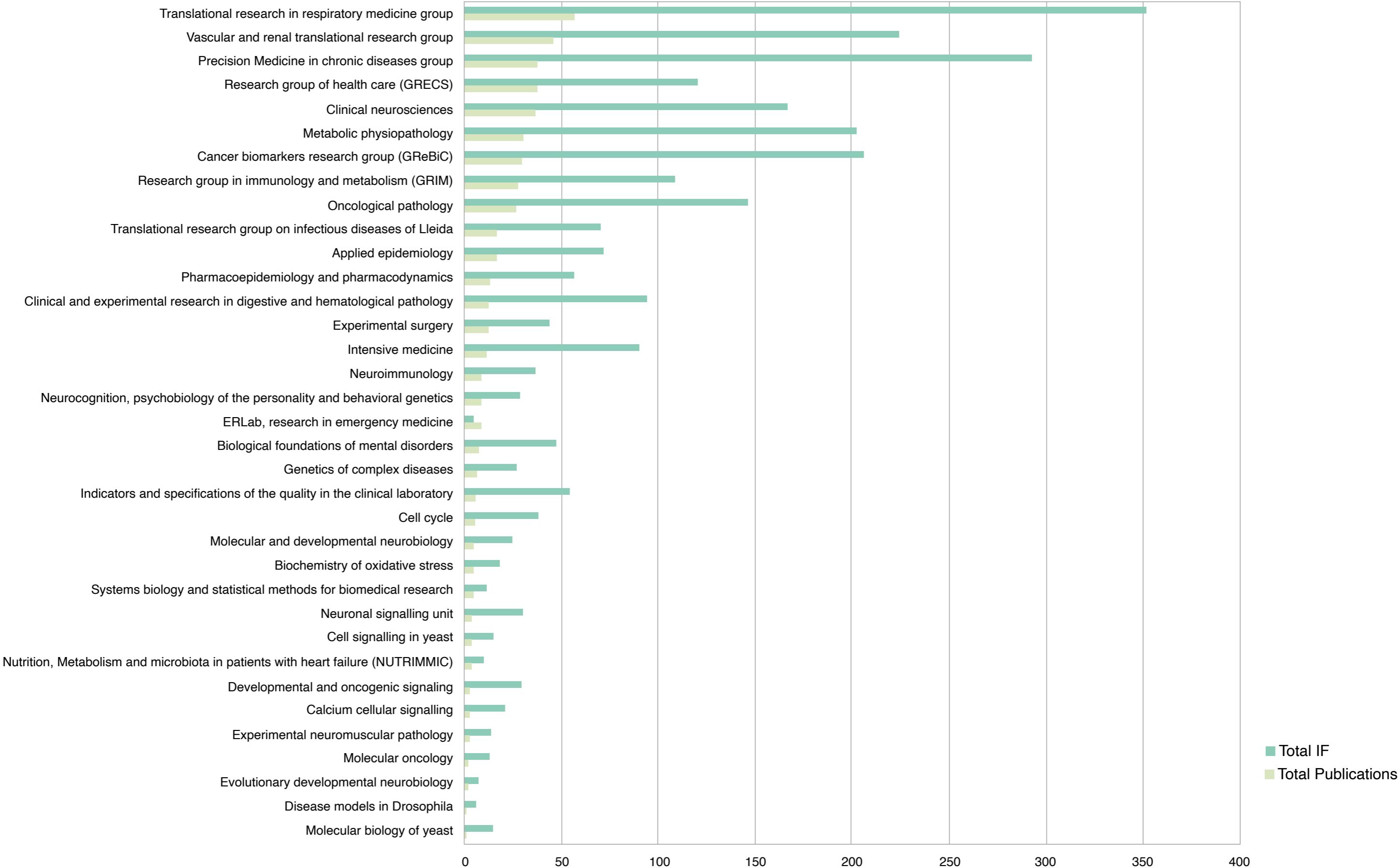


Scientific production by group

Group	Total Publications	D1	%D1	Q1	%Q1	Total IF	Average IF
Molecular and developmental neurobiology	4	0	0,0%	4	100,0%	24,1	6
Biochemistry of oxidative stress	4	0	0,0%	1	25,0%	17,73	4,43
Systems biology and statistical methods for biomedical research	4	0	0,0%	0	0,0%	11,1	2,77
Neuronal signalling unit	3	1	33,3%	3	100,0%	29,8	9,93
Cell signalling in yeast	3	0	0,0%	1	33,3%	14,41	4,80
Nutrition, metabolism and microbiota in patients with heart failure (NUTRIMMIC)	3	0	0,0%	0	0,0%	9,37	3,12
Developmental and oncogenic signaling	2	1	50,0%	2	100,0%	28,72	14,37
Calcium cellular signalling	2	1	50,0%	2	100,0%	20,45	10,22
Experimental neuromuscular pathology	2	0	0,0%	2	100,0%	13,13	6,56
Molecular oncology	2	0	0,0%	2	100,0%	12,47	6,23
Evolutionary developmental neurobiology	2	2	100,0%	2	100,0%	7,07	3,53
Molecular biology of yeast	1	1	100,0%	1	100,0%	14,9	14,9
Disease models in Drosophila	1	0	0,0%	1	100,0%	5,923	5,923

Table 6. Scientific production in 2021 by IRBLleida group's.

Scientific production by group





Research activity by areas and groups

- Area 1. Cancer
- Area 2. Chronic diseases, surgery and health care
- Area 3. Epidemiology, infectious diseases and public health
- Area 4. Neurosciences
- Area 5. Nutrition and cell metabolism
- Area 6. Other research areas



Area 1. Cancer

Area coordinator: Dr. Eloi Garí Marsol

The cancer area includes research staff trained in different specialties of Medicine and Biology. The common goal is oncology research integrating basic (model organisms), translational, and clinical research (trials).

Groups

1.1 Cell cycle

1.2 Research group of cancer biomarkers (GReBiC)

1.3 *Drosophila* models of disease

1.4 Molecular oncology

1.5 Oncological pathology

1.6 Calcium cellular signaling

1.7 Oncogenic signalig and development

7

Groups

82

Researchers

58

Publications

395

Total IF

6.81

Average IF

72%

%Q1

19%

%D1

10

Funded grants

612,500€

Grants funding

24

Active projects



1.1. Cell cycle

The cell cycle group studies the molecular mechanisms that regulate the division of eukaryotic cells, in particular:

(A) the mechanisms dependent on SUMO and SMC complexes that ensure genome stability during the cycle and in response to DNA damage.

(B) the mechanisms involved in the control of cell cycle entry and its relation to polarity, cell adhesion and migration.

Mouse embryonic fibroblasts, cell lines and primary cultures of human keratinocytes are used as models of cell adhesion and polarity whereas budding yeast and human cell lines are employed for chromosome replication, cohesion and segregation studies.

The overall goal of this work is to contribute to a better understanding of the processes that are altered during the loss of genome integrity and in diseases such as cancer.

Publications

Jesus C, Sans LS, Ruiz E, Ferran M, Soria L, Garcia I, Chiriac A, Casanova JM, Fernandez JM, Owens S, Celada A, Howell MD, Pujol RM, Santamaria LF. Interplay between Humoral and CLA(+) T Cell Response against Candida albicans in Psoriasis. *Int. J. Mol. Sci.* 2021. 22. (4):1519. IF:5,923. Q1.

Fernández JM, Àngel J. Psoriasis, inflammation and cardiovascular risk. *Piel.* 2021. 36. (4):p. 241-245.

Matas C, Sagrista M, Gomez X, Sobrino C, Fernandez JM, Àngel J, Casanova JM, Aguayo R. Risk factors for early-onset basal cell carcinomas and the trend towards their female predominance. *J. Dtsch. Dermatol. Ges.* 2021. 19. (3):p. 364-371. IF:5,584. Q1.

Varejão N, Lascorz J, Codina-Fabra J, Bellí G, Borràs-Gas H, Torres-Rosell J, Reverter D. Structural basis for the E3 ligase activity enhancement of yeast Nse2 by SUMO-interacting motifs. *Nat Commun.* 2021. 12. (1):p. 7013-7013. IF:14,919 D1

Torres OY, Fernandez J, Justribo E, Gonzalez E, Vena A. Impact of the SARS-COV-2 Pandemic Lockdown on Sexually Transmitted Urethritis in a Spanish Health Region. *Cureus.* 2021. 13. (10):e18921. .

Yuguero O, Fernández JM, Vilela Á, Aramburu J, Laín R, Godoy P. Preliminary Results of a Screening Programme for Chlamydia in an Asymptomatic Young Population in Spain. *Front. Public Health.* 2021. 9. p. 615110-615110. IF:3,709. Q1.

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Torres Rosell, Jordi	Ministerio de Ciencia e Innovación	Mecanismos moleculares implicados en coordinar la replicación y la disyunción de los cromosomas	211.750
Garí Marsol, Eloi	Ministerio de Ciencia e Innovación	Characterization of non-canonical functions of the Cyclin D1-Cdk4 complex involved in cell signaling	145.200

Research team

Group leaders

Eloi Garí Marsol
Jordi Torres Rosell

Principal investigators

Neus Colomina Gabarrella
Francisco Ferrezuelo Muñoz

Researchers

Rafael Aguayo Ortiz
Celia Casas Herranz
José Manuel Fernandez Armenteros
Neus Pedraza Gonzalez
Jose Manuel Casanova Seuma

PhD students

Marina Ribes Santolaria
Neus Perez Lorite
Roger Ferran Solé Soler
Marta Guasch Vallés
Marc Tarres Escalona
Clara Matas Nadal
Joan Codina Fabra

Research technician

Sonia Rius Balcells

Laboratories

Laboratory 3rd floor. Lab b3.8
973 702 411 (Despatx E Garí)
973 702 438 (Despatx J Torres)

Email

eloi.gari@udl.cat
jordi.torres@udl.cat



1.2. Research group of cancer biomarkers (GReBiC)

Our research group is translational, multidisciplinary and young. It is composed by medical staff specialized in Medical Oncology, Internal Medicine and Radiation Oncology; and research staff trained in Biosciences (Biology, Biochemistry, Biomedicine and Biotechnology) with a high degree of cohesion.

Our group work focuses on three main lines of research lines related to cancer:

- Digestive tumors: colorectal cancer, gastric cancer and hepatocellular carcinoma
- Breast cancer
- Malignant pleural effusion

The three lines tackle diseases of high prevalence in our society which are associated with a high mortality rate.

We work with translational and basic research approaches to respond to the major challenges posted by these pathologies, which are: to offer markers for diagnosis, to stratify the risk of recurrence or metastasis and to predict good therapeutic response to different treatments. In addition, novel highly innovative therapies based on gene editing are being developed in our group.

Publications

Bagueste G, Porcel JM. Pleural Infection Caused by *Nocardia farcinica*: Two Cases and Review of the Literature. *Cureus*. 2021. 13. (4):e14697.

Bielsa S, Bernet A, Civit C, Acosta C, Manonelles A, Porcel JM. FluoroType® MTB in pleural fluid for diagnosing tuberculosis. *Rev Clin Esp (Barc)*. 2021. 221. (3):p. 139-144.

Bonet M, Vázquez S, García E, Visus M, Jové D, Ripol O, Solé C, Gutiérrez L, Morales JL, Montero Á, Algara M, Arenas M, Mira M. Saving time in the radiotherapy procedures for COVID-19 pneumonia treatment. A single-institution experience. *Clin. Transl. Oncol*. 2021. 23. (11):p. 1-6. IF:3,405. Q3.

Chan A, Moy B, Mansi J, Ejlersen B, Holmes FA, Chia S, Iwata H, Gnant M, Loibl S, Barrios CH, Somali I, Smichkoska S, Martinez N, Alonso MG, Link JS, Mayer IA, Cold S, Murillo SM, Senecal F, Inoue K, Ruiz M, Hui R, Denduluri N, Patt D, Rugo HS, Johnston SRD, Bryce R, Zhang B, Xu F, Wong A, Martin M, ExteNET G. Final Efficacy Results of Neratinib in HER2-positive Hormone Receptor-positive Early-stage Breast Cancer From the Phase III ExteNET Trial. *Clin. Breast Cancer*. 2021. 21. (1):p. 80-80. IF:3,225. Q3.

Fernandez F, Farrais S, Planella M, Melero J, Lopez N, Vivas S, Fernandez L, Lanzarote AP, Ruiz P, Aguilar M, Vidal J, Esquerda A, Serrano C, Nunez C. Coeliac Disease in Elderly Patients: Value of Coeliac Lymphogram for Diagnosis. *Nutrients*. 2021. 13. (9):2984. IF:5,717. Q1.

Fjaellegaard K, Koefod J, Reuter S, Malene B, Gerke O, Porcel JM, Frost P, Laursen CB, Bhatnagar R, Bodtger U. Positron emission tomography-compu-

ted tomography (PET-CT) in suspected malignant pleural effusion. An updated systematic review and meta-analysis. *Lung Cancer*. 2021. 162. p. 106-118. IF:5,705. Q1.

Gandhi NS, Wang E, Sorolla A, Kan YJ, Malik A, Batra J, Young KA, Tie WJ, Blancafort P, Mancera RL. Design and Characterization of a Cell-Penetrating Peptide Derived from the SOX2 Transcription Factor. *Int. J. Mol. Sci*. 2021. 22. (17):9354. IF:5,923. Q1.

Gil MJ, Bellet M, Bergamino M, Morales S, Barnadas A, Manso L, Saura C, Fernandez A, Garcia E, Martinez N, Mele M, Villagrasa P, Celiz P, Martin XP, Ciruelos E, Pernas S. Long-Term Cardiac Safety and Survival Outcomes of Neoadjuvant Pegylated Liposomal Doxorubicin in Elderly Patients or Prone to Cardiotoxicity and Triple Negative Breast Cancer. Final Results of the Multicentre Phase II CAPRICE Study. *Front. Oncol*. 2021. 11. 645026. IF:6,244. Q2.

Astorga BG, Ballabrera FS, Aguilar EA, Fernandez EE, Garcia P, Flores EG, Garcia RV, Montes AF, Munoz A, Salvia AS. Patient profiles as an aim to optimize selection in the second line setting: the role of aflibercept. *Clin. Transl. Oncol*. 2021. 23. (8):p. 1520-1528. IF:3,405. Q3.

Griguolo G, Serna G, Pascual T, Fasani R, Guardia X, Chic N, Pare L, Pernas S, Munoz M, Oliveira M, Vidal M, Llombart A, Cortes J, Galvan P, Bermejo B, Martinez N, Lopez R, Morales S, Garau I, Manso L, Alarcon J, Martinez E, Villagrasa P, Prat A, Nuciforo P. Immune microenvironment characterisation and dynamics during anti-HER2-based neoadjuvant treatment in HER2-positive breast cancer. *npj Precis. Oncol*. 2021. 5. (1):23. IF:8,254. Q1.

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Research team

Group leaders

Maria Alba Sorolla Bardaji
Jose Manuel Porcel Pérez
Antonia Salud Salvia

Principal investigators

Robert Montal Roura
Silvia Bielsa Martin
Serafin Morales Murillo
Anabel Sorolla Bardaji

Researchers

Alberto Rodrigo Cáceres
Eva Parisi Capdevila
Moises Jose Mira Flores
Eleonor Paola Murata Yonamine
Aureli Esquerda Serrano
Marina Asuncion Pardina Solano
Magdalena Torres Pifarre
Izaskun Urdanibia Ascanio

PhD students

Ivan Hidalgo Muñoz
Ona Pallisé Subirats
Joel Veas Rodriguez
Maria Del Carmen Civit Oro

Research technicians

Marta Garcia Cortes
David Martinez Ortin
Joel Salla Fortuny
Ruben Tejero Narbona

Laboratories

**Laboratories ground floor. Lab b0.1
i B0.5 (1/2).**
973 702 226
973 003 747

Email

jmporcel.ileida.ics@gencat.cat
masalud.ileida.ics@gencat.cat
msorolla@irbilleida.cat



1.2. Research group of cancer biomarkers (GReBiC)

Martin M, Zielinski C, Ruiz M, Carrasco E, Turner N, Ciruelos EM, Munoz M, Bermejo B, Margeli M, Anton A, Kahan Z, Csoszi T, Casas MI, Murillo L, Morales S, Alba E, Gal E, Guerrero A, Calvo L, de la Haba J, Ramos M, Alvarez I, Garcia A, Bartlett CH, Koehler M, Caballero R, Corsaro M, Huang X, Garcia JA, Chacon JI, Swift C, Thallinger C, Gil M. Palbociclib in combination with endocrine therapy versus capecitabine in hormonal receptor-positive, human epidermal growth factor 2-negative, aromatase inhibitor-resistant metastatic breast cancer: a phase III randomised controlled trial-PEARL. *Ann. Oncol.* 2021. 32. (4):p. 488-499. IF:32,976. D1.

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Funded grants in 2021

PI	Funding agency	Project	Budget (€)
Montal Roura, Robert	Instituto de Salud Carlos III (ISCIII)	Biomarcadores de Respuesta a Inmunoterapia mediante la Inmunofenotipificación Exhaustiva del Adenocarcinoma Gástrico	98.010
Sorolla Bardaji, Anabel	Instituto de Salud Carlos III (ISCIII)	Development of precision therapies for triple negative breast cancers based on CRISPR/CAS9 ribonucleoproteins	117.370
Montal Roura, Robert	Fundacion Merck Salud	Inmuno-oncología de precisión para el Adenocarcinoma Gástrico.	30.000
Montal Roura, Robert	Grupo Tratamiento de los Tumores Digestivos - Grupo TTD	Editing of TERT promoter mutations with CRISPR/Cas9 technology for the treatment of Hepatocellular carcinoma	40.000
Montal Roura, Robert	Sociedad Española de Oncología Medica (SEOM)	Ayuda SEOM - Juan Rodés 2021	40.000
Sorolla Bardaji, Anabel	Diputació de Lleida	Development of precision therapies for triple negative breast cancer based on CRISPR/Cas12a ribonucleoproteins	50.000

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Morales Murillo, Serafin	ADAMED LABORATORIOS, S.L.U.	Selección de tratamiento con quimioterapia neoadyuvante en pacientes con cáncer de mama en estadioc precoz y con receptores hormonales positivos mediante la determinación de la plataforma ONCOTYPE, CF DNA en sangre periférica y cambios del marcador KI67 en tejido tumoral	9.000
Salud Salvia, Antonia	Fundacion Merck Salud	Predicción de micrometástasis en pacientes con cáncer de colon localizado de alto riesgo	30.000
Bielsa Martin, Silvia	Instituto de Salud Carlos III (ISCIII)	Ensayo clínico randomizado: lavados con suero salino vs tratamiento estándar en el derrame pleural paraneumónico complicado o empiema	43.560
Porcel Pérez, Jose Manuel	Instituto de Salud Carlos III (ISCIII)	Biopsia líquida utilizando el sobrenadante del líquido pleural y el plasma para el estudio del perfil mutacional en el cáncer de pulmón	96.800



1.3. *Drosophila* models of disease

Our group has developed a metastatic model of colorectal cancer in adult *Drosophila*, with the aim of unravel the basic mechanisms that allow the spread of tumour cells outside the primary tumor and the colonization of distant places.

We have two main lines of work:

1. Perform genetic screenings to identify key players in the initial steps of metastasis and characterize their role in the process.
2. Introduce our colorectal cancer models into *Drosophila* as a new step in the preclinical analysis of therapeutic compounds.

Publications

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Adams J,Casali A,Campbell K. Methods to Generate and Assay for Distinct Stages of Cancer Metastasis in Adult *Drosophila melanogaster*. *Methods Mol. Biol.* 2021. 2179. p. 161-170.

Research team

Group leader
Andreu Casali Taberner

PhD student
Patricia Montes Labrador

Research technician
Alba Vicario Andrade

Laboratories

Laboratory ground floor. Lab b0.5
973 702 221

Email
acasali@irblleida.cat

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Casali Taberner, Andreu	Ministerio de Ciencia e Innovación	Modelling metastasis in adult <i>Drosophila</i> : Identification of the mechanisms underlying successful cell migration	133.100



1.4. Molecular oncology

The main interest of our laboratory is the study of molecular events underlying the oncogenic process, especially in colorectal, gastric and head-and-neck cancer. Gaining a deeper understanding of the molecular mechanisms responsible for the tumorigenic process is essential to improve the diagnosis and treatment of these patients. We are also interested in the identification of novel biomarkers capable of predicting therapy response, thus contributing to treatment personalization for colorectal cancer patients. Finally, we explore novel therapeutic options for microvillus inclusion disease (MVID), a life-threatening rare intestinal disease.

Publications

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Research team

Group leader
Diego Arango Del Corro

Researcher
Agueda Martínez Barriocanal

PhD students
Nuria Vivancos Guiu
Bruno Brotons Morales

Laboratories

Biomedicine I 4th floor. Lab b4.8
973 702 201

Email

darango@irbllleida.cat

Funded grants in 2021

PI	Funding agency	Project	Budget (€)
Martinez Barriocanal, Agueda	Diputació de Lleida	EPH Receptor Signaling in Endometrial Cancer	50.000

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Arango Del Corro, Diego	Instituto de Salud Carlos III (ISCIII)	Desarrollo de nanosistemas de marcaje de CXCR4 mediante radiosondas para la imagen molecular de células tumorales y del microambiente tumoral	99.946
Arango Del Corro, Diego	Instituto de Salud Carlos III (ISCIII)	Antioxidant treatment as a novel therapeutic option for microvillus inclusion disease. ARMED	174.966
Arango Del Corro, Diego	Instituto de Salud Carlos III (ISCIII)	Identificación de nuevos biomarcadores de respuesta a los compuestos regorafenib y TAS-102 en pacientes con cáncer colorrectal	61.980
Arango Del Corro, Diego	Instituto de Salud Carlos III (ISCIII)	Nueva estrategia terapéutica para ael cáncer gástrico basada en la modulación de la señalización de RHOA	236.857



1.5. Oncological pathology

The group studies the molecular alterations of endometrial and skin cancers, in correlation with clinical and pathological characteristics, using descriptive molecular pathology tools (immunohistochemistry, in situ hybridization, sequencing, epigenetics, gene gain and loss), as well as in vitro functional analysis in cell cultures (2D and 3D), and experimental animals. The objective is to transfer the results to clinical practice for the benefit of patients.

The group's research activity focuses on the following priority lines of research:

Endometrial cancer

1. Implementation of the "OMIC" techniques for the identification of new diagnostic, prognostic or predictive markers of response to specific therapies in endometrial cancer.
2. Understand the immunological characteristics of endometrial carcinoma by evaluating the inflammatory microenvironment of different types of endometrial tumors and their recurrences. To propose clinical trials in endometrial cancer subtypes.
3. Analysis of the anti-tumor responses of antineoplastic drugs, through the use of in vitro cultures in two and three dimensions. Study of the mechanisms involved in resistance to apoptosis and conventional therapies in endometrial cancer.
4. Generation of new animal models (CAG-Cre: ER; PTEN^{fl/fl}; ARID1A^{fl/fl}, TP53...), to check drug responses in invasion and metastasis processes.
5. Updating the pathological analysis of endometrial cancer to improve the prediction of the prognosis and the response to therapy; transfer of new molecular information to clinical practice. Incorporation of molecular classification, based on TCGA

Melanoma cancer

1. Secretome study and its implication in tumoral progression, cellular behaviour and genetic phenotype.
2. Investigate the modulation of the tumor microenvironment immune system, especially macrophage activation (TAMs), related to mutational phenotype and/or the acquisition of Resistance.
3. Study and identification of new target therapies to promote personalized treatment in melanoma patients.
4. Use of mice models to analyse new drugs and evaluate their therapeutic potential in preclinical models.
5. Study of new biomarkers in biopsy of melanoma patients with different clinic-pathological stages to have a prognostic value or predictive response.

Publications

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Research team

Group leader

Xavier Matias-Guiu Guia

Principal investigators

Anna Macia Armengol

Núria Eritja Sanchez

Xavier Dolcet Roca

Rosa Maria Marti Laborda

Researchers

Elena Estarán Silvan

Douglas Rene Sanchez Guzman

Johanna Del Pilar Vargas Ramos

Dolors Cuevas Sanchez

Andree Yeramian Hakim

Maria Pilar Gallel Vicente

Judit Pallares Quixal

Jordi Tarragona Foradada

Felipe Vilardell Villellas

Sonia Gatius Caldero

Xavier Soria Gili

PhD students

Joan Angel Baldo

Manel Albertí Valls

Maria Vidal Sabanés

Ines De La Rosa Zurera

Pol Siso Camarasa

Anna Ruiz Mitjana

Cristina Megino Luque

Raul Navaridas Fernandez De Bobadilla

Research technicians

Marta Hereu Bordes

Marta Vaquero Susagna

Ana Velasco Sanchez

Maria Carrele Sole

Clara Molins Escuder

Carla Trapero Candela



1.5. Oncological pathology

Concin N, Matias X, Vergote I, Cibula D, Mirza MR, Marnitz S, Ledermann J, Bosse T, Chargari C, Fagotti A, Fotopoulou C, Martin AG, Lax S, Lorusso D, Marth C, Morice P, Nout RA, O'Donnell D, Querleu D, Raspollini MR, Sehouli J, Sturdza A, Taylor A, Westermann A, Wimberger P, Colombo N, Planchamp F, Creutzberg CL. ESGO/ESTRO/ESP guidelines for the management of patients with endometrial carcinoma. *Radiother. Oncol.* 2021. 154. p. 327-353. IF:6,280. Q1.

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Laboratories

Laboratory 2nd floor. Lab b2.4.7
973 702 937

Email

fjmatiasguiu.lleida.ics@gencat.cat



1.5. Oncological pathology

Sanegre S, Eritja N, de Andrea C, Diaz J, Diaz Á, Jácome MA, Salguero C, García D, Davidson B, Lopez R, Melero I, Navarro S, Ramon YS, de Alava E, Matias X, Noguera R. Characterizing the Invasive Tumor Front of Aggressive Uterine Adenocarcinoma and Leiomyosarcoma. *Front. Cell. Dev. Biol.* 2021. 9. p. 670185-670185. IF:6,684. Q1. Soria X, Vilardell F, Maiques Ó, Barceló C, Sisó P, de la Rosa I, Velasco A, Cuevas D, Santacana M, Gatius S, Matías X, Rodrigo A, Macià A, Martí RM. BRAF(V600E).Mutant Allele Frequency (MAF) Influences Melanoma Clinicopathologic Characteristics. *Cancers.* 2021. 13. (20):5073. IF:6,639. Q1.

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Qazi R, Primmer V, Dockhorn B, Hernández J, Soares FA, Gertler AA, Kalman M, Wong C, Carraro DM, Sousa AC, Reis RM, Fox SB, Fassan M, Brevet M, Merkelbach S, Colling R, Soilleux E, Teo RYW, D'Haene N, Nolet S, Ristimäki A, Väisänen T, Chapusot C, Soruri A, Unger T, Weggowiec J, Biscuola M, Frattini M, Long A, Campreggher PV, Matias X. Multi-center real-world comparison of the fully automated Idylla™ microsatellite instability assay with routine molecular methods and immunohistochemistry on formalin-fixed paraffin-embedded tissue of colorectal cancer. *Virchows Arch.* 2021. 478. (5):p. 851-863. IF:4,064. Q2.

Funded grants in 2021

PI	Funding agency	Project	Budget (€)
Vilardell Villellas, Felipe	Diputació de Lleida	Development of precision therapies for triple negative breast cancer based on CRISPR/Cas12a ribonucleoproteins	50.000
Anna Macià i Rosa M ^a Martí	Instituto de Salud Carlos III (ISCIII)	Análisis del microambiente tumoral del melanoma cutáneo asociado al perfil genético y/o a la aparición de resistencias	87.120
Matias-Guiu Guia, Xavier	Diputació de Lleida	EPH Receptor Signaling in Endometrial Cancer	50.000

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Dolcet Roca, Francisco Javier	Ministerio de Ciencia e Innovación	Descifrando redes de señalización en el cáncer de endometrio: papel del microRNA-424(322)/503 neoplasias endometriales y su regulación por las vías PI3K/AKT y TGF-β/Smad (NEOSIGNAL)	151.250
Eritja Sanchez, Nuria	FUNDACIÓN SANTIAGO DEXEUS FONT	“Determinación del perfil metabólico del carcinoma endometrioide de endometrio grado 3 para discriminar los subtipos tumorales establecidos por clasificación del TCGA (The Cancer Genome Atlas Research Network)”	3.000
Eritja Sanchez, Nuria	Instituto de Salud Carlos III (ISCIII)	Contratos Miguel Servet Tipo I - Proyecto	40.000
Eritja Sanchez, Nuria	Instituto de Salud Carlos III (ISCIII)	Papel de ARID1A en la carcinogénesis endometrial dependiente de contexto. Análisis de los mecanismos moleculares y posibles implicaciones terapéuticas	87.120



1.5. Oncological pathology

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Eritja Sanchez, Nuria	Ministerio de Ciencia e Innovación	EFFICACY: Nuevas estrategias para incrementar efectividad de los tratamientos con ABTL0812	169.871
Marti Laborda, Rosa Maria	Instituto de Salud Carlos III (ISCIII)	Análisis del secretoma en el melanoma humano asociado al perfil genético y a la aparición de resistencias. Identificación de biomarcadores y/o dianas terapéuticas de aplicación clínica	93.170
Matias-Guiu Guia, Xavier	Fundacio La Marato de TV3	Personalized Immunotherapy for Endometrial Cancer; Acronym: Ex-CITE (Endometrial Cancer Immunotherapy)	100.000
Matias-Guiu Guia, Xavier	Instituto de Salud Carlos III (ISCIII)	Incorporación de nuevas areas temáticas y nuevos grupos al consorcio CIBER	63.500
Matias-Guiu Guia, Xavier	Instituto de Salud Carlos III (ISCIII)	Plataforma Red Nacional de Biobancos	76.725
Matias-Guiu Guia, Xavier	Instituto de Salud Carlos III (ISCIII)	Plataforma de Biobancos y Biomodelos	205.700



1.6. Calcium cellular signalling

During tumor progression, cancer cells adapt to changes in their microenvironment (devoid of nutrients and/or oxygen) by activating stress pathways and autophagy. These processes are also relevant in chemoresistance and tumor recurrence and constitute therapeutic targets against cancer. We study the relationship between calcium signaling and these adaptive processes, in order to devise anti-tumoral strategies. Currently, our working model is glioblastoma, an aggressive brain tumor characterized by rapid growth, high invasiveness and resistance to treatment. We use primary cultures established from tumor biopsies, biochemical and cell biology techniques, gene silencing, and preclinical models of glioblastoma.

Publications

Moreno S, Maiques O, Romero M, Santacana M, Gómez I, Cuevas D, Velasco A, Veà À, Macià A, Barceló C, Boix R, Valls J, Gatiús S, Cantí C, Matias X, Soria X, Martí RM. Differential Immunoexpression of BRAF/V600E, Senescence Markers, PTEN, and T-type Calcium Channels in Acquired Naevi According to their Histopathological and Dermoscopic Classification. *Acta Derm Venereol.* 2021. 101. (11):adv00597. IF:4,437. Q1.

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Research team

Group leaders
Judith Herreros Danés
Carles Cantí Nicolás

Researcher
Anna Visa Pretel

PhD student
Lia Alza Blanco

Research technician
David Argiles Baulo

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Cantí Nicolás, Carles	Fundacio La Marato de TV3	Targeting calcium channels against primary and resistant glioblastoma	180.375
Herreros Danés, Judit	Ministerio de Ciencia e Innovación	Nuevos mecanismos de desregulación de la señalización por calcio contra el glioblastoma	157.300

Laboratories

Laboratory 2nd floor. Lab b2.11
973 702 214
973 702 950

Email
carles.canti@udl.cat
judit.herreros@udl.cat



1.7. Oncogenic signalling and development

The group considers a genetic approach to the mechanisms that regulate the activated cell signaling pathways by proto-oncogen Ret, and its regulation by the putative tumor suppressor Sprouty. As a fundamental tool, the group uses lines of mutant mice generated by homologous recombination. The studies cover different fields such as renal development and the peripheral nervous system, or the biology of tumors of neuroendocrine origin.

Publications

Eritja N, Navaridas R, Ruiz A, Vidal M, Egea J, Encinas M, Matias X, Dolcet X. Endometrial PTEN Deficiency Leads to SMAD2/3 Nuclear Translocation. *Cancers (Basel)*. 2021. 13. (19):4990. IF:6,639. Q1.

Ribera JM, Morgades M, Ciudad J, Montesinos P, Esteve J, Genesca E, Barba P, Ribera J, Garcia I, Moreno MJ, Martinez D, Torrent A, Martinez P, Monsalvo S, Gil C, Tormo M, Artola MT, Cervera M, Gonzalez J, Rodriguez C, Bermudez A, Novo A, Soria B, Coll R, Amigo ML, Lopez A, Fernandez R, Serrano J, Mercadal S, Cladera A, Gimenez A, Penarrubia MJ, Abella E, Vall F, Hernandez JM, Garcia A, Bergua JM, de Rueda B, Sanchez MJ, Serrano A, Calbacho M, Alonso N, Mendez JA, Garcia R, Olivares M, Barrena S, Zamora L, Granada I, Lhermitte L, Feliu E, Orfao A. Chemotherapy or allogeneic transplantation in high-risk Philadelphia chromosome-negative adult lymphoblastic leukemia. *Blood*. 2021. 137. (14):p. 1879-1894. IF:22,113. D1.

Research team

Group leader
Mario Encinas Martin

Researcher
Joan Ribera Calvet

PhD student
Gisela Altes Bargallo

Research technician
Marta Hereu Bordes

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Encinas Martin, Mario	Universitat de Lleida	Mecanismos moleculares y efectos biológicos de la senescencia celular mediada por Sprouty	157.300

Laboratories

Laboratory 2nd floor. Lab b2.08
973 702 213

Email
mario.encinas@udl.cat



Area 2. Chronic diseases, surgery and health care

Area coordinator: Dr. José Manuel Valdivielso Revilla

The area contains 6 groups dedicated to determining the pathophysiological mechanisms of vascular, renal, metabolic and pulmonary diseases. In addition, research is being conducted on new surgical methods and strategies to promote healthy aging.

Groups

2.1 Experimental surgery

2.2 Research group of immunology and metabolism (GRIM)

2.3 Vascular and renal translational research group

2.4 Translational research in respiratory medicine group

2.5 Research group of health care (GRECS)

2.6 Precision medicine in chronic diseases group





2.1. Experimental surgery

The group intends to develop interdisciplinary projects with special interest in those technologies and methodologies related to abdominal wall surgery and with applicability to other surgeries such as bariatric, hepatic, etc. In particular, the group studies the biomechanical response of the closure of the abdominal wall versus physical and anthropometric factors with the use of measuring instruments designed for this purpose that measure the traction forces of the abdominal wall after the intervention. The objective is to achieve optimum closure of the abdominal wall after an intervention, avoiding tensions and future hernias in the patient.

The Experimental Surgery Group is subdivided into 4 nodes:

- **Digestive surgery**
- **Abdominal wall**
- **Endocrine surgery**
- **Thoracic surgery**

The experimental surgery research group is integrated by surgeons, anesthetists, veterinarians and research and management technicians who work to develop interdisciplinary projects with special interest in those technologies and methodologies related to experimental surgery and the training of health professionals, as well as the development of instruments with applicability to different surgical specialties, such as the abdominal and hepatic walls, among others.

Defined lines of research can currently be identified in the experimental surgery group, such as the abdominal wall, led by Dr. Villalobos, who began with the study of the biomechanics of the abdominal wall to find out the physical and anthropometric factors that intervene during the closure and obtain the patent of an instrument that allows measurements to be made to determine the closing forces. Likewise, the group has carried out experimental studies using non-biological glues to fix the meshes to the abdominal wall to surgically repair the eventrations in a porcine experimental model of abdominal wall defect.

Postgraduate training represents a new line of research for the group by conducting studies on the impact of physical or biological clinical simulation on improving the training of professionals in the health sciences. Research in the pig model as an experimental model to study different surgical, diagnostic and therapeutic techniques marks many of the projects that are currently being carried out: anatomy, pain control, lung transplantation, safety in intestinal sutures, etc., with the aim of to be able to obtain experimental models that allow, in the long run, to extrapolate the findings in the human clinic and make a quality translational medicine. The research activities of this group are carried out at the CREBA center of the IRBLleida.

Publications

Cerdán C, Muriel P, Roig G, Merichal M, Pinillos AI, Mestres N, Sierra JE, Olsina JJ. Interval colonoscopy following acute diverticulitis should not be discouraged yet: results from a retrospective cohort. *Surg. Endosc.* 2021. 35. (12):p. 6819-6826. IF:4,584. Q1.

Cerdán C, Ambrona D, Villalobos R, Mestres N, Sierra JE, Olsina JJ. Laparoscopic repair of perineal hernia without suture fixation - a video vignette. *Colorectal Dis.* 2021. 23. (8):p. 1989-1990. IF:3,788. Q1.

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Hanna M, MONTERO A, Perrot S, Varrassi G. Tramadol/Dexketoprofen Analgesic Efficacy Compared with Tramadol/Paracetamol in Moderate to Severe Postoperative Acute Pain: Subgroup Analysis of a Randomized, Double-Blind, Parallel Group Trial-DAVID Study. *PAIN THER.* 2021. 10. (1):p. 485-503. IF:5,725. Q1.

Jimenez M, Garcia DC, Puy S, Beisani M, Planells F, Boldo A, Ruiz J, Duran M, Garcia D. Effects of negative-pressure therapy with and without ropivacaine instillation in the early evolution of severe peritonitis in pigs. *Eur. J. Trauma Emerg. Surg.* 2021. 47. (2):p. 597-606. IF:3,693. Q2.

Ojanguren A, Santamaría M, Milla L, Fraile C, Gatus S, Puy S, Boldó A, Gómez S, Boada M, Esquinas C, Sáez B, Ojanguren I, Barrecheguren M, Olsina JJ. Pilot Trial of Extended Hypothermic Lung Preservation to Analyze Ischemia-reperfusion Injury in Pigs. *Arch Bronconeumol.* 2021. 57. (7):p. 479-489. IF:4,872. Q2.

Osorio J, Jericó C, Miranda C, Santamaría M, Artigau E, Galofré G, Garsot E, Luna A, Puértolas N, Aldeano A, Olona C, Molinas J, Feliu J, Videla S, Tebe C, Pera M. Improved postoperative outcomes and reduced transfusion rates after implementation of a Patient Blood Management program in gastric cancer surgery. *EJSO.* 2021. 47. (6):p. 1449-1457. IF:4,424. Q1.

Salinas AS, García DC, Martínez C, Picazo MG, Giménez JM, Flores AB, Díaz Á. Clinical value of perioperative levels of DNA and mRNA in plasma of patients with renal cell carcinoma. *Transl. Oncol.* 2021. 14. (2):p. 100999-100999. IF:4,243. Q2.

Tur J, Garcia DC, Puy S, Muriel P, Protti GP, Boldo A, Gallardo MA, Bazaga S, Perez M, Olsina JJ. A new minimally invasive porcine model for the study of intrahepatic bile duct dilatation. *Surg. Endosc.* 2021. 35. (6):p. 2817-2822. IF:4,584. Q1.

Research team

Group leader

Jorge J. Olsina Kissler

Principal investigator

Alfredo Escartin Arias

Researchers

Carlos A Rombolá

Mari Cruz De La Fuente Juarez

Fernando Herrerias Gonzalez

Nuria Mestres Petit

Pablo Muriel Alvarez

Maria Teresa Santamaria Gomez

Yolanda Maestre Gonzalez

Lucia Milla Collado

Cristina Gas Ruiz

Jordi Escolí Rufino

Maria Carmen Mias Carballal

Antonio Montero Matamala

Maria Rufas Acin

Rafael Villalobos Mori

Mireia Merichal Resina

PhD student

Fulthon Frank Vela Polanco

Laboratories

HUAV

973 705 298

Email

jjolsina.lleida.ics@gencat.cat



2.2. Research group in immunology and metabolism (GRIM)

The Research Group in Immunology and Metabolism (GRIM) is subdivided into 2 nodes that represent the basic and clinical research of the group.

• Basic node: Immunology and Immunopathology Group (GRIIP)

The GRIIP is the basic research node of the Research Group in Immunology and Metabolism (GRIM). The group of the University of Lleida (UdL) and the Institute of Biomedical Research of Lleida (IRBLleida) is currently constituted by two Principal Investigators, Joan Verdaguer and Concepció Mora, and their respective research units. Both investigators have a long history as leading researchers in R & D for more than a decade and a half in the field of immunology and autoimmunity. Both researchers are members of the same research group recognized by the Generalitat (SGR) of the UdL and IRBLleida since its inception.

The research objective of the group is the study of the mechanisms of loss of immunological tolerance in autoimmune endocrine diseases, and more specifically in Type 1 Diabetes (T1D), and in the study of tools for the diagnosis and treatment of these diseases. The group also aims to lay the foundations on a future immunotherapy of T1D and other endocrinopathies of autoimmune origin, through participation and collaboration with different research and care groups.

• Clinical node: Obesity, Diabetes and Metabolism Research Group (ODIM)

The ODIM is the clinical research node of the Immunology and Metabolism Research Group (GRIM). The main lines of research of the Group are organized around 4 main branches:

- Morbid obesity and its comorbidities, with great interest in the development of personalized medicine, based on:
 - The genetic propensity to develop comorbidities such as non-alcoholic fatty liver, apnea syndrom or type 2 diabetes mellitus.
 - The ability to predict comorbidity resolution and weight loss after bariatric surgery.
 - The study of cellular and molecular signaling mechanisms involved in the cellular response to insulin, initially focused on the characterization of PKRN1 phosphokinase.
- Deepen the study of cardiovascular disease in the “other” diabetes: diabetes mellitus type 1, diabetes type LADA, and monogenic diabetes.
- Confirmation that the lung is the target organ of late complications of type 2 diabetes mellitus.

Publications

Ballesteros MD, Vilarrasa N, Rubio MÁ, Barahona MJ, Bueno M, Caixàs A, Cañañas A, Ciudin A, Cordido F, de Hollanda A, Diaz MJ, Flores L, García PP, García Pérez F, Goday A, Lecube A, López JJ, Miñambres I, Morales MJ, Morinigo R, Nicolau J, Pellitero S, Salvador J, Valdés S, Bretón I. The SEEN comprehensive clinical survey of adult obesity: Executive summary. *Endocrinol. Diabetes Nutr. 2021. 68. (2):p. 130-136.*

Bermúdez M, Martínez M, Castro E, Betriu À, Cambray S, Farràs C, Barbé F, Pamplona R, Lecube A, Mauricio D, Purroy F, Valdivielso JM, Fernández E, ILERVAS C. Subclinical atheromatosis localization and burden in a low-to-moderate cardiovascular risk population: the ILERVAS study. *Rev Esp Cardiol (engl Ed). 2021. 74. (12):p. 1042-1053. IF:4,596. Q1.*

Bonet M, Vázquez S, García E, Visus M, Jové D, Ripol O, Solé C, Gutiérrez L, Morales JL, Montero Á, Algara M, Arenas M, Mira M. Saving time in the radiotherapy procedures for COVID-19 pneumonia treatment. A single-institution experience. *Clin. Transl. Oncol. 2021. 23. (11):p. 1-6. IF:3,405. Q3.*

Bretón I, de Hollanda A, Vilarrasa N, Rubio MA, Lecube A, Salvador J, García PP, Tinahones FJ, Sánchez R, Gómez R, Carretero J, Moizé V, Polo J, Tranche S, Fernández A, Escalada J. Obesity and COVID-19. A necessary position statement. *Endocrinol. Diabetes Nutr. 2021. 68. (8):p. 573-576. IF:1,417. Q4.*

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Cambras T, Romero O, Díez A, Lecube A, Sampol G. Circadian Patterns of Patients with Type 2 Diabetes and Obstructive Sleep Apnea. *J Clin Med. 2021. 10. (2):p. 1-11. IF:4,241. Q1.*

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Research team

Group leaders

Albert Lecube Torelló
Joan Verdaguer Autonell
Concepción Mora Giral

Researchers

Carolina López Cano
Lorena Gómez Calvo
Liliana Patricia Gutierrez Carrasquilla
Marta Bueno Díez
Maria Dolores Santos Rey
Ferran Rius Riu
Marta Hernández García
Enric Sanchez Peña

PhD students

Júlia Luna Salinas
Marta Corral Pujol

Management technician

Anna Hernandez Ribalta

Laboratories

Biomedicine II 2nd floor
Laboratory ground floor. Lab b0.5.
973 702 958
973 705 240

Email

joan.verdaguer@udl.cat
conchi.mora@udl.cat
alecube.lleida.ics@gencat.cat



2.2. Research group in immunology and metabolism (GRIM)

Ciudin A, Fidilio E, Gutiérrez L, Caixas A, Vilarrasa N, Pellitero S, Simó A, Vila-llonga R, Ruiz A, de la Fuente M, Luna A, Sánchez E, Rigla M, Hernández C, Salas E, Simó R, Lecube A. A Clinical-Genetic Score for Predicting Weight Loss after Bariatric Surgery: The OBEGEN Study. *J. Pers. Med.* 2021. 11. (10):1040. IF:4,945. Q1.

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Hernandez M, Mauricio D. Latent Autoimmune Diabetes in Adults: A Review of Clinically Relevant Issues. *Adv.Exp.Med.Biol.* 2021. 1307. p. 29-41. IF:2,622. Q2.

Lecube A, Ciudin A. A long and stony road to the correct treatment of obesity. *Med. Clin.* 2021. 157. (4):p. 176-177. IF:1,725. Q3.

Purroy F, Sánchez E, Lecube A, Arqué G, Vicente M, Mauri G, Torreguitart N, Hernández M, Barbé F, Fernández E, Pamplona R, Farràs C, Mauricio D, Bermúdez M. Prevalence and Predictors of Cerebral Microangiopathy Determined by Pulsatility Index in an Asymptomatic Population From the ILERVAS Project. *Front. Neurol.* 2021. 12. p. 785640-785640. IF:4,003. Q2.

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mation in the NOD Mouse Model. *Front. Immunol.* 2021. 12. p. 634797-634797. IF:7,561. Q1.

Sánchez E, Lecube A, Bellido D, Monereo S, Malagón MM, Tinahones FJ, On Behalf Of The Spanish Society For The Study Of O. Leading Factors for Weight Gain during COVID-19 Lockdown in a Spanish Population: A Cross-Sectional Study. *Nutrients.* 2021. 13. (3):p. 1-12. IF:5,717. Q1.

Sánchez E, Santos MD, Nuñez M, Bueno M, Sajoux I, Yeramian A, Lecube A. Randomized Clinical Trial to Evaluate the Morphological Changes in the Adventitial Vasa Vasorum Density and Biological Markers of Endothelial Dysfunction in Subjects with Moderate Obesity Undergoing a Very Low-Calorie Ketogenic Diet. *Nutrients.* 2021. 14. (1):33. IF:5,717. Q1.

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Toledano Y, Flores L, Montes de Oca G, González A, García JC, Mora C, Saavedra NA, Gudiño M, González LC, Lacleste JP, Carrero JC. Toxicological Evaluations in Macrophages and Mice Acutely and Chronically Exposed to Halloysite Clay Nanotubes Functionalized with Polystyrene. *ACS Omega.* 2021. 6. (44):p. 29882-29892. IF:3,512. Q2.

Vilarrasa N, San Jose P, Rubio MA, Lecube A. Obesity in Patients with Type 1 Diabetes: Links, Risks and Management Challenges. *Diabetes Metab. Syndr. Obes.* 2021. 14. p. 2807-2827. IF:3,168. Q3.

Zhang RH, Cai YH, Shu LP, Yang JK, Qi L, Han M, Zhou JB, Simo R, Lecube A. Bidirectional relationship between diabetes and pulmonary function: a systematic review and meta-analysis. *Diabetes Metab.* 2021. 47. (5):p. 101186-101186. IF:6,041. Q1.

Zhang RH, Zhou JB, Cai YH, Shu LP, Yang JK, Wei WB, Lecube A. Non-linear association of anthropometric measurements and pulmonary function. *Sci Rep.* 2021. 11. (1):p. 14596-14596. IF:4,379. Q1.



2.2. Research group in immunology and metabolism (GRIM)

Funded grants in 2021

PI	Funding agency	Project	Budget (€)
Lecube Torelló, Albert	Instituto de Salud Carlos III (ISCIII)	¿Conocer la predisposicin genetica del paciente con obesidad ayuda a mejorar la eficacia de la cirugía bariátrica?	153.670
Lopez Cano, Carolina	Instituto de Salud Carlos III (ISCIII)	El efecto de la diabetes mellitus tipo 2 y la obesidad sobre la crono-disrupción. La hipoxia nocturna como nexos de unión.	62.920
Lecube Torelló, Albert	Diputació de Lleida	Comprendiendo mejor la interacción entre los mecanismos etiopatogénicos de la obsidad: Hacia un modelo predictivode base genética.	50.000

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Lecube Torelló, Albert	Instituto de Salud Carlos III (ISCIII)	Utilidad del estudio genético como predictor de respuesta a la cirugía bariátrica: estudio de cohortes y mecanismos implicados (Estudio GENOBS)	202.070
Lecube Torelló, Albert	Sociedad Española de Endocrinología Y Nutrición	Impacto de la composición corporal en la prevalencia, gravedad, propagación y pérdida de inmunidad en la infección por COVID-19	5.000



2.3. Vascular and renal translational research group

Vascular and Renal Translational Research (VRTR) Group from the IRBLleida is a multidisciplinary group with basic and clinical scientists working in an integrated environment. The main focus of our research group is the identification of factors involved in the progression of chronic kidney disease (CKD) and cardiovascular complications in CKD from the basic/translational and the clinical point of view. Through an array of diverse experimental approaches that include molecular biology, biochemistry, in vivo animal models of disease and state-of-the-art vascular imaging techniques, scientists of VRTR group join their efforts in solving challenging scientific problems.

VRTR group has stable collaborations with several renal divisions around Spain, as we are members of the Spanish Network for Renal Diseases (REDinREN IS-CIII) funded by the Spanish Government. VRTR group has been successfully leading the NEFRONA and ILERVAS project, with main objective in investigating vascular disease and hidden kidney disease. VRTR group holds collaborations with various international research groups in the USA, Canada, Netherlands, Italy and France. Researchers from the VRTR group are actively involved in several national and international EU-funded consortia.

The main research lines of the Vascular and Renal Translational Research Group are:

- Identification of molecular mechanisms involved in the progression of chronic kidney disease.
- Factors involved in glomerular diseases
- Identification of factors involved in the acceleration of atherosclerosis and vascular calcification in chronic kidney disease.
- Factors involved in the disruption of mineral homeostasis in chronic kidney disease.
- Vitamin D receptor in health and disease.

Publications

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Research team

Group leader

Jose Manuel Valdivielso Revilla

Principal investigators

Alfons Segarra Medrano
Milica Bozic

Researchers

Juan Miguel Diaz Tocados
Eva Castro Boque
Cristina Martinez Martinez
Elias Jatem Escalante
Nuria Dolade Masot
Maria Molina Gomez
Minerva Granado Casas
Marcelino Bermudez Lopez
Marisa Martin Conde
Lourdes Craver Hospital
Jordi Roig Carcel
Maria Paz Marco Mayayo
Jose Felipe Sarro Sobrin

PhD students

Juan Diego Dominguez Coral
Auria Eritja Sanjuan
Aurora Pérez Gómez
Maite Caus Enriquez

Research technicians

Manuel Marti Antonio
Ana Maria Martinez Bardaji
Alicia Garcia Carrasco
M Teresa Vidal Balleste
M Elisabet Samsó Piñol
Virtudes Maria De Lamo

Laboratories

Biomedicine I 1st floor Lab b1.10
973 702 479

Email

valdivielso@irblleida.cat



2.3. Vascular and renal translational research group

Castelblanco E, Sarrias MR, Betriu À, Soldevila B, Barranco M, Franch J, Valdivielso JM, Bermudez M, Groop PH, Fernández E, Alonso N, Mauricio D. Circulating CD5L is associated with cardiovascular events and all-cause mortality in individuals with chronic kidney disease. *Aging-US*. 2021. 13. (undefined):p. 22690-22709. IF:5,682. Q1.

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2.3. Vascular and renal translational research group

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2.3. Vascular and renal translational research group

Funded grants in 2021

PI	Funding agency	Project	Budget (€)
Bozic, Milica	Instituto de Salud Carlos III (ISCIII)	Descifrando el papel de SNCA en la regulación de la autofagia y el daño renal: implicaciones mecánicas, terapéuticas y pronósticas.	123.420
Martinez Martinez, Cristina	Instituto de Salud Carlos III (ISCIII)	Interacción entre huésped-microbiota y defectos en la integridad de la mucosa intestinal implicados en el origen del daño glomerular en el síndrome nefrótico idiopático.	84.700
Valdivielso Revilla, Jose Manuel	Instituto de Salud Carlos III (ISCIII)	Papel de PTEN en la reabsorción tubular renal de proteínas. Implicaciones en nefropatías proteinúricas.	165.770
Diaz Tocados, Juan Miguel	FUNDACION SENEFRO	Papel de la Fosfatasa PTEN en el Desarrollo de las Alteraciones Óseas Asociadas a la Enfermedad Renal Crónica y la Regulación de la Síntesis Osteocítica de FGF23 y Esclerostina.	24.000

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Bermudez Lopez, Marcelino	Institut de Recerca Biomèdica de Lleida (IRBLleida)	Desarrollo y caracterización de un modelo de aterosclerosis acelerada por insuficiencia renal crónica porcina mediante nefrectomía laparoscópica.	79.740
Bozic, Milica	Instituto de Salud Carlos III (ISCIII)	Papel del receptor NMDA en el daño renal inducido por hiperlipidemia. Estudio de los mecanismos moleculares y posibles implicaciones terapéuticas.	50.820
Segarra Medrano, Alfons	Instituto de Salud Carlos III (ISCIII)	Relación entre glicofomas de IgA1 e IgA2, actividad clínica y activación del complemento en la nefropatía IgA.	56.870
Valdivielso Revilla, Jose Manuel	FUNDACIÓN SENEFRO	Identifying predictors of cardiovascular events in chronic kidney disease. A cohorts substudy within the nefrona study.	24.000
Valdivielso Revilla, Jose Manuel	Instituto de Salud Carlos III (ISCIII)	Papel de la vía PI3K/AKT/mTOR en la regulación de las alteraciones del metabolismo mineral en la enfermedad renal crónica. Implicaciones en la regulación de la síntesis de FGF23.	212.052
Valdivielso Revilla, Jose Manuel	Instituto de Salud Carlos III (ISCIII)	Red de investigación Renal: REDINREN.	118.673



2.4. Translational research in respiratory medicine group

The group consists of basic, clinical and epidemiological researchers, who work at the Lleida Biomedical Research Institute (IRBLleida), a collaborating center of the University of Lleida. The principal investigator is Ferran Barbé Illa.

Since 2008, the TRRM group has belonged to the Diseases Network Research Centre (CIBERes) platform, as Group 35. Group 35 is currently one of the leading exponents of the Spanish Sleep Network of the Spanish Pneumology and Thoracic Surgery Society (SEPAR). We work alongside researchers from many specialties in order to approach the study of the pathophysiology of obstructive sleep apnea syndrome (OSA) and its consequences. The research excellence of the TRRM group has been recognized internationally.

Publications

Bermúdez M, Martínez M, Castro E, Betriu À, Cambray S, Farràs C, Barbé F, Pamplona R, Lecube A, Mauricio D, Purroy F, Valdivielso JM, Fernández E, ILERVAS C. Subclinical atheromatosis localization and burden in a low-to-moderate cardiovascular risk population: the ILERVAS study. *Rev Esp Cardiol (engl Ed)*. 2021. 74. (12):p. 1042-1053. IF:4,596. Q1.

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de Batlle J, Bertran S, Turino C, Escarrabill J, Dalmases M, García A, Sapiña E, Martínez E, Sánchez M, Barbé F. Longitudinal Analysis of Causes of Mortality in CPAP-treated Patients at the Population Level. *Ann Am Thorac Soc*. 2021. 18. (8):p. 1390-1396. IF:6,831. Q1.

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Research team

Group leader
Ferran Barbé Illa

Principal investigators
David De Gonzalo Calvo
Jordi De Batlle Garcia

Researchers
José Javier Vengoechea Aragoncillo
Silvia Barril Farre
Jessica Gonzalez Gutierrez
Mireia Masip Jiménez-Ortiz
Dinora Polanco Alonso
Albina Aldoma Balasch
Paola Carmona Arias
Anunciació Cortijo Fernández
Silvia Gómez Falguera
Lidia Pascual Arnó
Adriano Targa Dias Santos
Rosa Encarnació Plana Bolba

PhD students
Thalía Belmonte García
Maria Coronada García Hidalgo
Marta Molinero García
Lucía Pinilla Latorre

Management Technicians
Maricel Arbonés Tomás
Silvia Ortega Alcántara

Research technicians
Rosa Mediano San Andres
Clara Gort Paniello
Esther Gracia Lavedan
Maria Arguimbau Angalda
Rafaela Vaca Molina
Olga Minguez Roure
Anna Moncusi Moix
Fatima Rodríguez Jara

External contributor
M. Jesús Muniesa Royo



2.4. Translational research in respiratory medicine group

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Laboratories

Laboratory ground floor. Lab b0.3
973 705 372

Email

febarbe.ileida.ics@gencat.cat



2.4. Translational research in respiratory medicine group

Navarro C, Torres G, Barbé F, Sánchez M, Mañas P, Lloberes P, Cambries TD, Somoza M, Masa JF, González M, Mañas E, de la Peña M, García F, Montserrat JM, Muriel A, Oscullo G, García A, Posadas T, Campos F, Martínez MÁ, on behalf the Spanish Sleep N. The HIPARCO-2 study: long-term effect of continuous positive airway pressure on blood pressure in patients with resistant hypertension: a multicenter prospective study. *J. Hypertens.* 2021. 39. (2):p. 302-309. IF:4,844. Q2.

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Funded grants in 2021

PI	Funding agency	Project	Budget (€)
Targa Dias Santos, Adriano	Diputació de Lleida	Comprendiendo mejor la interacción entre los mecanismos etiopatogénicos de la obesidad: Hacia un modelo predictivo de base genética.	50.000
de Gonzalo Calvo, David	Fundacio La Marato de TV3	A systems biology approach to understand COVID-19 physiopathology and predict its outcome (SYSTEMS-BIO COVID) (2021-046-1)	160.007
de Batlle Garcia, Jordi	Instituto de Salud Carlos III (ISCIII)	Big Data para la predicción del riesgo de complicaciones durante y después del ingreso en pacientes crónicos con monitorización intensiva en las primeras 24h de ingreso.	121.000



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Funded grants in 2021

PI	Funding agency	Project	Budget (€)
de Batlle Garcia, Jordi	Sociedad Española de Neumología Y Cirugía Torácica (SEPAR)	Estudio mediante técnicas Big Data de las causas de mortalidad en toda la población diagnosticada de Síndrome de Apneas-Hipoapneas del Sueño en tratamiento con CPAP en Cataluña.	9.000
de Batlle Garcia, Jordi	Sociedad Española del Sueño (SES)	Análisis Big Data de toda la población tratada con CPAP en Cataluña.	10.000
de Gonzalo Calvo, David	Fundación Francisco Soria Melguizo	Huella molecular de los fenotipos clínicos del síndrome post covid-19: estudio post-feno-covid. Estudio POST-FENO-COVID. FUNDACIÓ SORIA MELGUIZO	100.000

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Barbé Illa, Ferran	Instituto de Salud Carlos III (ISCIII)	Clinical Impact of Obstructive Sleep Apnea Syndrome in Patients with Resistant Hypertension: SARAH Study	160.022
de Batlle Garcia, Jordi	Instituto de Salud Carlos III (ISCIII)	Análisis con técnicas Big Data de toda la población diagnosticada de Síndrome de Apneas-Hipoapneas del Sueño en tratamiento con CPAP en Cataluña	37.510
de Gonzalo Calvo, David	Instituto de Salud Carlos III (ISCIII)	Transcriptómica y machine learning para asistir en la toma de decisiones clínicas en pacientes con sospecha de apnea obstructiva del sueño	147.620



2.5. Research group of health care (GRECS)

The group is formed mainly by nurses and physiotherapists both from clinical practice (Santa Maria University Hospital, Arnau de Vilanova University Hospital and Primary Care) and teaching (Faculty of Nursing and Physiotherapy of University of Lleida). His main areas of research are active and healthy aging, Social Determinants of Health and Health Services. GRECS participates in several projects in Spain, Europe and worldwide.

Thanks to its potential, the GRECS has established a stable collaboration with the Nursing and Healthcare Research Unit (Investén-isciii), focused on the Best Practices Spotlight Organizations (BPSO), funded by the Ministry of Health and Long-Term Care of the Government of Ontario and the Instituto de Salud Carlos III, under the Ministry of Economy and Finance of Spain. As part of the Spanish Collaborating Center of the Joanna Briggs Institute, the group is involved in the implementation of Evidence Based Nursing Practice in a number of clinical settings, through an agreement signed between the Instituto de Salud Carlos III (Unidad de Investigación en Enfermería y Asistencia Sanitaria: Investén-isciii) and the Spanish Regional Health Systems.

Publications

Acea L, Del Mar Pastor M, Rubinat E, Bellon F, Blanco J, Gea M, Briones E. Burnout and job satisfaction among nurses of three Spanish regions. *J. Nurs. Manag.* 2021. 29. (7):p. 2208-2215. IF:3,325. D1.

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Research team

Group leaders

Esther Rubinat Arnaldo
Joan Blanco Blanco

Principal investigators

Francesc Valenzuela Pascual
Helena Fernandez Lago
Erica Tula Briones Vozmediano

Researchers

Carmen Nuin Orrio
Montserrat Gea Sanchez
Lorena Lourdes Tejero Vidal
Maria Masbernat Almenara
Jose Tomas Mateos Garcia
Josep M Gutierrez Vilaplana
Cristina Bravo Navarro
Merce Serra Miralles
Olga Masot Ariño
Francesc Josep Rubí Carnacea
Joan Enric Torra Bou
M^a Jesus Torrelles I Pijuan
M^a Angels Costa Menen
Sandra Hervas Marco
Jessica Miranda Iglesias
Mariona Rocaspana Garcia
Sílvia Solé Casas
Anna Espart Herrero
M Jose Sanmartin Bardaji
Miquel Àngel Calderó Solé
Maria Ferrer Gil
Maria Dolores Gomez Garcia
Judith Roca Llobet
Alexandra Pascual Garcia
Jordi Balleste Torralba
Teresa Botigue Satorra
Carlos Casanova Gonzalvo
María Ángeles Elez Martinez
Miguel Angel Escobar Bravo
Edith Garcia Solanes
M^a Luisa Guitard Sein-Echaluze
Ana Lavedan Santamaria



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Laza C, Castano PA, Sinisterra JP, Gea M, Briones E. Caring for children with Zika congenital syndrome in Colombia: Consequences for women's lives. *Aten Primaria*. 2021. 53. (3):p. 101972-101972. IF:1,137. Q4.

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Luis Mambona Giron
Jose Maria Martinez Barriuso
Jordi Martinez Soldevila
Eva Barallat Gimeno
Mariana Loezar Hernández
Laura Martinez Rodriguez

PhD students

Pere Bosch Barcelo
Rabie Adel Abdel-Kareem El Arab
Ester Garcia Martinez
Oriol Martínez Navarro
Filip Bellon
Carolina Climent Sanz
Celmira Laza Vasquez.

Research technician
Roland Pastells Peiro

Laboratories

Biomedicine II 2nd floor
973 702 457

Email

joan.blanco@udl.cat
esther.rubinat@udl.cat



2.5. Research group of health care (GRECS)

Funded grants in 2021

PI	Funding agency	Project	Budget (€)
Mateos Garcia, Jose Tomas	Departament de Salut - Generalitat de Catalunya	Projecte campanya agrària	149.795

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Briones Vozmediano, Erica Tula	Instituto de Salud Carlos III (ISCIII)	Trabajo agrícola y migración en España: Precariedad Sociolaboral y Salud (PSLyS)	51.425
Fernandez Lago, Helena	Instituto de Salud Carlos III (ISCIII)	Efectos de la combinación del tapiz rodante en un entorno virtual gamificado con la estimulación cerebral no invasiva en la enfermedad de Parkinson: ensayo clínico aleatorizado.	62.920
Rubinat Arnaldo, Esther	European Commission	NextPerception - Next generation smart perception sensors and distributed intelligence for proactive human monitoring in health, wellbeing, and automotive systems	8.801
Rubinat Arnaldo, Esther	Instituto de Salud Carlos III (ISCIII)	La salud circadiana en pacientes ingresados en unidades de cuidados intensivos y de hospitalización (CHRONOHOSPI)	33.880
Valenzuela Pascual, Francesc	European Commission	MOORE4MEDICAL - Project Consortium Agreement for Research, Development and Innovation Actions	121.056



2.6. Precision medicine in chronic diseases group

The Group of precision medicine in chronic diseases is a multidisciplinary group that integrates different professional profiles for development of translational research. Our main research lines are focused on the personalized management of patients with chronic diseases. The aim of the group is to understand the physiopathological components of the chronic diseases, in order to; i) achieve an accurate classification of the patients, ii) to develop non-pharmacological strategies and precision medicine tools to promote disease prevention, treatment and management, iii) contribute of sustainability of health and care systems in chronic diseases, iv) to create mHealth platforms for clinical monitoring, telemedicine and personalized follow-up

The main line of investigation combines basic, clinical and translational research:

- Animal models of intermittent hypoxia.
- Molecular profile of cardiovascular risk in patients with Obstructive Sleep Apnea.
- Precision Medicine in Obstructive Sleep Apnea

Publications

Castro AL, Suarez M, Benitez I, Tecchia L, Torres M, Almendros I, Farre R, Targa A, Montserrat JM, Dalmasas M, Barbé F, Gozal D, Sánchez M. The effect of chronic intermittent hypoxia in cardiovascular gene expression is modulated by age in a mice model of sleep apnea. *Sleep*. 2021. 44. (6):zsaa293. IF:5,849. Q1.

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Dakterzada F, David I, Targa A, Lladó A, Torres G, Romero L, de Gonzalo D, Moncusí A, Tort A, Huerto R, Sánchez M, Barbé F, Piñol G. Reduced Levels of miR-342-5p in Plasma Are Associated With Worse Cognitive Evolution in Patients With Mild Alzheimer's Disease. *Front. Aging Neurosci*. 2021. 13. p. 705989-705989. IF:5,750. Q1.

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de Batlle J, Massip M, Vargiu E, Nadal N, Fuentes A, Bravo MO, Miralles F, Barbé F, Torres G. Implementing Mobile Health-Enabled Integrated Care for Complex Chronic Patients: Intervention Effectiveness and Cost-Effectiveness Study. *JMIR mHealth uHealth*. 2021. 9. (1):e22135. IF:4,773. Q1.

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González J, Moncusí A, Benitez ID, Santistevé S, Monge A, Fontiveros MA, Carmona P, Torres G, Barbé F, de Batlle J. Clinical consequences of COVID-19 lockdown in patients with COPD: results of a pre-post study in Spain. *CHEST*. 2021. 160. (1):p. 135-138. IF:9,410. D1.

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Research team

Group leader
Manuel Sánchez De La Torre

Principal investigators
Mireia Dalmasas Cleries
Gerard Torres Cortada

Researcher
Ivan Benitez Iglesias

PhD students
Lucía Pinilla Latorre
Andrea Zapater Matute

Laboratories

Biomedicine 3rd Floor
973 702 216



Email
manuel.sanchez@udl.cat



2.6. Precision medicine in chronic diseases group

McEvoy RD, Sanchez M, Peker Y, Anderson CS, Redline S, Barbe F. Randomized clinical trials of cardiovascular disease in obstructive sleep apnea: understanding and overcoming bias. *Sleep*. 2021. 44. (4):zsab019. IF:5,849. Q1.

Muniesa MJ, Benitez I, Ezpeleta J, Sánchez de la Torre M, Pazos M, Milla E, Barbe F. Effect of CPAP Therapy on 24-Hour Intraocular Pressure-Related Pattern From Contact Lens Sensors in Obstructive Sleep Apnea Syndrome. *Transl. Vis. Sci. Technol.* 2021. 10. (4):p. 10-10. IF:3,283. Q2.

Navarro C, Martínez MA, Torres G, Barbé F, Sánchez M, Caballero C, Lloberes P, Cambriles TD, Somoza M, Masa JF, González M, Mañas E, de la Peña M, García F, Montserrat JM, Muriel A, Oscullo G, García A, Posadas T, Campos F. Long-term Effect of CPAP Treatment on Cardiovascular Events in Patients With Resistant Hypertension and Sleep Apnea. Data From the HIPARCO-2 Study. *Arch Bronconeumol.* 2021. 57. (3):p. 165-171. IF:4,872. Q2.

Navarro C, Torres G, Barbé F, Sánchez M, Mañas P, Lloberes P, Cambriles TD, Somoza M, Masa JF, González M, Mañas E, de la Peña M, García F, Montserrat JM, Muriel A, Oscullo G, García A, Posadas T, Campos F, Martínez MÁ, on behalf the Spanish Sleep N. The HIPARCO-2 study: long-term effect of continuous positive airway pressure on blood pressure in patients with resistant hypertension: a multicenter prospective study. *J. Hypertens.* 2021. 39. (2):p. 302-309. IF:4,844. Q2.

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Pinilla L, Santamaria F, Benítez ID, Zapater A, Targa A, Mediano O, Masa JF, Masdeu MJ, Minguez O, Aguilà M, Barbé F, Sánchez M. Association of Obstructive Sleep Apnea with the Aging Process. *Ann Am Thorac Soc.* 2021. 18. (9):p. 1540-1547. IF:6,831. Q1.

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Sánchez M, Sánchez E, Bermúdez M, Torres G, Farràs C, Pamplona R, Castro E, Valdivielso JM, Purroy F, Martínez M, Godoy P, Mauricio D, Fernández E, Hernández M, Rius F, Lecube A, On Behalf Of The Ilervas Project C. Clinical Usefulness of Anthropometric Indices to Predict the Presence of Prediabetes. Data from the ILERVAS Cohort. *Nutrients.* 2021. 13. (3):p. 1-15. IF:5,717. Q1.

Santamaria F, Benitez I, Pinilla L, Ortega F, Zapater A, Giron C, Minguez O, Gomez S, Vaca R, Fernandez JM, Barbe F, Sanchez M. MicroRNA Profile of Cardiovascular Risk in Patients with Obstructive Sleep Apnea. *Respiration.* 2021. 99. (12):p. 1-7. IF:3,580. Q2.

Sapiña E, Gracia E, Torres G, Gaeta AM, Paredes J, Mayoral A, Fernández E, Bermúdez M, Valdivielso JM, Farràs C, Pamplona R, Lecube A, de Batlle J, Barbé F, Dalmases M, ILERVAS G. Prevalence of Obstructive Sleep Apnoea and Its Association With Atherosclerotic Plaques in a Cohort of Subjects With Mild-Moderate Cardiovascular Risk. *Arch Bronconeumol.* 2021. IF:4,872. Q2.

Targa A, Benítez ID, Dakterzada F, Carnes A, Pujol M, Jorge C, Minguez O, Dalmases M, Sánchez M, Barbé F, Piñol G. Sleep profile predicts the cognitive decline of mild-moderate Alzheimer's disease patients. *Sleep*. 2021. 44. (10):zsab117. IF:5,849. Q1.

Targa A, Benítez ID, Dakterzada F, Fontenele J, Minguez O, Zetterberg H, Blennow K, Barbé F, Piñol G. The circadian rest-activity pattern predicts cognitive decline among mild-moderate Alzheimer's disease patients. *Alzheimers Res. Ther.* 2021. 13. (1):p. 161-161. IF:6,982. Q1.

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2.6. Precision medicine in chronic diseases group

Turino C, Benítez ID, Rafael X, Mayoral A, Lopera A, Pascual L, Vaca R, Cortijo A, Moncusí A, Dalmases M, Vargiu E, Blanco J, Barbé F, de Batlle J. Management and Treatment of Patients With Obstructive Sleep Apnea Using an Intelligent Monitoring System Based on Machine Learning Aiming to Improve Continuous Positive Airway Pressure Treatment Compliance: Randomized Controlled Trial. *J Med Internet Res.* 2021. 23. (10):e24072. IF:5,428. D1.

Zapater A, Santamaria F, Targa A, Pinilla L, Sanchez A, Benitez ID, Martinez MA, Barbe F, Sanchez M. Canonical Pathways Associated with Blood Pressure Response to Sleep Apnea Treatment: A Post Hoc Analysis. *Respiration.* 2021. 100. (4):p. 1-10. IF:3,580. Q2.

Zuil M, Barbe F, Dalmases M. OSA and CPAP in Older Patients-When to Treat?. *Curr. Sleep Med. Rep.* 2021. 7. (3):p. 97-104. Q2.

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Funded grants in 2021

PI	Funding agency	Project	Budget (€)
Sánchez De La Torre, Manuel	Instituto de Salud Carlos III (ISCIII)	Caracterización de los mecanismos del daño vascular inducido por la apnea del sueño en la hipertensión nocturna y posibles dianas terapéuticas. Estudio HYPERSLEEP.	275.275

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Sánchez De La Torre, Manuel	Instituto de Salud Carlos III (ISCIII)	Medicina de precisión en pacientes con apnea del sueño y síndrome coronario agudo: Modelo predictivo de respuesta al tratamiento	85.412

Area 3. Epidemiology infectious diseases and public health

Area coordinator: Dr. Oriol Yuguero Torres

In this area we want to respond to epidemiological challenges with clinical and basic researchers. We combine our research to see the impact on public health and the environment around us of all the pathologies we attend in our care centers.

Groups

- 3.1 Applied epidemiology
- 3.2 Genetics of complex diseases
- 3.3 Intensive medicine
- 3.4 Urgency and emergency multi-disciplinary research group
- 3.5 Indicators and specifications of the quality in the clinical laboratory
- 3.6 Translational research group on infectious diseases of Lleida
- 3.7 The pharmacoepidemiology and pharmacodynamics





3.1. Applied epidemiology

This is a multidisciplinary group set up by doctors specializing in preventive medicine and public health and specialists in family and community medicine that research the applications of epidemiology in the study of epidemic outbreaks, the investigation of risk factors for transmissible diseases, the estimation of coverage of periodic preventive activities in primary health care and pharmacoepidemiology. The main lines of research are the investigation of epidemic outbreaks for Norovirus, factors for HIV infection in immigrants, risk factors for tuberculous infection in contacts with patients and vaccines and international travel.

Publications

Baena JMG, Vall IC, Zielonka M, Mora JRM, Godoy P, Diz FW. Risk factors and comorbidities associated with severe aortic stenosis: a case-control study. *Rev. Clin. Esp.* 2021. 221. (5):p. 249-257. IF:1,556. Q3.

Bonet M, Villarte L, Barbé E, Godoy P. Sintomatología inicial de la infección por SARS-CoV-2 en el personal sanitario: ¿qué hemos aprendido?. *Aten Primaria.* 2021. 53. (2):p. 101960-101960. IF:1,137. Q4.

Castan MT, Godoy P, Bertran S, Montserrat J, Ortega M. Incidencia de exacerbación grave en pacientes codiagnosticados de diabetes y enfermedad pulmonar obstructiva crónica: estudio de cohorte. *Aten Primaria.* 2021. 53. (8):p. 102074-102074. IF:1,137. Q4.

Colomina J, Drudis R, Torra M, Pallisó F, Massip M, Vargiu E, Nadal N, Fuentes A, Ortega M, Miralles F, Barbé F, Torres G, de Batlle J, CONNECARE G. Implementing mHealth-Enabled Integrated Care for Complex Chronic Patients With Osteoarthritis Undergoing Primary Hip or Knee Arthroplasty: Prospective, Two-Arm, Parallel Trial. *J Med Internet Res.* 2021. 23. (9):e28320. IF:5,428. D1.

de Batlle J, Massip M, Vargiu E, Nadal N, Fuentes A, Bravo MO, Miralles F, Barbé F, Torres G. Implementing Mobile Health-Enabled Integrated Care for Complex Chronic Patients: Intervention Effectiveness and Cost-Effectiveness Study. *JMIR mHealth uHealth.* 2021. 9. (1):e22135. IF:4,773. Q1.

Florensa D, Godoy P, Mateo J, Solsona F, Pedrol T, Mesas M, Pinol R. The Use of Multiple Correspondence Analysis to Explore Associations Between Categories of Qualitative Variables and Cancer Incidence. *IEEE J. Biomed. Health Inform.*

2021. 25. (9):p. 3659-3667. IF:5,772. D1.

García Del Blanco B, Otaegui I, Rodríguez JF, Bayés A, Fernández E, Vilalta Del Olmo V, Carrillo X, Ibáñez B, Worner F, Casanova J, Pueo E, González JR, López J, Bardají A, Bonet G, Fuertes M, Rodríguez A, Ruiz M, Inserte J, Barba I, Gómez S, Martí G, Serra B, Bellera N, Ojeda M, Cuellar H, Valente F, Carmona MÁ, Miró E, Marsal JR, Sambola A, Lidón RM, Bañeras J, Elízaga J, Padilla F, Barrabés JA, Hausenloy DJ, Ferreira I, García D. Effect of COMBinAtion therapy with remote ischemic conditioning and exenatide on the Myocardial Infarct size: a two-by-two factorial randomized trial (COMBAT-MI). *Basic Res. Cardiol.* 2021. 116. (1):p. 4-4. IF:17,165. D1.

Godoy P. Guidelines on controlling latent tuberculosis infection to support tuberculosis elimination. *Rev Esp Sanid Penit.* 2021. 23. (1):p. 28-36.

Godoy P, Garcia M, Rius C, Muñoz C, Carmona G, Alsedà M, Jane M, Vidal MJ, Rodriguez R, Alvarez J, Camps N, Minguell S, Carol M, Sala MR, Castilla J, Domínguez À. Effectiveness of maternal pertussis vaccination in protecting newborn: A matched case-control study. *J. Infect.* 2021. 83. (5):p. 554-558. IF:6,072. Q1.

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Montserrat J, Marsal JR, Ortega M, Castañ MT, Alsedà M, Barbé F, Godoy P. Clinico-epidemiological characteristics of men and women with a new diagnosis of chronic obstructive pulmonary disease: a database (SIDIAP) study. *BMC Pulm. Med.* 2021. 21. (1):p. 44-44. IF:3,317. Q2.

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Research team

Group leader
Pere Godoy Garcia

Researchers
Marta Ortega Bravo
Josep Montserrat Capdevila
Miquel Alsedà Graells
Jesus Pujol Salud
Placido Santafe Soler
Maria Catalina Serna Arnaiz

PhD student
Cristina Garcia Serrano

External contributors
Josep Ramon Marsal Mora
Leonardo Galvan Santiago

Laboratories
HUAV

Email
pere.godoy@gencat.cat



3.1. Applied epidemiology

Sánchez M, Sánchez E, Bermúdez M, Torres G, Farràs C, Pamplona R, Castro E, Valdivielso JM, Purroy F, Martínez M, Godoy P, Mauricio D, Fernández E, Hernández M, Rius F, Lecube A, On Behalf Of The Ilervas Project C. Clinical Usefulness of Anthropometric Indices to Predict the Presence of Prediabetes. Data from the ILERVAS Cohort. *Nutrients*. 2021. 13. (3):p. 1-15. IF:5,717. Q1.

Yuguero O, Fernández JM, Vilela Á, Aramburu J, Laín R, Godoy P. Preliminary Results of a Screening Programme for Chlamydia in an Asymptomatic Young Population in Spain. *Front. Public Health*. 2021. 9. p. 615110-615110. IF:3,709. Q1.

Funded grants in 2021

PI	Funding agency	Project	Budget (€)
Godoy Garcia, Pere	Instituto de Salud Carlos III (ISCIII)	Factores asociados a la transmisión de SARS-CoV-2 en los convivientes de Cataluña y Navarra y efectividad de las vacunas y de las medidas no farmacológicas para reducir la transmisión.	76.230

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Godoy Garcia, Pere	Instituto de Salud Carlos III (ISCIII)	Incidencia y factores predictores de tuberculosis y del cumplimiento del tratamiento de la infección tuberculosa latente en una cohorte de expuestos a Mycobacterium tuberculo	62.920





3.2. Genetics of complex diseases

The group has been conducting research since January 1995 in the study of the genetic variability of the Vitamin D Receptor and its role in the susceptibility to HIV infection and the clinical progression of AIDS. The group currently coordinates an interdisciplinary research comprising by doctors and researchers from the Hospital Clínic de Barcelona, the University of Jaén and the University of Santiago de Compostela to study the role of the vitamin D receptor in HIV infection that causes AIDS. Following a strategy of “genes candidates” we are currently evaluating the role of allelic variants of different genes involved in the metabolism of vitamin D.

Publications

Acemel RD, Tena JJ, Gomez JL, Fibla J, Royo JL. Straightforward protocol for allele-specific chromatin conformation capture. *Gene*. 2021. 767. p. 145185-145185. IF:3,688. Q2.

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Research team

Group leader
Joan Fibla Palazon

Researcher
Ricard López Ortega

Laboratories

Biomedicine I 2nd floor
973 702 299

Email

joan.fibla@udl.cat

Funded grants in 2021

PI	Funding agency	Project	Budget (€)
Fibla Palazon, Joan	Diputació de Lleida	Caracterització de la diversitat genètica de les poblacions humanes de les comarques del Pirineu català - ajut 2020	19.800



3.3. Intensive medicine

The group's research is focused on improving safety in relation to the follow-up of patients with nosocomial infection, pulmonary disorders and/or artificial nutrition, as well as monitoring the quality of life of post-ICU patients, the assessment of the severity of the patients' conditions and the construction of models to predict outcome.

Publications

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Research team

Group leaders

Jesus Caballero Lopez
Jose Javier Trujillano Cabello

Principal investigator

Lluís Servià Goixart

Researchers

M Begoña Balsera Garrido
Sulamita Carvalho Brugger
Silvia Iglesias Moles
Mar Miralbes Torner
Josman Monclou Palomino
Dulce Angelica Morales Hernandez
Andres Pujol Freire
Jorge Rubio Ruiz
Estela Val Jordan
Montserrat Marta Vallverdu Vidal
Gabriel Jimenez Jimenez
Jose Javier Prados Chica
Neus Montserrat Ortiz
Judith Vilanova Corsellas
Mariona Badia Castello
Miguel Leon Valle
Silvia Rodriguez Ruiz

Laboratories

HUAV

973 702 406

973 705 245

Email

jcaballero.lleida.ics@gencat.cat

jjtrujillano.lleida.ics@gencat.cat



3.4. Urgency and emergency multi-disciplinary research group

The main challenge of our group is to improve the urgent assistance we provide to the citizens of our healthcare region in the field of urgency. We want to transfer the results obtained through our investigations and projects in the clinical field in our guides of action and welfare procedures that we use to the emergency services. We will promote the research and study of the impact of health education on practicing healthcare professionals. We intend to conduct research in a fundamental social area from urgency, domestic violence, patient safety and mortality.

We believe that by carrying out this approach from the three aforementioned aspects we intend to increase the quest for excellence in the field of urgency. Providing a new vision, mainly in the objectives of education and the more legal blindness.

Publications

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Fernandez A, Torres OY. Survival Analysis of Geriatric Patients with Low Digestive Hemorrhage Attending an Emergency Department. *Gerontology.* 2021. 67. (3):p. 314-319. IF:5,140. Q1.

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Research team

Group leader
Oriol Yuguero Torres

Principal investigator
Rosa Maria Perez Perez

Researchers
Elena Justribo Sanchez
Maria Viladrosa Montoy
Raquel Lain Gari
Sara Muñoz Buderus
Carmel Vidal Sans
Jose Daniel Lacasta Garcia
Cecilia Llobet Pina
Anna Moreno Pena
Laia Molina Castellà
Xavier Ichart Tomas

PhD students
Iris Nathalie San Roman Arispe
Noemí Espies Diaz

Contributors
Rita Maria Maciel Soares Pereira
Mireia Saura Codina

Laboratories

HUAV
973 705 230

Email
oriolyuguero@gencat.cat

Funded grants in 2021

PI	Funding agency	Project	Budget (€)
Yuguero Torres, Oriol	Institut Català de la Salut (ICS)	Premi investigador/a jove ICS 2021	5.000



3.4. Urgency and emergency multi-disciplinary research group

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Perez Perez, Rosa Maria	Ministerio de Sanidad, Consumo y Bienestar Social	Evolución temporal de la atención hospitalaria urgente por consumo de alcohol y drogas de abuso entre mujeres y hombres. Impacto del consumo tóxico en pacientes menores de edad.	19.750
Yugero Torres, Oriol	Fundación Investigación Mutua Madrileña	Biomarcadores séricos en el servicio de Urgencias como indicador de lesión cerebral post-TCE y pronóstico de morbimortalidad	70.000



3.5. Indicators and specifications of the quality in the clinical laboratory

Interdisciplinary group with medical specialists belonging to the clinical laboratories of the Catalan Institute of Health. The group's work is based on consensus and shared experience as guarantors of effectiveness and efficiency. The main objective is to establish quality indicators and specifications for the design and evaluation of strategies for the continuous improvement of processes, in order to increase patient safety.

Publications

Bellés A, Bernal M, Gómez J, Bernet A, Picó S, Bueno J, Chávez C, García M, Ibarz M. E-gene RT-PCR Crossing Point Value and Other Biochemical Parameters as Useful Markers of Death Risk in COVID-19 Patients. *EJIFCC*. 2021. 32. (1):p. 98-104.

Carpio JD, Marco MP, Martin ML, Ramos N, de la Torre J, Prat J, Torres MJ, Montoro B, Ibarz M, Pico S, Falcon G, Canales M, Huertas E, Romero I, Nieto N, Gavaldà R, Segarra A. Development and Validation of a Model to Predict Severe Hospital-Acquired Acute Kidney Injury in Non-Critically Ill Patients. *J Clin Med*. 2021. 10. (17):3959. IF:4,241. Q1.

de Gonzalo D, Benítez ID, Pinilla L, Carratalá A, Moncusí A, Gort C, Molinero M, González J, Torres G, Bernal M, Pico S, Almansa R, Jorge N, Ortega A, Bustamante E, Gómez JM, González M, Micheloud D, Ryan P, Martinez A, Tamayo L, Aldecoa C, Ferrer R, Ceccato A, Fernández L, Motos A, Riera J, Menéndez R, Garcia D, Peñuelas O, Torres A, Bermejo JF, Barbé F. Circulating microRNA profiles predict the severity of COVID-19 in hospitalized patients. *Transl. Res*. 2021. 236. p. 147-159. IF:7,012. D1.

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Research team

Group leader

Maria Mercedes Ibarz Escuer

Researchers

Blanca Montero San-Martín

Daniel Queimaliños Perez

Maria Bernal Morillo

Sonia Carrasco Ignes

Silvia Pico Fornies

Ana Cristina Sopena Murillo

External contributors

Aurora Blanco Font

Gloria Busquets Soria

Maria Antonia Llopis Diaz

Ma Isabel Llovet Lombarte

Merce Montesinos Costa

Nuria Serrat Orus

Margarita Simon Palmada

Laboratories

Biomedicine I 2nd floor

973 705 228

Email

mibarz.lleida.ics@gencat.cat



3.6. Translational research group on infectious diseases of Lleida

The translational research group on infectious diseases of Lleida (TRIDLE) works in the following lines of research:

- Sepsis and infections of the bloodstream
- HIV
- Healthcare-related infections
- Antimicrobial administration, clinical microbiology
- Tropical diseases and imported pathology

Publications

Bellés A, Bernal M, Gómez J, Bernet A, Picó S, Bueno J, Chávez C, García M, Ibarz M. E-gene RT-PCR Crossing Point Value and Other Biochemical Parameters as Useful Markers of Death Risk in COVID-19 Patients. *EJIFCC*. 2021. 32. (1):p. 98-104.

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MÁ, Padullés A, Cobo S, Hereu P, Videla S, Tebe C, Pallarés N, Miro JM, Pujol M, SAFO study group and the Spanish Network for Research in Infectious Diseases (. Multicentre, randomised, open-label, phase IV-III study to evaluate the efficacy of cloxacillin plus fosfomycin versus cloxacillin alone in adult patients with methicillin-susceptible Staphylococcus aureus bacteraemia: study protocol for the SAFO trial. *Bmj Open*. 2021. 11. (8):e051208. IF:2,692. Q2.

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Research team

Group leader
Eva González De La Fuente

Principal investigators
Fernando Barcenilla Gaité
Alfredo Jover Saenz

Researchers
Mariola Espejo Suros
Nadia Abdulghani Martinez
Merce Almirall Egerique
Alba Belles Belles
Albert Bernet Sanchez
Thais Comella Fiestras
Maria Jose Estadella Servalls
Mercedes Garcia Gonzalez
Jaume Garriga Masana
Antón Manonelles Fernández
Lluís Marques Amat
Teresa Puig Ganau
Francesc Pujol Aymerich
Maria Fernanda Ramirez Hidalgo
Esther Ribes Murillo
Marcos Serrano Godoy
Elena Simó Martínez De Guereño
Marina Vidal Castello

Laboratories

HUAV HUSM



egonzalezf@gss.cat



3.6. Translational research group on infectious diseases of Lleida

Ruiz L, Belles A, Fernandez R, Garcia M, Vilaro A, Zarazaga M, Torres C. Linezolid-resistant MRSA-CC398 carrying the *cfr* gene, and MRSA-CC9 isolates from pigs with signs of infection in Spain. *J. Appl. Microbiol.* 2021. 131. (2):p. 615-622. IF:3,772. Q2.

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Ruiz L, Feßler AT, Hanke D, Eichhorn I, Azcona JM, Alonso CA, Pérez MO, Spiroz C, Bellés A, Schwarz S, Torres C. Mechanisms of Linezolid Resistance Among Clinical *Staphylococcus* spp. in Spain: Spread of Methicillin- and Linezolid-Resistant *S. epidermidis* ST2. *Microb. Drug Resist.* 2021. 27. (2):p. 145-153. IF:3,431. Q3.

Sánchez L, Alfaya T, Martínez San Ireneo M, Domínguez C, Vega JM, Vega A, Moreno E, Marqués L, Fuentes M, Ruiz B, Hymenoptera Allergy Committee of the S. Large Local Reactions to Hymenoptera Stings Negatively Affect Quality Of Life to the Same Degree as Systemic Reactions. *J. Invest. Allergol. Clin. Immunol.* 2021. 31. (6):p. 502-504. IF:4,333. Q2.

Teira R, Diaz H, Aragao F, Marguet S, de la Fuente B, Munoz MJ, Abdulghani N, Ribera E, Domingo P, Deig E, Peraire J, Roca B, Montero M, Galindo MJ, Romero A, Espinosa N, Lozano F, Merino MD, Martinez E, Geijo P, Estrada V,

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3.7. The pharmacoepidemiology and pharmacodynamics

(P&P) research group is a multidisciplinary group that includes medical doctors from different specialties, pharmacists from different specialties, teaching doctors and graduates in nursing. The research areas include topics in basic, clinical and epidemiological pharmacology. The group aims to evaluate the efficacy, safety and efficiency of medical technology linked to the use of drugs, either as prevention or treatment of diseases. It also focuses on the analysis of drug use patterns as a starting point to achieve their rational application.

Its objectives are focused on the following basic areas:

- Medical oncology
- Infectious diseases
- Inflammatory diseases
- Drug repurposing
- Artificial nutrition
- Neuropharmacology
- The safety and effectiveness of medications
- Pharmacoeconomics

The fundamental tool of pharmacoepidemiology is the clinical trial. For this reason, the group's is actively participating in multicenter national or international clinical trials for the development of new drugs in the different areas of interest. The pharmacodynamic part of the group is focused on deciphering the mechanism of action of new drugs and the identification of new, previously unnoticed, applications of the approved drugs.

Publications

Altisent R, Nabal M, Muñoz P, Ferrer S, Delgado MT, Alonso A. Eutanasia: ¿es esta la ley que necesitamos?. *Aten Primaria*. 2021. 53. (5):p. 102057-102057. IF:1,137. Q4.

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Research team

Group leader
Juan Antonio Schoenenberger Arnaiz

Principal investigators
Marta Gilabert Sotoca
Judit Rius Perera
Fernando Worner Diz
Judit Ribas Fortuny
Jacint Boix Torras
Irene Mangues Bafalluy

Researchers
Pilar Taberner Bonastre
Esther Querol Zamora
Eduardo Pereyra Acha
Jaume Canal Sotelo
Beatriz Martínez Castro
Mireia Martínez Sogues
Ana M Aragones Eroles
Jordi Bosch Muñoz
Santiago Manuel Cano Marron Maria
Dolors Castellana Perello
Valentin Huerva Escanilla
Maria Nabal Vicuña
Manel Pique Gilart

PhD students
Alvaro Valero Cortijo
Javier Chicote Gonzalez

Research technicians
Blanca Navarro Cabases
Eulalia Martínez Ribot
Laura Barta Sancho

Laboratories

Biomedicine 2nd floor. Lab b2.2
HUAV
973 705 220

Email
jas.lleida.ics@gencat.cat



3.7. The pharmacoepidemiology and pharmacodynamics

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Funded grants in 2021

PI	Funding agency	Project	Budget (€)
Ribas Fortuny, Judit	Ministerio de Ciencia e Innovación	Reposicionamiento contra el Crohn: cribado de una librería de fármacos aprobados por FDA que frenen la muerte celular por TNF-a en modelos genéticos deficientes en autofagia	110.110



Area 4. Neurosciences

Area coordinator: Dr. Rosa Maria Soler Tatché

Neuroscience is a multidisciplinary area that studies the nervous system in its structure, function, development and pathology. IRBLleida groups investigate neurological and psychiatric diseases addressing molecular, cellular and clinical aspects.

Groups

4.1 Clinical neurosciences

4.2 Evolutionary developmental neurobiology

4.3 Experimental neuromuscular pathology

4.4 Molecular and developmental neurobiology

4.5 Neurocognition, psychology of the personality and behavioral genetics

4.6 Neuroimmunology

4.7 Neuronal signaling unit

4.8 Biological foundations of mental disorders

8

Groups

73

Researchers

57

Publications

284

Total IF

5

Average IF

45.6%

%Q1

15.8%

%D1

3

Funded grants

238,274€

Grants funding

12

Active projects



4.1. Clinical neurosciences

The Clinical Neurosciences group was created with the aim of bringing together all the neurological research carried out in the Lleida hospital setting in 2008. Currently, it is a translational research group made up of different professional profiles (neurologists, radiologists, psychologists, nurses, vascular surgeons, geriatricians, psychologists, clinical biochemists, biologists, biotechnologists, and biomedicians). The group is subdivided into two nodes representing research in cerebrovascular diseases and research in cognitive impairment:

- **Cerebrovascular diseases** The group aims to improve the diagnosis, prognosis and treatment of patients, through the identification of biomarkers (neuroimaging, biologics) and the understanding of the molecular mechanisms involved in strokes. It is developing a clinical trial of remote ischemic tolerance in patients with stroke code criteria (study REMOTECAT- trialsgov NCT03375762). It is part of the “Spanish Network of Cerebral Vascular Diseases” of the Carlos III Institute (INVICTUS-plus).
- **Cognitive impairment** It aims to improve the diagnosis of people with cognitive impairment through biological biomarkers and its association with sleep pathology.

Publications

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Research team

Group leader
Francisco Purroy Garcia

Principal investigator
Gerard Piñol Ripoll

Researchers
Nuria Montala Palau
Gloria Arque Fuste
Mikel Vicente Pascual
Gerard Josep Mauri Capdevila Daniel Vazquez Justes
Ana Belen Vena Martinez
Anna Carnes Vendrell
Nuria Torreguitart Mirada
Maria Isabel Gil Garcia
Juan Farre Pons
Jordi Sanahuja Montesinos
Robert Begue Gomez
Alejandro Quilez Martinez

PhD students
Leila Romero El Khayat
Cristina Pereira Priego
Coral Torres Querol
Farida Dakterzada Sedaghat

External contributor
Raquel Mitjana Penella

Laboratories

Biomedicine II 2nd floor
973 702 935

 **Email**
fpurroy.lleida.ics@gencat.cat



4.1. Clinical neurosciences

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4.1. Clinical neurosciences

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4.1. Clinical neurosciences

Funded grants in 2021

PI	Funding agency	Project	Budget (€)
Piñol Ripoll, Gerard	Diputació de Lleida	La vía de señalización mediada por los lípidos bioactivos diacilglicerol-ácido fosfatídico como biomarcadores para discriminar los estadios iniciales de la enfermedad de Alzheimer del envejecimiento normal	50.000
Purroy Garcia, Francisco	Diputació de Lleida	Perspectivas clínicas de la biología de sistemas aplicada al análisis de placas carotídeas humanas: ILER-CAROTID	50.000
Purroy Garcia, Francisco	Instituto de Salud Carlos III (ISCIII)	RICORS-ICTUS	138.274

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Purroy Garcia, Francisco	Instituto de Salud Carlos III (ISCIII)	Percondicionamiento isquémico remoto en pacientes con ictus isquémico agudo en Catalunya (REMOTE-CAT) y modelo experimental de Per y Postcondicionamiento isquémico remotos	183.920
Purroy Garcia, Francisco	Instituto de Salud Carlos III (ISCIII)	Determinación del tiempo de inicio del ictus isquémico y el tejido recuperable mediante la firma ómica: OMIC IS BRAIN	185.130
Purroy Garcia, Francisco	Instituto de Salud Carlos III (ISCIII)	RED DE ENFERMEDADES VASCULARES CEREBRALES. INVICTUS PLUS	23.903

4.2. Evolutionary developmental neurobiology

The group’s research focuses on the study of the amygdala, a very complex brain structure involved in the control of emotions, social behavior and cognition, which is altered in all psychiatric disorders. Currently it is not possible to explain the different outcomes of distinct mental conditions, posing a real challenge on their treatment. To solve this problem, the group is trying to decipher the amygdala at molecular, cellular and circuit levels using an evolutionary development biology approach.

Previous research of the group has shown that the high complexity of the amygdala can be largely explained by the different embryonic origin of its neurons, which conditions their adult phenotype. With this vision in mind, the group is currently developing research to study the transcriptome and the connections of amygdalar neurons with different embryonic origin. Comparison of the results

with public databases of genes involved in distinct mental disorders will help to understand the relation between different susceptibility genes to specific amygdalar neurons and networks regulating emotion and social behavior. This will be the first step to design more accurate therapeutic targets for distinct mental disorders and will open the venue for precision medicine in Psychiatry.

Publications

Morales L, Castro B, Abellán A, Desfilis E, Medina L. A novel telencephalon-opto-hypothalamic morphogenetic domain coexpressing Foxg1 and Otp produces most of the glutamatergic neurons of the medial extended amygdala. J Comp Neurol. 2021. 529. (10):p. 2418-2449. IF:3,215. Q1.

- Research team**
- Group leaders**
 Ester Desfilis Barcelo
 Loreta Medina Hernandez
- Researcher**
 Antonio Abellan Rodenas
- PhD students**
 Alba Gonzalez Alonso
 Alek Hanafi-Metwalli
 Alessandra Pross
 Lorena Morales Garcia

Laboratories
 Biomedicine II 3rd floor
 973 702 961

Email
 loreta.medina@udl.cat
 ester.desfilis@udl.cat

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Medina Hernandez, Loreta	Ministerio de Ciencia e Innovación	Arquitectura molecular de los centros y redes del cerebro que regulan emoción y cognición: implicaciones para la Psiquiatría.	131.769



4.3. Experimental neuromuscular pathology

The group studies the cellular and molecular bases of neuromuscular disorders, particularly, motoneuron diseases such as amyotrophic lateral sclerosis (ALS) and spinal muscular atrophy (SMA). For this, we use in vitro and in vivo models, mainly chick embryo and transgenic mice. Several lines of work are currently underway to examine the role of excitotoxicity, autoimmunity and neuroinflammation in the ALS and SMA pathogenesis, and to identify new targets for future therapies. Another important aspect of our research is the analysis of plastic changes in central and peripheral synapses in the context of normal development, aging and motoneuron diseases.

Publications

Gras S, Blasco A, Modol G, Tarabal O, Casanovas A, Piedrafita L, Barranco A, Das T, Rueda R, Pereira SL, Navarro X, Esquerda JE, Calderó J. Beneficial effects of dietary supplementation with green tea catechins and cocoa flavanols on aging-related regressive changes in the mouse neuromuscular system. *Aging-US*. 2021. 13. (14):p. 18051-18093. IF:5,682. Q1.

Salvany S, Casanovas A, Piedrafita L, Tarabal O, Hernández S, Calderó J, Esquerda JE. Microglial recruitment and mechanisms involved in the disruption of afferent synaptic terminals on spinal cord motor neurons after acute peripheral nerve injury. *Glia*. 2021. 69. (5):p. 1216-1240. IF:7,452. Q1.

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Calderó Pardo, Jordi	Fundacio La Marato de TV3	Preclinical Analysis of new combinatorial treatments for spinal muscular atrophy (SMA): Effects on motoneuron survival, synaptic integrity, and skeletal muscle preservation.	198.375
Calderó Pardo, Jordi	Ministerio de Ciencia e Innovación	El sistema NRG1-ErbBs en la arquitectura molecular de las sinapsis aferentes de tipo C y su significado en las enfermedades de la motoneurona	108.900

Research team

Group leader
Jordi Calderó Pardo

Principal investigator
Josep Enric Esquerda Colell

Researchers
Olga Tarabal Mostazo
Sara Hernández Estañol
Anna Maria Casanovas Llorens

PhD students
Alaó Gatus Puchercós
Sara Salvany Montserrat
Alba Blasco Carmona

Research technicians
Silvia Gras Artells
Lidia Piedrafita Llorens

Laboratories

Biomedicine I 1st floor
973 702 440

Email
jordi.caldero@udl.cat



4.4. Molecular and developmental neurobiology

Our goal is the characterization of new molecular mechanisms involved in the formation (development) and remodelling (adult neurogenesis) of the neuronal circuits in the vertebrate nervous system. Our models are genetically modified mice and we expect that our studies will help to shed some light on or understanding of the aetiology of neurological and psychiatric disorders such as schizophrenia and the autism as well as neurodegenerative diseases such as Alzheimer's disease, in humans. In our studies we use a wide spectrum of technical approaches, from in vivo (behaviour, mouse genetics, in utero electroporation and tissue processing and analysis), in vitro (primary tissue culture of explants or of dissociated neurons) to biochemistry and molecular biology.

Publications

Eritja N, Navaridas R, Ruiz A, Vidal M, Egea J, Encinas M, Matias X, Dolcet X. Endometrial PTEN Deficiency Leads to SMAD2/3 Nuclear Translocation. *Cancers*. 2021. 13. (19):4990. IF:6,639. Q1.

Fleitas C, Marfull P, Chauhan D, Del Toro D, Peguera B, Zammou B, Rocandio D, Klein R, Espinet C, Egea J. FLRT2 and FLRT3 cooperate in maintaining the tangential migratory streams of cortical interneurons during development. *J. Neurosci*. 2021. 41. (35):p. 7350-7362. IF:6,167. Q1.

Marfull P, Fleitas C, Zammou B, Rocandio D, Ballester B, Terrado J, Perez I, Espinet C, Egea J. Genetic ablation of the Rho GTPase Rnd3 triggers developmental defects in internal capsule and the globus pallidus formation. *J. Neurochem*. 2021. 158. (2):p. 197-216. IF:5,372. Q1.

Olabiyi BF, Fleitas C, Zammou B, Ferrer I, Rampon C, Egea J, Espinet C. proNGF Involvement in the Adult Neurogenesis Dysfunction in Alzheimer's Disease. *Int. J. Mol. Sci*. 2021. 22. (19):10744. IF:5,923. Q1.

Research team

Group leader
Joaquim Egea Navarro

Principal investigator
Carmen Espinet Mestre

PhD student
Bahira Zammou

Research technician
Sonia Rius Balcells

Laboratories

Biomedicine I 1st floor
973 702 961

Email

joaquim.egea@udl.cat

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Egea Navarro, Joaquim	Ministerio de Ciencia e Innovación	Papel de Rnd3/RhoE, uno de los efectores de las proteínas FLRT, en guía axonal y la formación de pliegues en la corteza durante el desarrollo del cerebro.	108.900



4.5. Neurocognition, psychobiology of the personality and behavioral genetics

The researchers converge in the interest in the search for the biological bases of personality and their disorders. Based on biological-factorial personality research models, the relationship between personality with the endocrine system (gonadal hormones), central nervous system (neurotransmitters and genetic polymorphisms) and neurophysiology (electrophysiology) is investigated. The current research focuses on impulsive-uninhibited personality relationships and emotions with neural monoamphatic neurotransmission (norepinephrine, dopamine, serotonin and MAO), both at a biochemical level (neurotransmitters and metabolites) and at the level of molecular genetics. The biological bases of personality are also investigated through the search of techniques of computerized electrophysiology and functional infrared spectroscopy (fNIR) applied to the study of emotions, cognitive functions and the frontal lobe (Laboratory of Human Behaviour). It also interests the study of human behavior through observation techniques of direct and digitalized behavior.

Publications

Aluja A, Sayans P, Garcia LF, Gutierrez F. Location of International Classification of Diseases-11th Revision and Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Dimensional Trait Models in the Alternative Five-Factor Personality Space. *Personal. Disord.* 2021. 12. (2):p. 127-139. IF:3,623. Q2.

Fernandes T, Camerino O, Castañer M. T-Pattern Detection and Analysis of Football Players' Tactical and Technical Defensive Behaviour Interactions: Insights for Training and Coaching Team Coordination. *Front. Psychol.* 2021. 12. p. 798201-798201. IF:2,988. Q2.

Garcia G, Camerino O, Castaner M, Manzano D, Jimenez JF, Valero A. Implementation of a Hybrid Educational Program between the Model of Personal and Social Responsibility (TPSR) and the Teaching Games for Understanding (TGfU) in Physical Education and Its Effects on Health: An Approach Based on Mixed Methods. *Children-Basel.* 2021. 8. (7):573. IF:2,863. Q2.

Sorrel MA, Garcia LF, Aluja A, Rolland JP, Rossier J, Roskam I, Abad FJ. Cross-Cultural Measurement Invariance in the Personality Inventory for DSM-5. *Psychiatry Res.* 2021. 304. 114134. IF:3,222. Q2.

Urieta P, Aluja A, Garcia LF, Balada F, Lacomba E. Decision-Making and the Alternative Five Factor Personality Model: Exploring the Role of Personality Traits, Age, Sex and Social Position. *Front. Psychol.* 2021. 12. p. 717705-717705. IF:2,988. Q2.

Research team

Group leader
Anton Aluja Fabregat

Researchers
Neus Aymami Sanroma
Ferran Balada Nicolau
Eduardo Blanco Calvo

PhD students
Elena Lacomba Arnau
Patricia Urieta Sabat
Laura Trujillo Paton

External contributor
Marta Castañer Balcells

Laboratories

Biomedicine II 1st floor
973 702 496
973 702 498

Email

anton.aluja@udl.cat

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Aluja Fabregat, Anton	Ministerio de Ciencia e Innovación	Efecto de la personalidad en la toma de decisiones y actividad de la corteza prefrontal (cpf) mediante espectroscopia funcional por infrarrojo cercano (fnir)	95.590



4.6. Neuroimmunology

The objectives of our research team are:

- To uncover knowledge of the as yet undiscovered etiopathological processes, of multiple sclerosis.
- To identify biomarkers of clinical evolution and / or response to treatment that help the physician to be able to make a treatment personalization with the ultimate goal of improving the patient's quality of life.

Our primary focus is the study of environmental factors triggering the disease with a special interest in oxidative processes and mitochondrial function.

Publications

Avila A, Pastor P, Planellas L, Gil MP, Hernandez J, Fernandez A. DISCREPA study: treatment of advanced Parkinson's disease and use of second-line treatments in Catalonia. *Rev. Neurologia*. 2021. 72. (1):p. 1-8. IF:0,870. Q4.

Fernandez JI, Kuhle J, Monreal E, Meca V, Meca J, Izquierdo G, Gascon F, de la Maza SS, Walo PE, Maceski A, Rodriguez E, Roldan E, Villarrubia N, Saiz A, Blanco Y, Sanchez P, Carreon E, Aladro Y, Brieva L, Iniguez C, Gonzalez I, de Antonio L, Masjuan J, Costa L, Villar LM. Effect of Ocrelizumab in Blood Leukocytes of Patients With Primary Progressive MS. *Neurol.-Neuroimmunol. Neuroinflammation*. 2021. 8. (2):e940. IF:8,485. D1.

Jorge C, Cetó M, Arias A, Blasco E, Gil MP, López R, Dakterzada F, Purroy F, Piñol G. Level of understanding of Alzheimer disease among caregivers and the general population. *Neurologia (Engl Ed)*. 2021. 36. (6):p. 426-432.

Maurino J, Sotoca J, Sempere AP, Brieva L, López de Silanes C, Caminero AB, Terzaghi M, Gracia J, Saposnik G. High-Efficacy Disease-Modifying Therapies in People with Relapsing-Remitting Multiple Sclerosis: The Role of Risk Attitude in Treatment Decisions. *Patient*. 2021. 14. (2):p. 241-248. IF:3,883. Q1.

Meca J, Garcia JA, Martinez S, Vidal A, Costa L, Eichau S, Rovira À, Brieva L, Aguera E, Zarranz A. Identification of patients with relapsing multiple sclerosis eligible for high-efficacy therapies. *Neurodegener. Dis. Manag*. 2021. 11. (3):p. 251-261.

Otero S, Rodríguez J, Vilella A, Ara JR, Brieva L, Calles C, Carmona O, Casanova V, Costa L, Eichau S, García JA, Garcia C, González M, Llana M, Martínez M, Meca JE, Prieto JM, Rodríguez A, Tintoré M, Blanco Y, Moral E, en nombre S. Recommendations for vaccination in patients with multiple sclerosis who are eligible for immunosuppressive therapies: Spanish consensus statement. *Neurologia (Engl Ed)*. 2021. 36. (1):p. 50-60.

Purroy F, Vicente M, Arque G, Baraldes M, Begue R, Gallego Y, Gil MI, Gil MP, Mauri G, Quilez A, Sanahuja J, Vazquez D. Sex-Related Differences in Clinical Features, Neuroimaging, and Long-Term Prognosis After Transient Ischemic Attack. *Stroke*. 2021. 52. (2):p. 424-433. IF:7,914. D1.

Ramo C, Blanco Y, Brieva L, Casanova B, Martínez E, Ontaneda D, Ramió L, Rovira À. Recommendations for the Diagnosis and Treatment of Multiple Sclerosis Relapses. *J. Pers. Med*. 2021. 12. (1):6. IF:4,945. Q1.

Sánchez M, González C, Torterolo G, Torrent A, Batalla I. Episodic Ataxia Misdiagnosed as Anxiety Disorder. *Prim Care Companion CNS Disord*. 2021. 23. (2).

Research team

Group leader
Luis Brieva Ruiz

Researchers

Agustin Sancho Saldana
Laura Quibus Requena
Silvia Peralta Moncusi
Ana Rita Gil Sanchez
Cristina Gonzalez Mingot
José Vicente Hervás Garcia
Maria Pilar Gil Villar

Contributor

M^a Jose Solana Moga

Laboratories

Biomedicine I ground floor
973 705 367

Email

lbrieva.lleida.ics@gencat.cat

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Brieva Ruiz, Luis	Instituto de Salud Carlos III (ISCIII)	Red esclerosis múltiple (REMM)	5.500



4.7. Neuronal signalling unit

The neuronal signaling unit is a research group focused on the study of the mechanisms of cell degeneration occurring in the context of spinal muscular atrophy (SMA) disease. SMA is a genetic childhood neuromuscular disorder characterized by the loss of the spinal cord motoneurons due to the mutation of the SMN1 gene (Survival Motor Neuron). SMN1 gene codifies for a protein called SMN, which reduction causes motoneuron and muscle degeneration by molecular mechanisms still under study.

Publications

Sansa A,Hidalgo I,Miralles MP,de la Fuente S,Perez MJ,Munell F,Soler RM,Garcera A. Spinal Muscular Atrophy autophagy profile is tissue-dependent: differential regulation between muscle and motoneurons. Acta Neuropathol. Commun. 2021. 9. (1):p. 122-122. IF:7,801. Q1.

Sansa A,de la Fuente S,Comella JX,Garcera A,Soler RM. Intracellular pathways involved in cell survival are deregulated in mouse and human spinal muscular atrophy motoneurons. Neurobiol Dis. 2021. 155. p. 105366-105366. IF:5,996. Q1.

Klionsky DJ,Abdel AK,Abdelfatah S,...Garcera A,...Soler RM.....Stallings CL,-Tong CK. Guidelines for the use and interpretation of assays for monitoring autophagy (4th edition)(1). Autophagy. 2021. 17. (1):p. 1-382. IF:16,016. D1.

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Soler Tatche, Rosa Maria	Instituto de Salud Carlos III (ISCIII)	Nuevas terapias para el tratamiento de la Atrofia Muscular Espinal: inhibidores de la calpaina y células madre mesenquimales modificadas	81.070
Soler Tatche, Rosa Maria	Instituto de Salud Carlos III (ISCIII)	Analysis of the beneficial effects of calpain inhibitors treatment and combined therapies on Spinal Muscular Atrophy	82.280

Research team

Group leader
Rosa Maria Soler Tatche

Principal investigator
Ana Garcera Teruel

PhD student
Alba Sansa Zaragoza

Research technician
Maria Pilar Miralles Exposito

Laboratories

Biomedicine I 4th floor
973 702 264

Email
rosa.soler@udl.cat



4.8. Biological foundations of mental disorders

The group comprises mainly members of the psychiatry service of the Santa Maria University Hospital, Lleida and biomedical research is conducted by sub-teams that share a common interest in the study of the biological bases of various mental disorders, mainly bipolar disorder, psychotic disorder and personality disorder.

Publications

Esquerda M. Ventajas, inconvenientes y aspectos éticos del teletrabajo. FMC. 2021. 28. (4):p. 207-209.

Esquerda M, Palau F, Lorenzo D, Cambra FJ, Bofarull M, Cusi V, Interdisciplinar En Bioetica G. Ethical questions concerning newborn genetic screening. Clin. Genet. 2021. 99. (1):p. 93-98. IF:4,438. Q2.

Kueny A, Monteso P, Lunn S, Mohabbat AB, Clark S, Luedtke C, Vincent A, Ruschak I, Mateu ML, Panisello ML, Rossello L, Guerrero CC, Goncalves AQ, Martin CA, Toussaint L. Fibromyalgia Pain and Fatigue Symptoms in Spanish and US Men. Pain Manag. Nurs. 2021. 22. (3):p. 423-428. IF:1,929. Q2.

Llorca V, Batalla I, Agrados M, Buil E, Pifarre J, Torrent A. Why keep an ECT unit open during a COVID-19 lockdown period. J Affect Disord. 2021. 285. p. 55-57. IF:4,839. Q1.

Llorca V, Palacios R, Rey D, Buil E, Agrados M, Gich I, Bioque M, Mur M. High neutrophil-lymphocyte ratio upon admission is associated with better response in psychotic depression. J. Psychiatr. Res. 2021. 143. p. 38-42. IF:4,791. Q1.

Mendo M, Arenas L, Forné C, Fernández D, Ruiz de Cortázar N, Facal C, Torrent A, Palacios R, Pifarré J, Batalla I. A pilot study of the efficacy of an adventure therapy programme on borderline personality disorder: A pragmatic controlled clinical trial. Personal. Ment. Health. 2021. 15. (3):p. 159-172. IF:3,816. Q2.

Oro P, Esquerda M, Mas B, Viñas J, Yuguero O, Pifarre J. Effectiveness of a Mindfulness-Based Programme on Perceived Stress, Psychopathological Symptomatology and Burnout in Medical Students. Mindfulness. 2021. 12. (5):p. 1-10. IF:4,684. Q1.

Peirau M, Esquerda M, Gabarrell C, Pifarre J. Veinte años después: prevalencia y evolución del burnout en Pediatría, de 1998-1999 a 2018-2019. Rev Pediatr Aten Prim. 2021. 23. p. 253-260.

Ribera JM, Morgades M, Ciudad J, Montesinos P, Esteve J, Genesca E, Barba P, Ribera J, Garcia I, Moreno MJ, Martinez D, Torrent A, Martinez P, Monsalvo S, Gil C, Tormo M, Artola MT, Cervera M, Gonzalez J, Rodriguez C, Bermudez A, Novo A, Soria B, Coll R, Amigo ML, Lopez A, Fernandez R, Serrano J, Mercadal S, Cladera A, Gimenez A, Penarrubia MJ, Abella E, Vall F, Hernandez JM, Garcia A, Bergua JM, de Rueda B, Sanchez MJ, Serrano A, Calbacho M, Alonso N, Mendez JA, Garcia R, Olivares M, Barrena S, Zamora L, Granada I, Lhermitte L, Feliu E, Orfao A. Chemotherapy or allogeneic transplantation in high-risk Philadelphia chromosome-negative adult lymphoblastic leukemia. Blood. 2021. 137. (14):p. 1879-1894. IF:22,113. D1.

Sánchez M, González C, Torterolo G, Torrent A, Batalla I. Episodic Ataxia Misdiagnosed as Anxiety Disorder. Prim Care Companion CNS Disord. 2021. 23. (2).

Research team

Group leaders

Maria Mur Lain
Josep Pifarre Paredero

Researchers

Lluís Rossello Aubach
Maria Irigoyen Otiñano
Irene Forcada Pach
Laura Bosa Lopez
Montse Esquerda Areste
Iolanda Batalla Llodes
Esther Castan Campanera
Teresa Guilera Lladós
Salvador Miret Fallada
Aurora Torrent Seto
Francesc Abella Pons

External contributors

Vanessa Pera Guardiola
Ester Mora Claramunt

Laboratories

HUSM
973 727 222
Ext1647

Email

pifarre1@comll.cat
mmur@gss.cat

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Guilera Lladós, Teresa	Universitat de Lleida	Estats emocionals en l'espai públic - INDEST	7.000



Area 5. Nutrition and cell metabolism

Area coordinator: Dr. Joaquim Ros Salvador

We study the ageing process, myocardial differentiation, neurodegenerative diseases and cell signalling in relation to oxidative stress in various cellular, animal and human models, using experimental and theoretical methods.

Groups

5.1 Molecular biology of the yeast

5.2 Biochemistry of oxidative stress

5.3 Metabolic physiopathology

5.4 Systems biology and statistical methods for biomedical research

5.5 Clinical and experimental research in digestive and hematological pathology

5.6 Cell signaling and apoptosis group

5.7 Cell signaling in yeast

5.8 Nutrition, metabolism and microbiota in patients with heart failure (NUTRIMMIC)





5.1. Molecular biology of yeast

The group studies the effect of environmental stress conditions on cell proliferation in yeast *Saccharomyces cerevisiae*, as a model for a genetically manipulable unicellular eukaryotic organism, as well as the transduction pathways and enzymatic systems involved in the defense and repair of stress damage. Particular emphasis is placed on oxidative stress (given its biomedical implications), and on the protective role of glutaredoxin systems, which are involved in various cellular processes, since, among other functions, they participate in the formation of proteins with Fe-S centres. Defects in these co-factors cause

various cellular disorders such as mitochondrial dysfunction, alterations in iron homeostasis and genomic instability, alterations associated with numerous human diseases.

Publications

Varejão N, Lascorz J, Codina J, Bellí G, Borràs H, Torres J, Reverter D. Structural basis for the E3 ligase activity enhancement of yeast Nse2 by SUMO-interacting motifs. *Nat. Commun.* 2021. 12. (1):p. 7013-7013. IF:14,919. D1.

Research team

Group leader
Gemma Belli Martinez

Research technician
M. Inmaculada Montoliu Sanchis

Laboratories

Biomedicine I 4th floor. Lab 4a
973 702 940
973 702 409

Email

gemma.belli@udl.cat



5.2. Biochemistry of oxidative stress

The biochemistry of oxidative stress group analyses altered mitochondrial functions in a disease called Friedreich Ataxia caused by deficient levels of frataxin, a mitochondrial protein. In this pathology, there is an alteration in the mitochondrial calcium and iron homeostasis, which leads to alterations in the redox state of proteins, in the membrane potential and, in general, loss of mitochondrial functions. To study this pathology, we use primary cultures of neurons and cardiomyocytes, which are the most affected tissues in this disease; we also use a new mouse model called FXNI151F and lymphoblasts obtained from patients. Based on these results, we design therapeutic strategies trying to improve the quality of life of patients, since to date, there is no effective cure; in this regard, we are analysing the effects of calcitriol, the active form of vitamin D and also molecules focused on restoring mitochondrial membrane potential. These trials are carried out in collaboration with biopharma companies and also with hospitals, where pilot clinical trials are being initiated.

Publications

Britti E, Delaspre F, Sanz A, Medina M, Llovera M, Purroy R, Mincheva S, Tamarit J, Ros J. Calcitriol increases frataxin levels and restores mitochondrial function in cell models of Friedreich Ataxia. *Biochem. J.* 2021. 478. (1):p. 1-20. IF:3,857. Q3.

Britti E, Delaspre F, Tamarit J, Ros J. Calpain-Inhibitors Protect Frataxin-Deficient Dorsal Root Ganglia Neurons from Loss of Mitochondrial Na⁺ /Ca²⁺ Exchanger, NCLX, and Apoptosis. *Neurochem. Res.* 2021. 46. (1):p. 108-119. IF:3,996. Q2.

Rodríguez L, Britti E, Calap P, Dong YN, Vergara C, Delaspre F, Medina M, Tamarit J, Pallardó FV, Gonzalez P, Ros J, LYNCHDR, Martinell M, Pizcuetta P. PPAR gamma agonist leriglitazone improves frataxin-loss impairments in cellular and animal models of Friedreich Ataxia. *Neurobiol. Dis.* 2021. 148. p. 105162-105162. IF:5,996. Q1.

Tamarit J, Britti E, Delaspre F, Medina M, Sanz A, Cabiscol E, Ros J. Mitochondrial iron and calcium homeostasis in Friedreich ataxia. *IUBMB Life.* 2021. 73. (3):p. 543-553. IF:3,885. Q2.

Research team

Group leader
Joaquim Ros Salvador

Principal investigators
Fabien Delaspre
Elisa Cabiscol Catala
Jordi Tamarit Sumalla

PhD students
Maria Pazos Gil
Arabela Sanz Alcázar
Marta Medina Carbonero
Elena Britti

Research technician
Roser Pane Domenech

Laboratories

Biomedicine I 4th floor
973 702 281

Email

joaquim.ros@udl.cat

Funded grants in 2021

PI	Funding agency	Project	Budget (€)
Ros Salvador, Joaquin	Ministerio de Ciencia e Innovación	Mecanismos de disfuncion mitocondrial y nuevas estrategias terapéuticas en modelos celulares y animales de Ataxia de Friedreich	193.600
Ros Salvador, Joaquin	Ministerio de Ciencia e Innovación	Nuevo fármaco dirigido a la Ataxia de Friedreich	143.750

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Delaspre, Fabien	Association Française Ataxie De Friedrich	Effet du Calcitriol dans un nouveau modèle murin pour l'AF de mutation ponctuelle I151F	50.000



5.3. Metabolic physiopathology

The overall goal of our investigations concerned the role of metabolism and oxidative stress (including free radical chemistry, redox biology and antioxidants) in the aging process and age-associated diseases. We have investigated the role of metabolism and oxidative stress in animal models (vertebrates and invertebrates) and humans in which aging rate and longevity are different or are experimentally modified (e.g. caloric restriction, methionine restriction, and genetic manipulations) or pathologically affected (e.g. metabolic diseases, cardiovascular disease, cancer, neurodegenerative diseases). If the aging process could be slowed or even reverted the incidence of age-related diseases would diminish significantly.

Publications

Andrés P, Gelpi E, Jové M, Mota N, Obis È, Portero M, Povedano M, Pujol A, Pamplona R, Ferrer I. Lipid alterations in human frontal cortex in ALS-FTLD-TDP43 proteinopathy spectrum are partly related to peroxisome impairment. *Neuropathol. Appl. Neurobiol.* 2021. 47. (4):p. 544-563. IF:8,090. D1.

Arnoriaga M, Mayneris J, Coll C, Pérez V, Ricart W, Moya A, Ramió L, Pamplona R, Jové M, Portero M, Fernández JM. Subjects with detectable *Saccharomyces cerevisiae* in the gut microbiota show deficits in attention and executive function. *J. Intern. Med.* 2021. 290. (3):p. 740-743. IF:8,989. D1.

Arnoriaga M, Mayneris J, Contreras O, Burokas A, Ortega JA, Blasco G, Coll C, Biarnés C, Castells A, Puig J, Garre J, Ramos R, Pedraza S, Brugada R, Vilanova JC, Serena J, Barretina J, Gich J, Pérez V, Moya A, Fernández X, Ramio L, Pamplona R, Sol J, Jové M, Ricart W, Portero M, Maldonado R, Fernández JM. Obesity-associated deficits in inhibitory control are phenocopied to mice through gut microbiota changes in one-carbon and aromatic amino acids metabolic pathways. *Gut.* 2021. 70. (12):p. 2283-2296. IF:23,059. D1.

Barja G, Pamplona R. mTORC1 is also involved in longevity between species. *Aging-US.* 2021. 13. (11):p. 14544-14545. IF:5,682. Q1.

Berdún R, Jové M, Sol J, Cai W, He JC, Rodriguez R, Martin M, Pamplona R, Uribarri J, Portero M. Restriction of Dietary Advanced Glycation end Products Induces a Differential Plasma Metabolome and Lipidome Profile. *Mol. Nutr. Food Res.* 2021. 65. (23):e2000499. IF:5,914. Q1.

Bermúdez M, Martínez M, Castro E, Betriu À, Cambray S, Farràs C, Barbé F, Pamplona R, Lecube A, Mauricio D, Purroy F, Valdivielso JM, Fernández E, ILERVAS C. Subclinical atheromatosis localization and burden in a low-to-moderate cardiovascular risk population: the ILERVAS study. *Rev Esp Cardiol (engl Ed).* 2021. 74. (12):p. 1042-1053. IF:4,596. Q1.

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Research team

Group leader
Reinald Pamplona Gras

Principal investigators
Mariona Jove Font
Manuel Portero Otin
Jose Serrano Casasola

Researchers
Victoria Ayala Jove
Jordi Boada Pallas
Joan Prat Corominas
Pascual Torres Cabestany
Lara Nogueras Penabad

PhD students
Anna Fernandez Bernal
Laia Fontdevila Olivé
Jose Daniel Galo Licona
Chiara Rossi
Joaquim Sol Cullere

Research technician
David Argiles Baulo

Laboratories

Biomedicine 3rd floor
973 702 442

Email

reinald.pamplona@udl.cat



5.3. Metabolic physiopathology

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Publications (books)

Reinald Pamplona, Mariona Jové, Irene Pradas, Natalia Mota-Martorell, Isidro Ferrer. Chapter 8 - Lipoxidation: features, neurological tissues, and aging. Editor(s): Colin R. Martin, Victor R. Preedy, Rajkumar Rajendram. *Factors Affecting Neurological Aging*, Academic Press, 2021, Pages 83-96, ISBN 9780128179901. Doi: 10.1016/B978-0-12-817990-1.00008-1



5.3. Metabolic physiopathology

Funded grants in 2021

PI	Funding agency	Project	Budget (€)
Jove Font, Mariona	Fundacion Bancaria Caixa d'Estalvis i Pensions de Barcelona	From GFAP mutations in astrocytes to neurodegeneration: exploring a lipid-protein oxidation pathway	275.000
Pamplona Gras, Reinald	Diputació de Lleida	La vía de señalización mediada por los lípidos bioactivos diacilglicerol-ácido fosfatídico como biomarcadores para discriminar los estadios iniciales de la enfermedad de Alzheimer del envejecimiento normal	50.000
Portero Otin, Manuel	Diputació de Lleida	Perspectivas clínicas de la biología de sistemas aplicada al análisis de placas carotídeas humanas: ILER-CAROTID	50.000

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Pamplona Gras, Reinald	Fundacion Bancaria Caixa d'Estalvis i Pensions de Barcelona	Dynamics of the neuronal, metabolomic and neuropsychological signatures underlying the adptations for motherhood during pregnancy.	101.750
Pamplona Gras, Reinald	Ministerio de Ciencia e Innovación	Neurolipidómica del envejecimiento cerebral humano	78.650
Portero Otin, Manuel	Instituto de Salud Carlos III (ISCIII)	Estrés celulares y alteraciones en los lipidos neuronales, gliales y extracelulares en la fisiopatología de la esclerosis lateral amiotrófica.	153.670
Portero Otin, Manuel	Diputació de Lleida Instituto de Salud Carlos III (ISCIII)	Metabolismo lipidico intracelular, procesamiento de ARNm y estrés celular en la encrucijada de la fisiopatología de la esclerosis lateral amiotrófica	214.170



5.4. Systems biology and statistical methods for biomedical research

The group focuses on two parallel research lines: systems biology and statistical methods for biomedical research.

The first line develops mathematical tools and methods for research in bioinformatics, computational biology, and systems and synthetic biology. The methods are applied to analyze and integrate large molecular, omics, and clinical databases in order to understand how the molecular circuits of cells and organisms evolved and work from a systems perspective.

The Statistical Methods line for Biomedical Research develops and applies statistical models to evaluate health interventions and collaborates closely with clinical and translational research groups. The group works on the design and analysis of clinical studies, on the economic evaluation of health interventions, on the development of advanced methods for survival analysis, and on joint models of longitudinal data.

Publications

Lena E, Aquino J, Lopez J, Magrans R, de Haro C, Sarlabous L, Lopez N, Montanya J, Rue M, Kacmarek RM, Lucangelo U, Fernandez R, Pelosi P, Blanch

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Research team

Group leaders

Montserrat Rué Monné
Albert Sorribas Tello
Rui Carlos Vaqueiro De Castro Alves

Principal investigators

Ester Vilapriño Terre
Alberto Marin Sanguino

Researchers

Abel Lucido Garbulo
Baldiri Salvado Lopez

Laboratories

Biomedicine II | 4th floor
973 702 441

Email

ruí.alves@udl.cat
montserrat.rue@udl.cat
albert.sorribas@udl.cat

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Rué Monné, Montserrat	Fundacio La Marato de TV3	Liquid biopsies for the identification of mechanisms of resistance to PARP inhibitors in BRCA1/2-associated cancers	68.910
Rué Monné, Montserrat	Instituto de Salud Carlos III (ISCIII)	Personalización del cribado del cáncer de mama: Evaluación de su viabilidad y aceptabilidad en el Sistema Nacional de Salud	56.870
Sorribas Tello, Albert	Instituto de Salud Carlos III (ISCIII)	Development of a simulation environment as a tool to support the design of studies and clinical trials.	43.318



5.5. Clinical and experimental research in digestive and hematological pathology

Our group's research deals with colorectal carcinogenesis and with hematologic diseases.

Research interests:

- Prognostic factors in patients with colorectal cancer
- Factors related to diagnosis and treatment of colorectal cancer
- Study of chemically induced colonic carcinogenesis in murine experimental models
- Telomerase activity in cell neoplastic cells
- Laboratory techniques and procedures in hematology (hematologic analyzers and flow cytometry)
- Clinical and basic research in blood diseases

Publications

Bellés A, Bernal M, Gómez J, Bernet A, Picó S, Bueno J, Chávez C, García M, Ibarz M. E-gene RT-PCR Crossing Point Value and Other Biochemical Parameters as Useful Markers of Death Risk in COVID-19 Patients. *EJIFCC*. 2021. 32. (1):p. 98-104.

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Research team

Group leader

Josep Maria Reñé Espinet

Principal investigators

Javier Gómez Arbonés
M. Carmen Piñol Felis

Researchers

Patricia Huelin Alvarez
Albert Tugues Peiro
Consuelo Ramirez Salazar
Maria Tehas Crespo
Armando Luaña Galan
Maria Cristina Marzo Alonso
Elisabeth Talavera Ramos
Montserrat Teixido Amoros
Antonio Garcia Guiñon
Jordi Garreta Mesegue
Tamara Revuelto Artigas
Juan Armando Rodríguez Oballe
Natividad Zaragoza Velasco Montserrat
Planella De Rubinat
Carlos Aracil Blanch
Juan Buenestado Garcia
Tomas Garcia Cerecedo
Josep Maria Miñana Calafat
Eva Sese Abizanda

Research technician

Sarata Sall Sall

Laboratories

HUAV

Email

jmrene.lleida.ics@gencat.cat



5.5. Clinical and experimental research in digestive and hematological pathology

Ribera JM, Morgades M, Genesca E, Chapchap EC, Montesinos P, Acuna E, Gil C, Garcia I, Barba P, Gonzalez J, de Llano MPQ, Torrent A, Ribera J, Granada I, Bernal T, Diaz M, Amigo ML, Coll R, Tormo M, Vall F, Gomez I, Sanchez MJ, Soria B, Cladera A, Artola MT, Garcia A, Gimenez A, Amador ML, Martinez P, Algarra JL, Vidal MJ, Alonso N, Maluquer C, Llorente L, Garcia R, Ciudad J, Feliu E, Orfao A, PETHEMA GRP. Outcomes and prognostic factors of adults with refractory or relapsed T-cell acute lymphoblastic leukemia included in measurable residual disease-oriented trials. *Hematol. Oncol.* 2021. 39. (4):p. 529-538. IF:5,271. Q2.

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Yuste S, Ludwig IA, Romero MP, Piñol C, Catalan U, Pedret A, Valls RM, Fernandez S, Motilva MJ, Macia A, Rubio L. Metabolic Fate and Cardiometabolic Effects of Phenolic Compounds from Red-Fleshed Apple in Hypercholesterolemic Rats: A Comparative Study with Common White-Fleshed Apple. *The Apple-COR Study. Mol. Nutr. Food Res.* 2021. 65. (10):e2001225. IF:5,914. Q1.



5.6. Cell signalling and apoptosis group

The line of research of the cell signaling and apoptosis group is:

Study of the processes that regulate differentiation, survival and cell death in cardiac tissue. Investigation of the mechanisms involved in these processes is essential to address the treatment of diseases of the cardiovascular system.

Publications

Barés G, Beà A, Hernández L, Navaridas R, Felip I, Megino C, Blasco N, Nadeu F, Campo E, Llovera M, Dolcet X, Sanchis D. ENDOG Impacts on Tumor Cell Proliferation and Tumor Prognosis in the Context of PI3K/PTEN Pathway Status. *Cancers*. 2021. 13. (15):3803. IF:6,639. Q1.

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Witte F, Ruiz J, Mattioli CC, Blachut S, Adami E, Schulz JF, Schneider V, Hummel O, Patone G, Mücke MB, Šilhavý J, Heinig M, Bottolo L, Sanchis D, Vingron M, Chekulaeva M, Pravenec M, Hubner N, van S. A trans locus causes a ribosomopathy in hypertrophic hearts that affects mRNA translation in a protein length-dependent fashion. *Genome Biol.* 2021. 22. (1):p. 191-191. IF:13,583. D1.

Research team

Group leaders

Marta Llovera Tomàs
Daniel Sanchis Morales

Researcher

Carlos Lana Castilla

PhD student

Aida Beà Tàrraga

Laboratories

Biomedicine I 2nd floor. Lab b2.10
973 702 949

Email

daniel.sanchis@udl.cat
marta.llovera@udl.cat

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Sanchis Morales, Daniel	Ministerio de Ciencia e Innovación	Liquid biopsies for the identification of mechanisms of resistance to PARP inhibitors in BRCA1/2-associated cancers	96.800



5.7. Cell signalling in yeast

Our current research areas have both a basic and applied orientation:

Basic orientation:

1. Responses to stress mediated by signal transduction pathways (TOR, Ras / PKA, AMPK/Snf1, Pkc1-MAPK, GCN2, PDK1/YPK1 ...).
2. Study of the mechanisms of iron homeostasis, its relationship with the recycling of nutrients through autophagy and its impact on aging and mortality in *saccharomyces cerevisiae*, with a translational objective towards studies related to iron deficiency anemia and breast cancer.
3. Humanization of yeast with human ferritins in order to delve into the mechanisms of iron homeostasis and cell survival.

Applied orientation:

1. Design of strategies to increase endogenous iron levels for use as a nutritional supplement.
2. Design strategies for directed evolution to obtain improved yeast for use in food production.

Publications

Montella S, Pujol N, de la Torre MA. The Cell Wall Integrity Receptor Mtl1 Contributes to Articulate Autophagic Responses When Glucose Availability Is Compromised. *J. Fungi*. 2021. 7. (11):903. IF:5,816. Q1.

Montella S, Pujol N, Mechoud MA, de la Torre MA. Bulk autophagy induction and life extension is achieved when iron is the only limited nutrient in *Saccharomyces cerevisiae*. *Biochem. J*. 2021. 478. (4):p. 811-837. IF:3,857. Q3.

Pujol N, Pavón M, Arroyo J, de la Torre MA. The MAPK Sit2/Mpk1 plays a role in iron homeostasis through direct regulation of the transcription factor Aft1. *Biochim. Biophys. Acta-Mol. Cell Res*. 2021. 1868. (5):p. 118974-118974. IF:4,739. Q2.

Research team

Group leader
M^a Angeles De La Torre Ruiz

Researchers
Laia Castells Roca
Nuria Pujol Carrion

PhD student
Sandra Montellà Manuel

Research technician
M. Inmaculada Montoliu Sanchis

Laboratories

Biomedicine 4th floor. Lab 4.25
973 702 941
973 702 410

Email

mariaangeles.delatorre@udl.cat

5.8. Nutrition, metabolism and microbiota in patients with heart failure (NUTRIMMIC)

The group is composed of basic and clinical researchers, our research focuses on the field of heart failure (HF), a disease with growing prevalence in developed countries. Our research aims to know how the nutritional factors and intestinal microbiota affect the development and prognosis of heart failure. Patients with heart failure show an inflammatory status associated with iron deficit. It is hypothesized that malnutrition and alteration of the gut microbiota are responsible for perpetuating inflammation.

The objective of the clinical line is to determine the nutritional status, adherence to the mediterranean diet and composition of the gut microbiota of patients with heart failure. The basic line aims to generate a murine experimental model of heart failure and analyze the relationships between microbiota and inflammation.

The observations obtained in the basic line about the relationships between microbiota and inflammation, will allow us to transfer knowledge from basic to the clinical line to design specific nutritional and supplementation strategies in order to modify the composition of the intestinal flora and reduce inflammation.

Publications

Bonet M, Vázquez S, García E, Visus M, Jové D, Ripol O, Solé C, Gutiérrez L, Morales JL, Montero Á, Algara M, Arenas M, Mira M. Saving time in the radiotherapy procedures for COVID-19 pneumonia treatment. A single-institution experience. Clin. Transl. Oncol. 2021. 23. (11):p. 1-6. IF:3,405. Q3.

Fernández JM, Casado J, Formiga F, González A, Arévalo JC, Beltrán M, Cerqueiro JM, Llàcer P, Manzano L, Morales JL, Silvestre JP, Conde A. Consensus on basic conduct during the hospital admission of patients with acute heart failure. Rev. Clin. Esp. 2021. 221. (5):p. 283-296. IF:1,556. Q3.

García MJ, Perona AA, Padron AL, Rull JLM, Martínez M, Martín MD, Díaz JL, Fernández SL, Oficialdegui PO, Sosa AJ. Efficacy and safety of intermittent repeated levosimendan infusions in advanced heart failure patients: the LAICA study. ESC Heart Fail. 2021. 8. (6):p. 4820-4831. IF:4,411. Q2.

Research team
Group leaders
 Amalia Zapata Rojas
 Jose Luis Morales Rull

Researchers
 Jordi Cortada Echaz
 Natalia Mateu Cantarell
 Cristina Sole Felip
 Pilar Vaqué Castilla

Research technician
 Joan Gimeno Guasch.

External contributor
 Sara Cuesta Sancho

Laboratories
 Biomedicine I ground floor. Lab 0.3
 Biomedicine II 2nd floor. Lab 3.6
 973 703 748

Email
 jlmorales.lleida.ics@gencat.cat
 azapata@irbllleida.cat

Active projects in 2021

PI	Funding agency	Project	Budget (€)
Morales Rull, Jose Luis	Sociedad Española De Medicina Interna (SEMI)	“Efecto sobre la capacidad funcional del tratamiento con hierro carboximaltosa Intravenoso o hierro Oral sucrosomial en pacientes con insuficiencia cardiaca con fracción de eyección del ventrículo izquierdo deprimida y anemia ferropénica”	30.000



Area 6. Other research areas

Other lines of research includes those researchers that, without being part of a specific research group at IRBLleida, have a relevant scientific production in areas such as family medicine, ophthalmology, fibromyalgia, internal medicine, traumatology, etc.

Publications

Vicente M, Molins C, Rosas K, Murata EP, Vázquez D, Purroy F, Traveset A. Bilateral Optic Neuritis Secondary to Immune Etiology by anti-PD-L1 Antibody. *J. Neuro-Ophthalmol.* 2021. 41. (2):p. 177-179. IF:3,042. Q2.

Rojo MI, Castelblanco E, Real J, Hernández M, Falguera M, Amigó N, Julve J, Alonso N, Franch J, Granada M, Mauricio D. Advanced Quantitative Lipoprotein Characteristics Do Not Relate to Healthy Dietary Patterns in Adults from a Mediterranean Area. *Nutrients.* 2021. 13. (12):4369. IF:5,717. Q1.

Castelblanco E, Sarrias MR, Betriu À, Soldevila B, Barranco M, Franch J, Valdivielso JM, Bermudez M, Groop PH, Fernández E, Alonso N, Mauricio D. Circulating CD5L is associated with cardiovascular events and all-cause mortality in individuals with chronic kidney disease. *Aging-US.* 2021. 13. (undefined):p. 22690-22709. IF:5,682. Q1.

Valenzuela F, Garcia E, Molina F, Soler J, Blanco J, Rubi F, Climent C, Briones E. Patients' and primary healthcare professionals' perceptions regarding chronic low back pain and its management in Spain: a qualitative study. *Disabil. Rehabil.* 2021. 43. (18):p. 1-10. IF:3,033. D1.

Morales S, Gasol A, Veas J, Canosa C, Melé J, Vilardell F, Sanchez DR, Iglesias E, Salud A. Selection of neoadjuvant treatment based on the 21-GENE test results in luminal breast cancer. *BREAST.* 2021. 56. p. 35-41. IF:4,380. Q1.

Murillo SM, Cudos AG, Rodriguez JV, Morales CC, Olive JM, Villellas FV, Guzman DRS, Martinez EI, Salvia AS. Survival analysis of bevacizumab plus taxane treatment in luminal metastatic breast cancer. *Futur. Sci. OA.* 2021. 7. (3):FSO672.

Falguera M, Castelblanco E, Rojo MI, Vilanova MB, real J, Alcubierre N, Miró N, Molló À, Mata M, Franch J, Granada M, Mauricio D. Mediterranean Diet and Healthy Eating in Subjects with Prediabetes from the Mollerussa Prospective Observational Cohort Study. *Nutrients.* 2021. 13. (1):p. 1-10. IF:5,717. Q1.

Research team

Researchers

Ramon Jové Talavera
 Jaume Mas Atance
 Pau Sole Florensa
 Angel Forner Forner
 Antonio Otal Palacin
 Oscar Ripol Valentin
 Jorge Soler Gonzalez
 Miquel Falguera Sacrest
 Jaume March Llanes
 Maria Angels Mollo Iniesta
 Jordi Mele Olive
 Eduard Sole Mir
 Alba Mari Lopez
 Violant Pujol Aymerich
 Eloisa Seto Gort
 Antonio Alcantara Tadeo
 Francesc Xavier Abardia Oliva
 Ramon Aldabo Gimeno
 Jose Antonio Carceller Vidal
 Maria Lourdes Hernandez Gimeno
 Maria Merce Matute Crespo
 Teresa Pedrol Aige
 Jose Maria Sistac Ballarin
 Alicia Traveset Maeso
 Ana Rosa Calvo Redol
 Jordi Soldevila Estape
 Maria Carmen Jurjo Campo
 Maria Carmen Roig Garcia
 Francisco Javier Gonzalez Tallada



Fundraising



Collaborating companies and organizations



The contributions made by companies and organizations that work with IRBLleida have the mission of promoting, developing, managing and disseminating biomedical research in Lleida. Donations allow us to investigate in our 5 research areas. IRBLleida has the support of 157 companies and organizations from Lleida.

Why make a donation to IRBLleida?

- To promote health research and have an impact on the quality of life of the population.
- To improve the treatment of many diseases to benefit the health of future generations.
- To collaborate with the scientific community, patients and the public
- To promote Lleida and the region
- To share the values of the IRBLleida: responsibility, respect, rigour, generosity in synergy, independence of judgement, fairness in the distribution of resources, social commitment, leadership and enthusiasm.

Information 2021

157

TOTAL COLLABORATING COMPANIES

27

NEW COLLABORATORS

202.561€

CONTRIBUTION TO IRBLLEIDA



Fundraising

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Number of companies and organizations	117	125	129	132	139	157	166	135	157
Donations	119.745	134.763	150.346	153.561	163.382	190.939	210.056	179.379	202.561

Figure 26. Total number of collaborating companies and organizations.

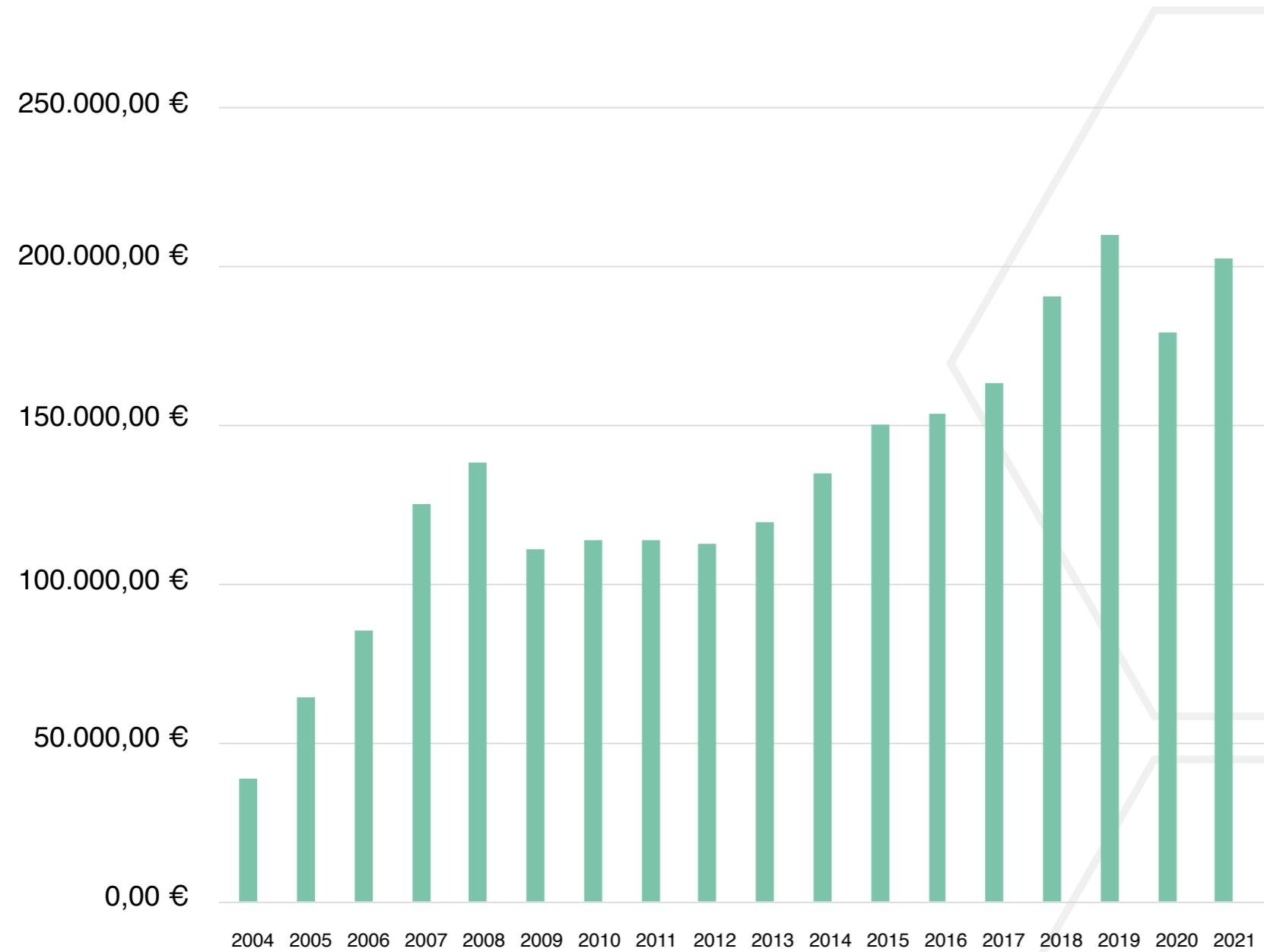


Figure 27. Donations made by companies and organizations since 2004.

Collaborating companies and organizations 2021



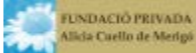
Collaborating companies and organizations 2021





Main funders

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IRB **Lleida**[®]

Institut de Recerca Biomèdica






**Biomedical Research Institute
of Lleida**

Av. Alcalde Rovira Roure, 80

25198 Lleida

Tel. 973 70 22 01

info@irblleida.cat

-  @IRBlleida_info
-  /IRBlleida
-  @irblleida
-  company/irblleida
-  canal IRBlleida