UNIVERSITAT DE BARCELONA

# ANNUAL REPORT 2020

Institute of Neurosciences of the University of Barcelona

Institut de Neurociències
UNIVERSITAT DE BARCELONA

UNIT OF EXCELLENCE MARÍA DE MAEZTU

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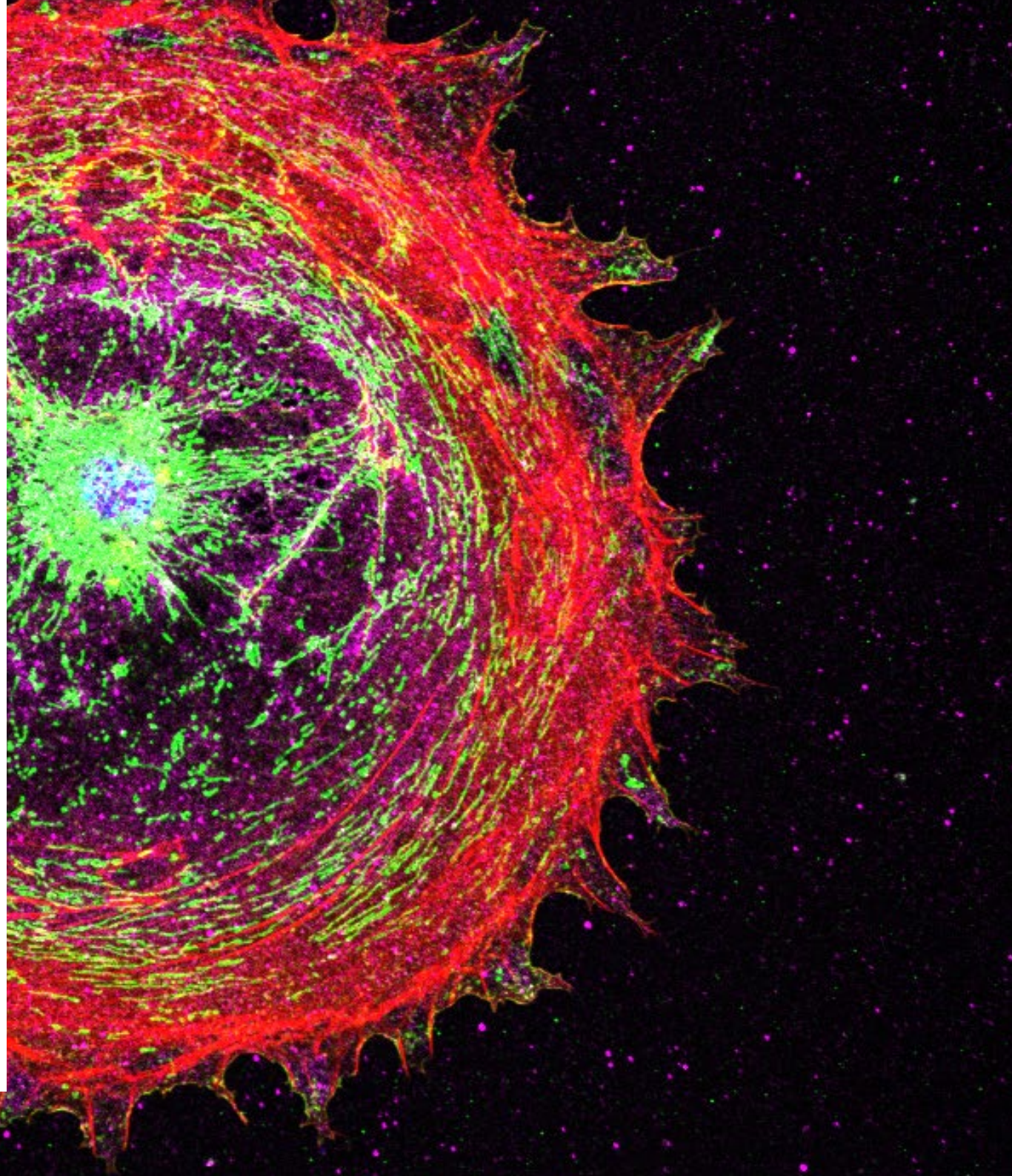


**Annual Report**
2020

# Foreword

## Institute of Neurosciences

The Institute of **Neurosciences (UBneuro) was created under the premise** to gather all research at the University of Barcelona that focused on a common goal: understanding the nervous system as a whole to give response to society challenges. It is a frontrunner in international neuroscience research, being one of the few institutes in the world that investigates the brain at every level. This includes research groups in neurobiology, neuropharmacology, pathophysiology, neurology, psychiatry, clinical psychology, neuropsycobiology and cognitive neurosciences.

**As a university research Institute, we support training of the neuroscience research workforce and disseminate timely and accurate information about neurological and mental disorders to the research community, physicians, patient associations and the public.**

The Institute has been awarded with the María de Maeztu Excellence Unit accreditation, and **gathers 445 researchers from the University of Barcelona. We encourage** aand welcome collaborations with international research groups and organisations!

# Foreword

Dr. Jordi Alberch
Director

## Message from the Director

It is my pleasure to release the 2020 edition of the Annual Report of the Institute of Neurosciences of the University of Barcelona (UBneuro). At the beginning of the year, the pandemic COVID-19 shooked our lifes and we had to fastly adapt to the new circumstances. I would like to acknowledge the effort of UBneuro community to face this world crisis being close to society in such a difficult time in which global mental health has been affected.

During this year we reached the equator or the Scientific Strategic Programme of María de Maeztu Unit of Excellence award (MdM). UBneuro was evaluated in December 2020 by an external international committee of the Spanish Ministry of Science and Innovation. The panel congratulated the activities of the Institute and gave us the score of "Satisfactory", which is the highest. The panel commends "Research outcomes are of high quality in comparison to international standards and clearly designate UBneuro as an important unit of neuroscience research" and "UBneuro has delivered on the milestones and deliverables set out in the original workplan".

The Institute has achieved an **international** research leadership in Neuroscience with an outstanding scientific contribution over the past few years. We are proud to rank 32th in the Neuroscience and Behaviour in the US News Best Global Universities Ranking (out of 400). I would like to highlight that our researchers, using multidisciplinary approaches, have obtained novel findings in understanding brain function and pathology from the molecular levels to cognition and behaviour. We also keep a close interaction between basic and clinical research, and these bridges are reinforced by the eight scientific and technological platforms that support multiple research groups. Many of these fascinating discoveries have only been possible thanks to the wide international collaborative networks of the researchers of the Institute.

UBneuro has also increased the scientific strength thanks to the attraction of new researchers. Several young and talented researchers joined the Institute as group leaders. Furthermore, we have continued with the programmes to retain and attract the best talent, including new grants for excellent master and PhD students, and a personalized support programme for researchers interested in applying for Postdoctoral fellowships.

Although in this exceptional year, we had difficulties to performe some activities, we could have two meetings with our **Scientific Advisory Board** (SAB) in May was virtual, but in November we could make a face to face meeting. I would like to thanks the commitment of all SAB members that really drive us to achieve our goals of the strategic plan and to keep moving forward as a reference in translational research in Neuroscience in Spain and abroad.

We continuously endeavour to align our research activities with the **Responsible Research and Innovation** guidelines fostered by the European Commission supporting the design of inclusive and sustainable research and innovation. This year, the Institute had to adapt to exceptional circumstances in relation to its presence in several scientific dissemination and outreach activities. But thanks to our team and all the collaborators we organized once more, the NeuroArt project. I want to highlight the work done by the high school students creating stunning pieces of art, and also the researchers that participated in the project.

Overall, we keep working toward scientific excellence and strive to advance neuroscience research at all scientific levels, from discovering new innovative strategies to identifying new therapeutical approaches for neurological and psychiatric disorders, gathering knowledge and building collaborations across disciplines to ultimately tackle current and future challenges and together build a better world.

Jordi Alberch
*MD, PhD, Director*

# Governing and Advisory Bodies

## Director

- **Jordi Alberch, MD, PhD**
  Department of Biomedical Sciences

## Deputy Director

- **Xavier Gasull, PhD**
  Department of Biomedical Sciences, until November
- **Georgina Guilera, PhD**
  Department of Social Psychology and Quantitative Psychology, since November

## Management team

- **Marta Turro**
  Administrative officer
- **Laia Tremosa, MSc**
  Communication manager
- **Cristina Pulido, PhD**
  Research developer
- **Katia Verger, PhD**
  Transference manager
- **Sara Alaoui**
  Junior trainee in Digital information and documentation

## PhD Committee

Marta Riba Baques, Carla Castany Pladevall, Alicia Georghiades, Esther Garcia Garcia, Josep Argerich, Ana Martina Greco, Gizem Senel, Irene Sanchez.

## Representatives of research areas

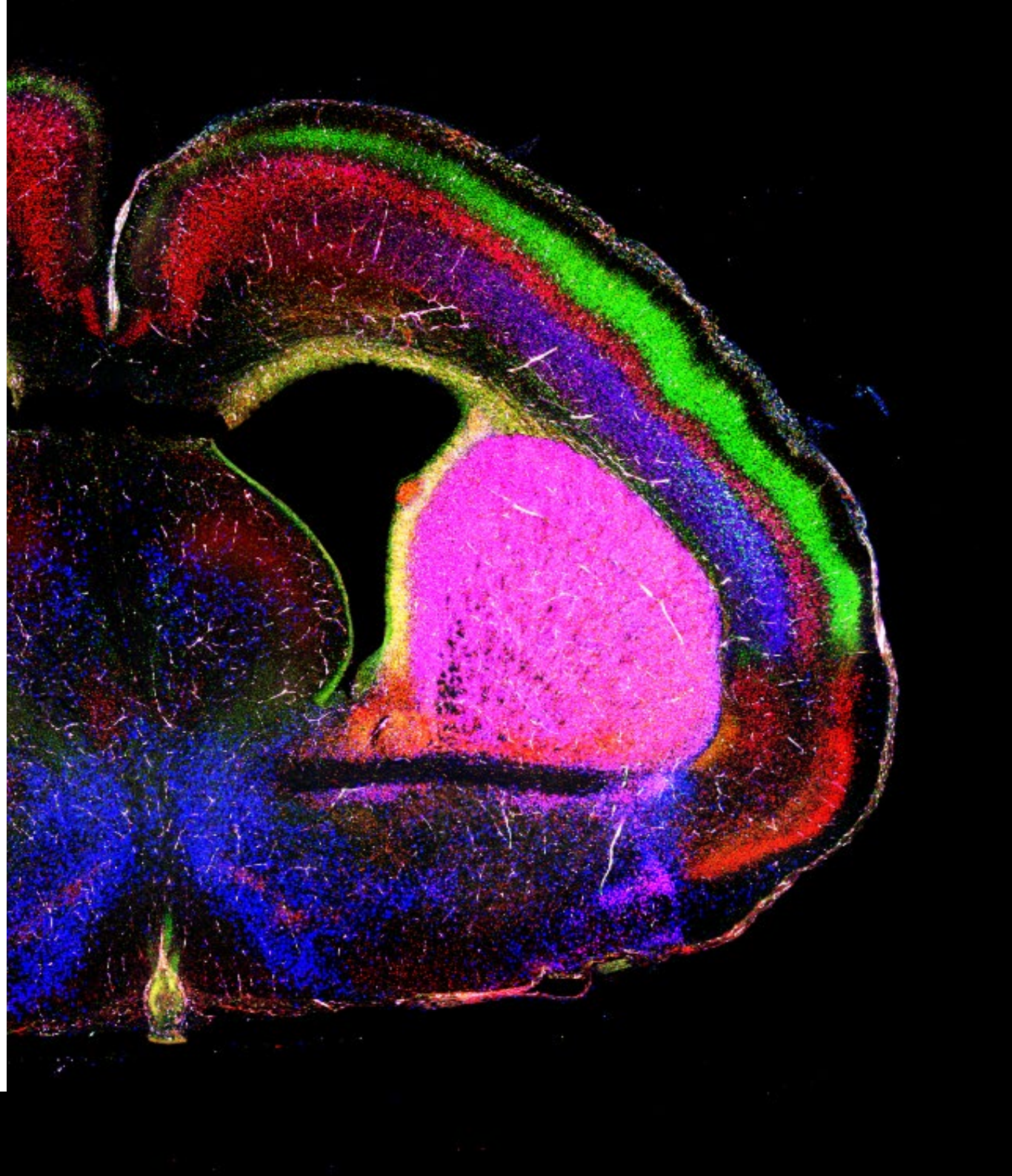
- **Josep Marco, PhD**
  Department of Cognition, Development and Educational Psychology
- **Maria Angels Jurado, PhD**
  Department of Clinical Psychology and Psychobiology
- **Georgina Guilera, PhD**
  Department of Social Psychology and Quantitative Psychology
- **Raul Estevez, PhD**
  Department of Physiological Sciences
- **Merce Pallas, PhD**
  Department of Pharmacology, Toxicology and Therapeutic Chemistry
- **Yaroslau Compta, MD, PhD**
  Department of Medicine

## Scientific Advisory Board

- **Kimmo Alho, PhD**
  University of Helsinki, Finland
- **Ernest Arenas, MD, PhD**
  Karolinska Institute, Sweden
- **Mercedes Atienza, PhD**
  Universidad Pablo de Olavide, Spain
- **Carmen Sandi, PhD**
  Ecole Polytechnique Federale de Lausanne, Switzerland
- **Frederic Saudou, PhD**
  Institute of Neuroscience, University Grenoble-Alps, France

2020 IN A NUTSHELL

# GLOBAL NUMBERS



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OUTPUTS

**476** Total articles

**79.6** Q1 Scopus

**1131** SJR (Scientific Journal Ranking)

**4495** Cite Score

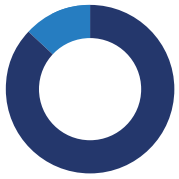
**Source:** Scopus

INPUTS

## **364** Ongoing Projects | **42.5 M€**

**69.9%** National projects
**29.7M€**

**30.1%** International projects
**12.8M€**



**83.3%** Public Funding
**36.4M€**

**16.7%** Private Funding
**6.1M€**

UNIT OF EXCELLENCE MARÍA DE MAEZTU

MDM-2017-0729. Ministerio de Economía, Industria y Competitividad. Institute of Neurosciences of the University of Barcelona. **2,000,000€**

**2** Advanced Grants

**4** Research professors
**6** Academia professors

**4** CIBERs

CIBERNED, CIBERSAM, CIBERER, CIBERESP

**3** RETICs

RETICS of Cell Therapy, RETICS of Ophthalmology and Vision and RETICS of Multiple Sclerosis

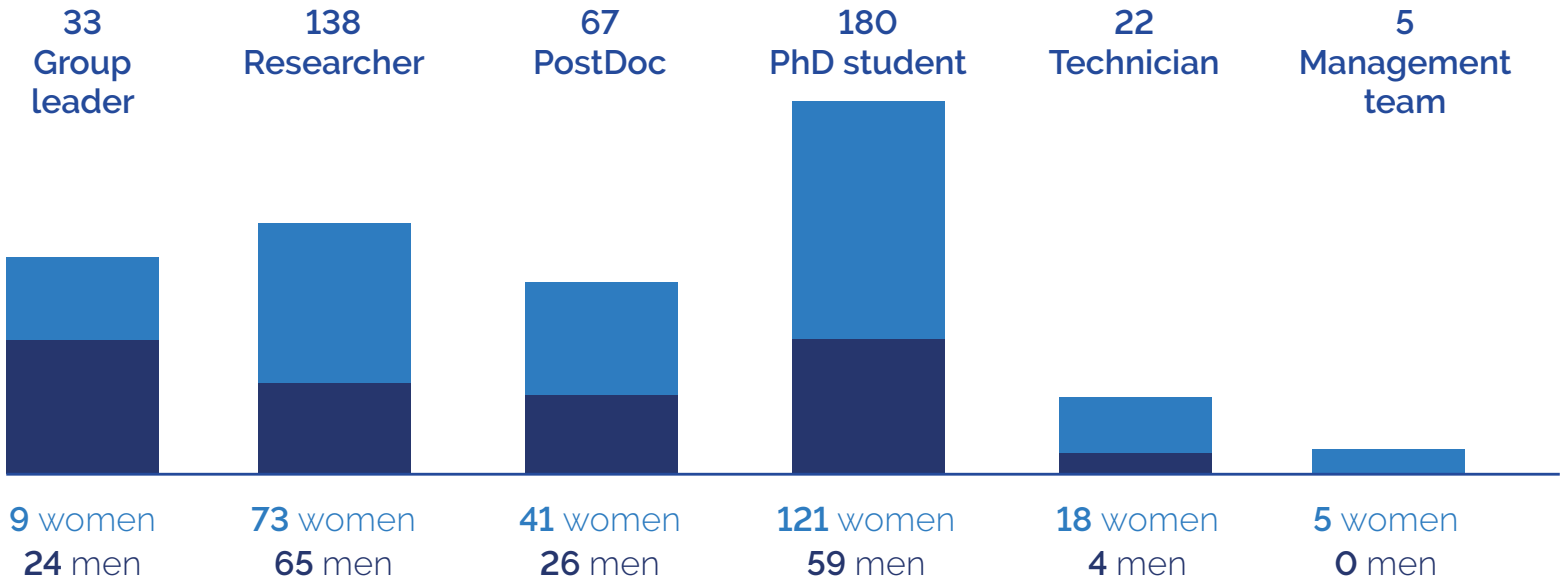
**6** Spin-offs ongoing

**16** Patents ongoing

# **445** Total Human resources

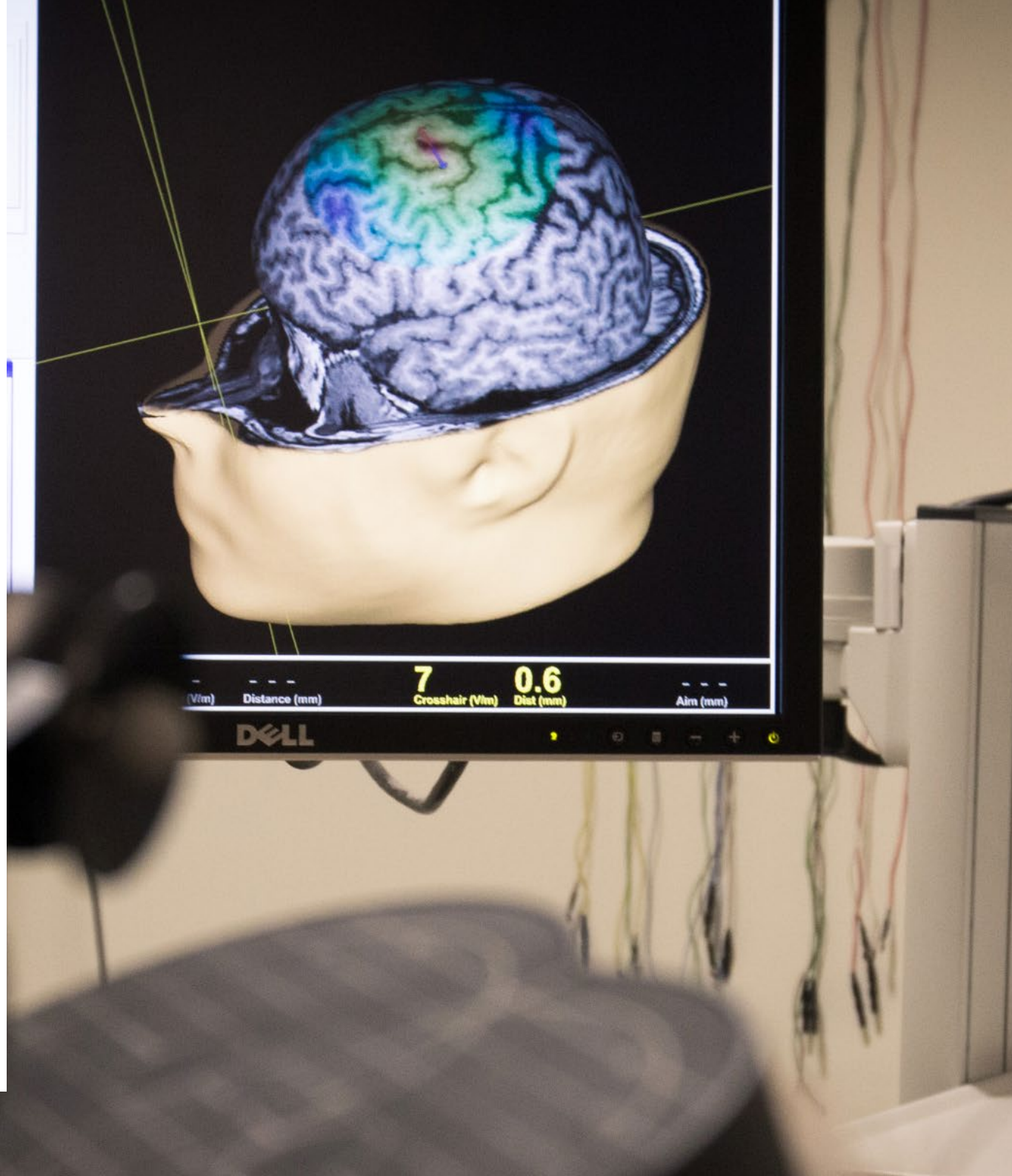
**267** women | **60%**

**178** men | **40%**



# UBNEURO ACTIONS AND ACTIVITIES

**Annual Report**
2020



# UBneuro actions and activities


During the year 2020, we had different events and news, building upon of the strategic plan implemented after receiving the **María de Maeztu Excellence Award.**

The new research areas have facilitated interdisciplinary research and the flourishing of new synergies. Overall, the Institute keeps working to push the frontiers of Neuroscience and contribute to society. We also implemented new initiatives to keep being at the forefront of excellent research. We have built new collaborations and partnerships, both internally and externally, to increase the impact of our contributions.

Below we briefly describe the most relevant UBneuro Actions during 2020.

# UBneuro actions and activities

## Technical and Scientific platform program

We developed a program to potentiate advanced technical and scientific platforms. The eight specialized platforms created in 2019 have been extended in 2020:

- Animal research facility
- Neuropharmacology
- Electrophysiology facility
- Clinical and experimental neurology and neuropathology
- Advanced microscopy
- Neuroimaging
- Virtual Reality biosensor platform
- Electroencephalography (EEG) and Magnetoencephalography

## Spin-offs

Concerned with knowledge transfer this year, two new spin-offs have been created: AIGecko Technologies and Mind & Identity. Below you will find a brief description of all ongoing spin-offs of UBneuro.

- **Braingaze:** Technology-driven detection and digital treatment for cognitive disorders. More information
- **Cytes Biotecnologies:** Offers services based on cell isolation and cell solutions for in vitro models. More information
- **Virtual bodyworks:** Applies immersive virtual reality to health improvement both, mental and physical (diagnosis of dyslexia, autism, adult ADHD and early onset detection of Alzheimer's disease). More information
- **Neurekalab:** Science to overcome learning difficulties. More information
- **AIGecko Technologies** Image recognition and analysis services based on algorithms, and artificial intelligence. More information
- **Mind & Identity:** Virtual reality to revolutionize psichological treatments. More information

# UBneuro actions and activities

## International Congresses Grants

In 2020, the Institute of Neurosciences of the University of Barcelona awarded 50 congress fellowships for our researchers in order to register to congresses such as FENS, European Academy of Childhood Disability Annual Meeting, International Congress of Parkinson's Disease and Movement Disorders. The total funding was 3.476€

The aim of these grants is to promote the internationalisation of research and to support the career of young researchers, strengthening the international presence of the research groups from the Institute of Neurosciences of the University of Barcelona.

# UBneuro actions and activities

## Neuroscience Conference (NCS)- and Barcelona Lecture Series (BLS) 2020

These open conferences offer a great opportunity for researchers and students to meet international distinguished neuroscientists, who present the latest advancements in their respective field of research. Below you can find the oral presentations that were held previous pandemic.

**NCS 20120 “Brain circuits encoding threats”**

28/02/2020

Manuel Mameli, PhD

Université de Lausane

**NCS 2020 “Decoding the neural processing of speech “**

06/02/2020

Tobias Reichenbach, PhD

Imperial College London

**BLS 2020 “Forecasting “what’s next” in a dynamic world”**

12/02/2020

Martijn Wokke, PhD

The City University of New York (USA), and The University of Cambridge (UK)

**BLS 2020 “ERC Artsoundscapes project”**

28/01/2020

Raquel Jimenez Pasalodos, PhD

Universidad de Valladolid and Universitat de Barcelona

# UBneuro actions and activities

## Scientific Advisory Board Meeting

**Due the pandemic, the 3rd Scientific Advisory Board (SAB) meeting was postponed to the 6th of May of 2021 and was celebrated virtually.**

UBneuro External SAB is composed by 5 prestigious scientists:

- Carmen Sandi (Full Prof., Director of Brain Mind Institute, Laboratory of Behavioural Genetics, Ecole Polytechnique Federale de Lausanne, Switzerland. Former President of FENS)
- Ernest Arenas (Full Prof. Karolinska Institute, ERC AdG, Sweden)
- Frederic Saudou (Director of Institute of Neuroscience, ERC AdG, University Grenoble-Alps, France)
- Mercedes Atienza (Full Prof. Universidad Pablo de Olavide, Spain)
- Kimmo Alho (Full Prof. University of Helsinki, Finland)

The aim of this meeting was to discuss and plan the strategy of the Institute to ensure growth and scientific excellence.

Opening the event, the director Jordi Alberch welcomed the SAB members and the Steering Committee and exposed the current status of the Institute and the proposed strategy for 2021. The presentations of the event were: Cristina de la Malla (Perception and control of action), Judith Dominguez (Emotion processing and its influence on the sensory and attention systems), Daniel del Toro (Novel mechanisms of cerebral cortex folding) and Merce Massana (Shining light to corticobasal ganglia circuit alterations in Huntington's Disease). After all the presentations, the SAB got together to deliberate and discuss all the information provided. Finally, a group discussion about the opportunities for the Institute took place.

## Agenga - 6 May 2021 Virtual event

| | |
|---|---|
| 9:00-10:30 | UBneuro presents the evolution during 2020 and its overarching strategy<br>**Jordi Alberch**, Director<br>**Cristina Pulido**, Research developer<br>**Laia Tremosa**, Communication manager<br>**Katia Verger**, Knowledge transfer manager |
| 10:30-10:45 | Break |
| 10:45-11:05 | **Cristina de la Malla**, Perception and control of action |
| 11:05-11:25 | **Judith Dominguez**, Emotion processing and its influence on the sensory and attention systems |
| 11:25-11:45 | **Daniel del Toro**, Novel mechanisms of cerebral cortex folding |
| 11:45-12:05 | **Mercè Masana**, Shining light to cortico-basal ganglia circuit alterations in Huntington's Disease |
| 12:05-12:20 | Break |
| 12:20-12:40 | Internal discussion |
| 12:40-13:00 | Feedback |

# UBneuro actions and activities

## Training Actions

**The Institute of Neurosciences assumes that the future of our society relies on visionary and endeavouring spirits, and certainly those can be found in new young generation. Thus, one of our major goals is to attract and promote the most brilliant talent. Since we are a university institute, training is in our DNA.**

**Master** students could apply to 5 master degrees:

1. Inter-university Master of Neurosciences (Coord. Esther Pérez-Navarro)
2. Master of Research in Behaviour and Cognition (Coord. Ferran. Pons)
3. Master degree in General Health Psychology (Coord. Joan Sansa)
4. Inte-runiversity Master of Introduction to Mental Health Research (Coord. Eduard Vieta)
5. Cognitive Science and Language (Coord. Laura Bosch).

Additionally, during 2020, master students could enjoy mentoring **workshops** on "How to develop the research career" and "How to look and apply for PhD fellowships" Five **Master** thesis awards were grantedto the best students to do their master thesis with some of our principal investigators. And two potential PhD candidates benefited from the **Master-PhD bridge program**, which employ them between the end of their master and the beginning of their PhD fellowship.

PhD students can join **4 Doctoral Programs** of the UB and **3 MSCA-ITN** programmes:

1. PhD in Biomedicine (Coord. Albert Tauler)
2. PhD in Medicine and Translational Research (Coord. Julia Gonzalez)
3. PhD in Brain, Cognition and Behavior (Coord. Joan Lopez-Moliner)
4. PhD in Clinical Health Psychology (Coord. José Gutierrez Maldonado)
5. Perception and Action in Complex Environments (PI: Joan López-Moliner)
6. European Training Network for Cell-based Regenerative Medicine (PI: Jordi Alberch)
7. Training for Advanced Stem Cell Technologies in Neurology (Coord. Josep M. Canals).

These official programmes constitute an excellent opportunity for professional development in neurosciences for young researchers and talented students interested in research. Moreover, PhD students at UBneuro could also enjoy several actions promoted by our PhD Committee such as the Online Mentoring Seminars. This seminars are organized to mentor PhD students on their research career path after their PhD
Exceptionally, this year we offered PhD extension grants because due to COVID-19 pandemic, many of the PhD students had to interrupt their research. Despite the government grants gave the option to extend the contracts, several of the PhD students, were not been able to embrace this option. Six PhD students were able to finalized their PhD thanks to this grant.Therefore, the Institute

Personalized mentoring is offer to all researchers to both help on their career path and support on any application. Support is given by the research promotion platform formed by UBneuro members, UBneuro staff, and external advisory companys.

As a novelty of 2020, all researchers can apply for Training grants to get training on specific technics and skills to keep train at the frontiers of knowledge. Seven training grants were given in 2020.

Last but no least we organised the EIT Health Course: Brain Health for Life, preventing brain-related disability. This international entrepreneurial course was made together with Barcelona Brain Health Institute-Institut Guttmann, Biocat and La Caixa Foundation. It was held on 15-16 December 2020.

# UBneuro actions and activities

## Open Access Actions

Peer-reviewed scientific research articles are published on gold open, or following the European Commission's strategy, opting for green open access when the gold open access is not achievable due to economical restriction. University of Barcelona has an institutional repository (http://diposit.ub.edu) publicly accessible to anyone with a research data collection (http://hdl.handle.net/2445/56611). Any researcher can upload datasets and get a unique handle as a permanent identifier. Moreover, data can be released using any of the required licenses (CC-BY, CC0). Inside the Digital Repository, the UBNeuro has its own collection (http://diposit.ub.edu/dspace/handle/2445/119894).
In 2020, to consolidate our Open Access strategy inside an Open Science (OS) Framework Open Access Grants to publish on Open Access were offered to our researchers to promote gold open publications. Ten grants were awarded. Moreover, UBneuro had an active participation in OS working group from SOMMa.

## Gender Actions

The Institute takes active account of: i) Gender balance in decision-making processes; ii) Gender dimension in Research and Innovation (R&I) content; iii) Gender balance in Project teams at all levels. Our Institute is composed by 60% of women. Our Institute works to provide equal opportunities to male and female researchers at all stages, paying attention to promote gender equality in all open vacancies, respecting the rules of the Code as laid out in the Charter and guaranteeing gender balance in the decision-making network. In order to keep the awareness of the importance of gender consideration our institute promoted the attendance to "Debats UB: Feminism(s)", February, 2020. Other actions were canceled due to pandemic.

## Outreach

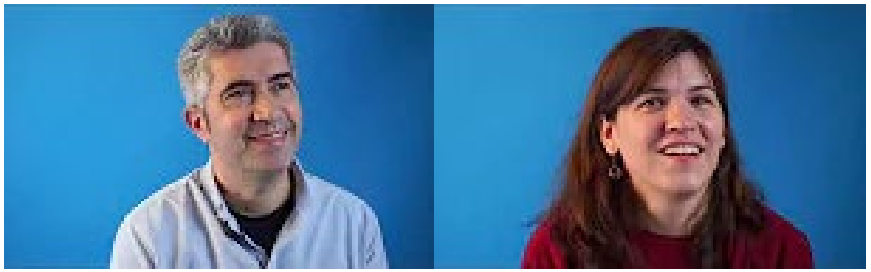
This year, we have exponentially grown the impact of our outreach activities thanks to the online component. In addition, we also participated in the online edition of the Science Festival of the UB. Thanks to the strengthening of our science communication and outreach program we have consolidated our collaborations and sponsorships with the Centre of Contemporary Culture of Barcelona, Museum of Contemporary Art of Barcelona, CosmoCaixa, Pasqual Maragall Foundation, Edinburgh University, Facebook VR and we have stablished a new collaboration with Fundació Catalana per la Recerca to teach science dissemination activities to high school teachers.

# UBneuro actions and activities

## 1. Meet the Brains

The Institute are its researchers, through them the Institute opens up to peers and society. We wanted to show to everybody our researchers and what they are investigating. With these short videos we wanted that our researchers felt part of the Institute. Also, we want to use the videos as an internal communication so all the crew could know what their coworkers are researching. Last but no least with this project we want to break the stereotype of an unapproachable scientist to the society.

Link of the videos: https://www.youtube.com/playlist?list=PLk30SkIhJt5Kv8c7Yuzqh0r78hBr2mAaL



## 2. NeuroArt 2020

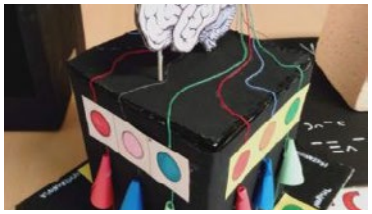
On March 2020, in the framework of the Brain Awareness week, we celebrated the third edition of the NeuroArt project, which aims to bridge the gap between science and art.

See the video of the project here
www.neurociencies.ub.edu/neuroart/

NeuroArt invites schools from all over Catalonia to explore different neuroscientific concepts through works of art. Our researchers went to diferents schools talking about their research and answering qüestions of the students about the brain. Besides more than 2,000 students directly involved in the NeuroArt project, we have reached an audience of more than 15.000 people online who voted for the different works of art.
This year we did the Award Gala online, a group of representatives from each school made a video explaining their works of art inspired by the nervous system.

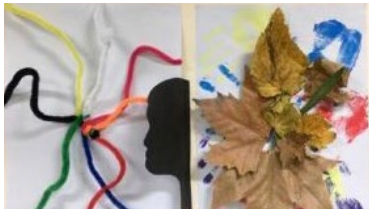
# UBneuro actions and activities

The awarded works of art were:



## El Daltonisme: 1st Prize

With this work, the students of the 3r ESO of Institut Els Roures (Dosrius), want to represent color blindness and its types. It is a cube-shaped sculpture in which each face represents a type of color blindness. Using a traffic light symbology, they show the diferent color-blindness and how they work.



## Memòries d'un Museu: 2nd Prize

The second prize went to the project Memòries d'un Museu by students of 3r ESO of Escola Salesians (Sabadell). They wanted to represent how the the brain, as a center of emotions control attitudes such as harassment or masculinity and abilities such as freedom or love. These concepts are represented creating the memories of a museum to show its effects: decreased learning, stress, awareness, and alteration.


## (Mal)addicions: 3rd Prize

The 3rd prize went to other group of 3r ESO of Institut Els Roures (Dosrius). This piece of art aims to represent the differences in mental health between a healthy lifestyle and a harmful lifestyle due to drug use.

## Apagada parcial de la medul·la espinal: 4th prize

The students of 4t ESO of the Escola Túrbula (Sant Adrià del Besòs) wanted to represent the rupture of the spinal cord caused by a traffic accident. With this idea, they won the 4th prize.

# RESEARCH

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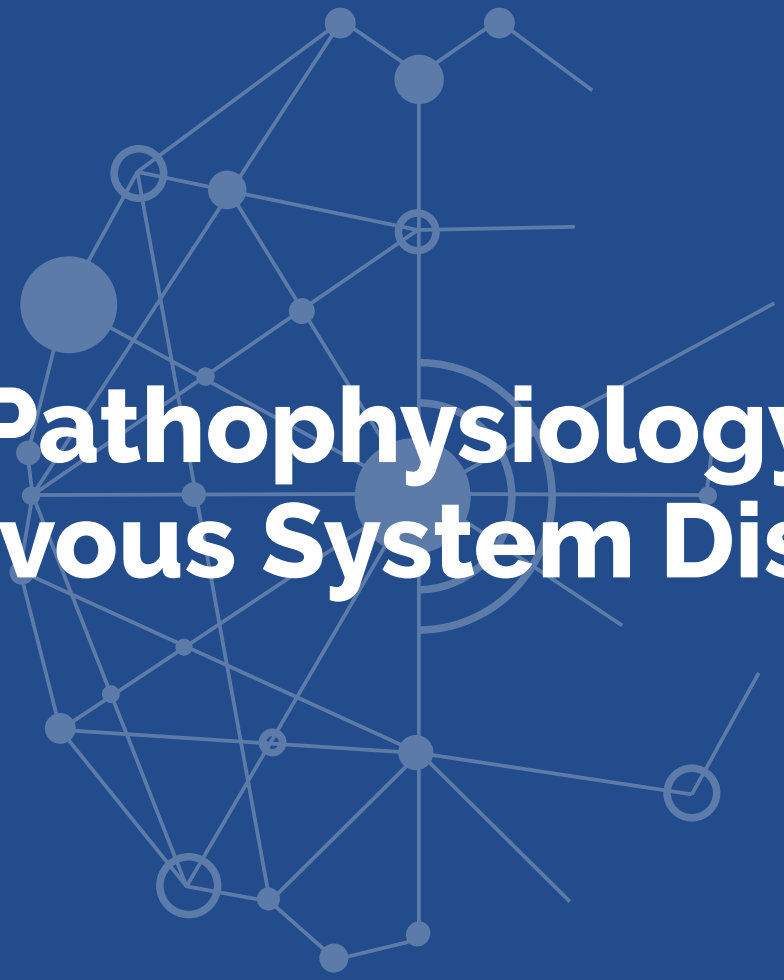
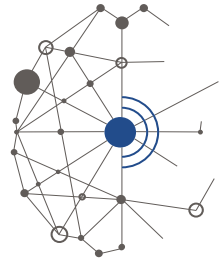


# Pathophysiology of Nervous System Diseases

**Annual Report**
2020

# Pathophysiology of Nervous System Diseases



## THE STUDY OF THE PATHOPHYSIOLOGY OF NERVOUS SYSTEM DISEASES IS AN IMPORTANT CHALLENGE IN BIOMEDICINE TO DEVELOP NEW SUCCESSFUL THERAPIES.

Neurological and psychiatric disorders can disrupt molecular pathways, synapses, neuronal and glial subpopulations, and local circuits in specific brain regions, as well as higher-order neural networks. Therefore, research must range from the study of large-scale brain network alterations to the microscopic and/or genetic abnormalities. Improving our knowledge of the pathophysiology of these conditions will enable not only to identify new potential therapeutic targets but also biomarkers, whose usefulness can range from detecting diseases in very early stages more likely to respond to disease-modifying treatments than advanced stages, to differentiate among similar conditions and to monitor response to treatments.

Research in this area focuses on defining the pathophysiological mechanisms involved in the loss of normal and neuronal plasticity related to these diseases. A deeper understanding of neuronal connectivity and dynamics, signaling molecules, cell-cell interaction and epigenetic factors in the nervous system will enable us to devise new pharmacological targets for therapeutic strategies to prevent or delay nervous system diseases.

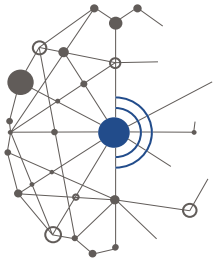
Another therapeutic approach for nervous system disorders is neuroregenerative medicine. The institute is also interested in mimicking neural development on stem cells for replacing strategies as new therapies for diseases affecting the brain and spinal cord.

Thus, the current structure and expertise of the Institute of Neurosciences constitute the best environment to conduct multidisciplinary and translational research to find therapeutic approaches for motor and cognitive dysfunctions.

## FEATURED PROJECTS

- **Recerca centrada en el pacient: estudi de les necessitats del pacient, fenotipació clínica i patogènesi molecular en la Neurofibromatosi Tipus 2**. Fundació La Marató de TV3. 20207-30-31. Jordi Llorens
- **Papel de la proteina de matriz extracelular Reelina en plasticidad neural y en la enfermedad de Alzheimer.** Ministerio de Ciencia Innovación y Universidades. PID2019-106764RB-C21. Eduardo Soriano i Lluis Pujada
- **Modulation of Tau seeding and pathology in tauopathies by BBB-nanocarriers, epitope selective vaccination and ectoPrP Tau receptor bodies (STOPTauPATHOL).** Fundació 'La Caixa'. HR18-00452. Jose Antonio del Rio
- **Regulación de canales de cloruro en salud y enfermedad.** Ministerio de Ciencia Innovación y Universidades. RTI2018-093493-B-I00. Raul Estevez.
- **Modulation of soluble epoxide hydrolase (sEH) in brain and peripheral tissues: role of the intestinal-brain axis in neurodegeneration.** Ministerio de Ciencia Innovación y Universidades. PID2019-106285RB-C21. Merce Pallas
- **In vitro Study of Neurodevelopment in Huntington's disease.** CHDI Foundation Inc. A14079. Josep M. Canals
- **Nuevos mecanismos de migración neuronal implicados en el plegamiento de la corteza cerebral.** Ministerio de Ciencia Innovación y Universidades. RTI2018-095580-A-100. Daniel del Toro
- **Network Center for Biomedical Research in Neurodegenerative Diseases** (CIBERNED)
- **Network Center for Biomedical Research in Rare Diseases** (CIBERER)

# Cell biology of neurodegeneration



Pathophysiology of Nervous System Diseases

## Principal investigators

FERNANDO AGUADO
(Neural and endocrine secretory pathways in normal and pathological conditions)

FRANCESC X. SORIANO
(Inter-organelle communication)

## Members

Raquel Larramona Arcas, Guillem Rique Pujol, Irene Sanchez, Paula Tena Morraja, Virginia Teresa Pla

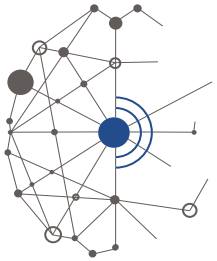
## Active projects

- **Dense core vesicles in neurons and astrocytes: exocytotic mechanisms and their potential use as neurodegenerative biomarkers.** Ministerio de Ciencia, Innovación y Universidades. PID2019-107738RB-I00. Fernando Aguado

- **Nuevas aproximaciones frente al accidente cerebrovascular. De los mecanismos moleculares a los tratamientos farmacológicos.** Ministerio de Economia y Competitividad. SAF2017-86622-C2-1-R. FX Soriano

- **ER-mitochondria contacts in neurodegeneration. Looking for a novel therapeutic approach.** Velux Stiftung. Project number 1262. FX Soriano

# Cellular and molecular basis of sensory disorders



Pathophysiology of Nervous System Diseases

## Principal investigators

ALEJANDRO BARRALLO-GIMENO
(Hair cell damage mechanisms in the zebrafish lateral line)

JORDI LLORENS
(Mechanisms and physiological impact of hair cell loss in the mammalian vestibular system)

ANA MENDEZ (Mechanisms underlying the light response in photoreceptor cells of the retina, light adaptation and inherited blindness)

## Members

Alberto Maroto, Carla Soler

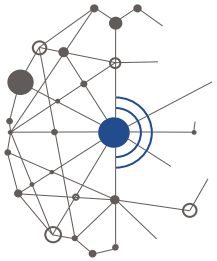
## Active projects

- **Recerca centrada en el pacient: estudi de les necessitats del pacient, fenotipació clínica i patogènesi molecular en la Neurofibromatosi Tipus 2.** Fundació La Marató de TV3. 20207-30-31. Jordi Llorens
- **Respuesta molecular del sistema vestibular a la ototoxicidad crónica; identificación de mecanismo y desarrollo de modelos de análisis in vivo.** Ministerio de Ciencia, Innovación y Universidades. RTI2018-096452-B-I00. Jordi Llorens i Alejandro Barrallo-Gimeno

## Selected publications


- Plana-Bonamaisó, A., López-Begines, S., Andilla, J., Fidalgo, M. J., Loza-Alvarez, P., Estanyol, J. M., Villa, P. de la, & Méndez, A. (2020). GCAP neuronal calcium sensor proteins mediate photoreceptor cell death in the rd3 mouse model of LCA12 congenital blindness by involving endoplasmic reticulum stress. Cell Death & Disease, 11(1), 62. https://doi.org/10.1038/s41419-020-2255-0
- Plana-Bonamaisó, A., López-Begines, S., Fernández-Justel, D., Junza, A., Soler-Tapia, A., Andilla, J., Loza-Alvarez, P., Rosa, J. L., Miralles, E., Casals, I., Yanes, O., de la Villa, P., Buey, R. M., & Méndez, A. (2020). Post-translational regulation of retinal IMPDH1 in vivo to adjust GTP synthesis to illumination conditions. eLife, 9, e56418. https://doi.org/10.7554/eLife.56418
- Chalansonnet, M., Carreres-Pons, M., Venet, T., Thomas, A., Merlen, L., Boucard, S., Cosnier, F., Nunge, H., Bonfanti, E., Llorens, J., Campo, P., & Pouyatos, B. (2020). Effects of co-exposure to CS2 and noise on hearing and balance in rats: continuous versus intermittent CS2 exposures. Journal of Occupational Medicine and Toxicology, 15(1), 9. https://doi.org/10.1186/s12995-020-00260-5

# Developmental neurobiology and regeneration



Pathophysiology of Nervous System Diseases

## Principal investigators

EDUARDO SORIANO
(Developmental genes and neural plasticity)

MARTA PASCUAL
(Septohippocampal networks in Alzheimer's Disease)

## Members

Ferran Burgaya, Fausto Alexander Ulloa, Jesus Mariano Ureña, Yasmina Manso, Antoni Parcerisas, Lluis Pujadas, Oriol Ros, Tiziana Cortrufo, Eva Davila, Katherine Herrera, Alba Ortega, Alba del Valle Vilchez, Alba Elias

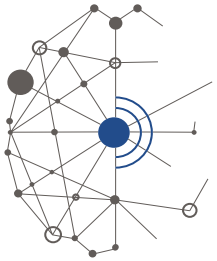
## Active projects

- **Enfermedades neurodegenerativas (CIBERNED).** Instituto de Salud Carlos III. Ministerio de Ciencia e Innovación. CB06/05/0098. Eduardo Soriano
- **Neurobiologia del Desenvolupament i la Regeneració Neuronal. SGRC - Ajuts de Suport als Grups de Recerca de Catalunya.** Agència de Gestió d'Ajuts Universitaris i de Recerca. 2017SGR1280. Eduardo Soriano
- **Nuevos enfoques para entender la patogénesis y la terapéutica de la enfermedad de Alzheimer.** Ministerio de Economía, Industria y Competitividad. SAF2016-76340-R. Eduardo Soriano
- **Papel de la proteina de matriz extracelular Reelina en plasticidad neural y en la enfermedad de Alzheimer.** Ministerio de Ciencia e Innovación. PID2019-106764RB-C21. Eduardo Soriano i Lluis Pujadas
- **Regulación de la respuesta microglial y eliminación de A por Reelina en la enfermedad de Alzheimer.** CIBERNED, Instituto de Salud Carlos III. Eduardo Soriano

## Selected publications


- Navas-Pérez, E., Vicente-García, C., Mirra, S., Burguera, D., Fernàndez-Castillo, N., Ferrán, J. L., López-Mayorga, M., Alaiz-Noya, M., Suárez-Pereira, I., Antón-Galindo, E., Ulloa, F., Herrera-Úbeda, C., Cuscó, P., Falcón-Moya, R., Rodríguez-Moreno, A., D'Aniello, S., Cormand, B., Marfany, G., Soriano, E., … Garcia-Fernàndez, J. (2020). Characterization of an eutherian gene cluster generated after transposon domestication identifies Bex3 as relevant for advanced neurological functions. Genome Biology, 21(1), 267. https://doi.org/10.1186/s13059-020-02172-3
- Rossi, D., Gruart, A., Contreras-Murillo, G., Muhaisen, A., Ávila, J., Delgado-García, J. M., Pujadas, L., & Soriano, E. (2020). Reelin reverts biochemical, physiological and cognitive alterations in mouse models of Tauopathy. Progress in Neurobiology, 186, 101743. https://doi.org/10.1016/j.pneurobio.2019.1017432282-x

# Research

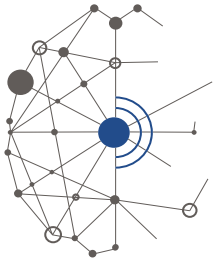


Pathophysiology of Nervous System Diseases

## Selected publications


- Coccia, E., Planells-Ferrer, L., Badillos-Rodríguez, R., Pascual, M., Segura, M. F., Fernández-Hernández, R., López-Soriano, J., Garí, E., Soriano, E., Barneda-Zahonero, B., Moubarak, R. S., Pérez-García, M. J., & Comella, J. X. (2020). SIVA-1 regulates apoptosis and synaptic function by modulating XIAP interaction with the death receptor antagonist FAIM-L. Cell Death & Disease, 11(2), 82. https://doi.org/10.1038/s41419-020-2282-x
- Navas-Pérez, E., Vicente-García, C., Mirra, S., Burguera, D., Fernàndez-Castillo, N., Ferrán, J. L., López-Mayorga, M., Alaiz-Noya, M., Suárez-Pereira, I., Antón-Galindo, E., Ulloa, F., Herrera-Úbeda, C., Cuscó, P., Falcón-Moya, R., Rodríguez-Moreno, A., D'Aniello, S., Cormand, B., Marfany, G., Soriano, E., Carrión, Á. M., … Garcia-Fernàndez, J. (2020). Characterization of an eutherian gene cluster generated after transposon domestication identifies Bex3 as relevant for advanced neurological functions. Genome Biology, 21(1), 267. https://doi.org/10.1186/s13059-020-02172-3
- Parcerisas, A., Pujadas, L., Ortega-Gascó, A., Perelló-Amorós, B., Viais, R., Hino, K., Figueiro-Silva, J., La Torre, A., Trullás, R., Simó, S., Lüders, J., & Soriano, E. (2020). NCAM2 Regulates Dendritic and Axonal Differentiation through the Cytoskeletal Proteins MAP2 and 14-3-3. Cerebral cortex (New York, N.Y.: 1991), 30(6), 3781–3799. https://doi.org/10.1093/cercor/bhz342
- Sans-Dublanc, A., Razzauti, A., Desikan, S., Pascual, M., Monyer, H., & Sindreu, C. (2020). Septal GABAergic inputs to CA1 govern contextual memory retrieval. Science Advances, 6(44), eaba5003. https://doi.org/10.1126/sciadv.aba5003
- Roselló-Busquets, C., Hernaiz-Llorens, M., Soriano, E., & Martínez-Mármol, R. (2020). Nystatin Regulates Axonal Extension and Regeneration by Modifying the Levels of Nitric Oxide. Frontiers in Molecular Neuroscience, 13, 56. https://doi.org/10.3389/fnmol.2020.00056
- Dávila-Bouziguet, E., Casòliba-Melich, A., Targa-Fabra, G., Galera-López, L., Ozaita, A., Maldonado, R., Delgado-García, J. M., Gruart, A., Ávila, J., Soriano, E., & Pascual, M. (2020). Coexistence of amyloid- and Tau hyperphosphorylation rescues cognitive and electrophysiological deficiencies in a mouse model of Alzheimer's disease. BioRxiv, 2020.12.10.417907. https://doi.org/10.1101/2020.12.10.417907
- Lobon, I., Solís-Moruno, M., Juan, D., Muhaisen, A., Abascal, F., Esteller-Cucala, P., García-Pérez, R., Martí, M. J., Tolosa, E., Ávila, J., Rahbari, R., Casals, F., Marques-Bonet, T., & Soriano, E. (2020). Somatic mutations in Parkinson disease are enriched in synaptic and neuronal processes. MedRxiv, 2020.09.14.20190538. https://doi.org/10.1101/2020.09.14.20190538
- Giralt, A., Brito, V., Pardo, M., Rubio, S. E., Marion-Poll, L., Martín-Ibáñez, R., Zamora-Moratalla, A., Bosch, C., Ballesteros, J. J., Blasco, E., García-Torralba, A., Pascual, M., Pumarola, M., Alberch, J., Ginés, S., Martín, E. D., Segovia, J., Soriano, E. & Canals, J. M. (2020). Helios modulates the maturation of a CA1 neuronal subpopulation required for spatial memory formation. Experimental Neurology, 323, 113095. https://doi.org/10.1016/j.expneurol.2019.113095

# Mechanisms of synaptic transmission



Pathophysiology of Nervous System Diseases

## Principal investigators

JUAN BLASI
(Study of the action of epsilon toxin on the nervous system)

ARTUR LLOBET
(Outside-in control of synaptic function; Study of synaptic disfunctions in the experimental model of X. tropicalis tadpoles)

CARLES SOLSONA
(Study of the action of epsilon toxin on the nervous system)

## Members

Beatrice Terni, Pablo Martinez, Marta Casas, Celia Velasco

## Active projects

- **Análisis de la interacción entre la toxina épsilon de Clostridium perfringens y la proteína MAL como causa de procesos neuroinflamatorios.** Ministerio de Economía, Industria y Competitividad. SAF2017-85818-R. Juan Blasi
- **Red de Investigación Transfronteriza en Enfermedades Priónicas Humanas y Animales (REDPRION).** European Union. EFA148/16 REDPRION. Juan Blasi
- **Regulación outside-in de la función presináptica por factores neuronales y gliales secretados.** Ministerio de Ciencia, Innovación y Universidades. RTI2018-096948-B-I00. Artur Llobet

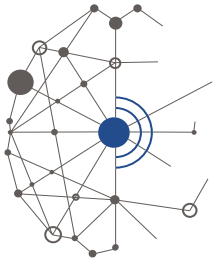
## Selected publications


- Martínez San Segundo, P., Terni, B., Burgueño, J., Monroy, X., Dordal, A., Merlos, M., & Llobet, A. (2020). Outside-in regulation of the readily releasable pool of synaptic vesicles by 2-1. FASEB Journal, 34(1), 1362–1377. https://doi.org/10.1096/fj.201901551R
- Velasco, C. D., & Llobet, A. (2020). Synapse elimination activates a coordinated homeostatic presynaptic response in an autaptic circuit. Communications Biology, 3(1), 260. https://doi.org/10.1038/s42003-020-0963-8
- Dorca-Arévalo, J., Dorca, E., Torrejón-Escribano, B., Blanch, M., Martín-Satué, M., & Blasi, J. (2020). Lung endothelial cells are sensitive to epsilon toxin from Clostridium perfringens. Veterinary research, 51(1), 27. https://doi.org/10.1186/s13567-020-007482
- Camarero, N., Trapero, A., Pérez-Jiménez, A., Macia, E., Gomila-Juaneda, A., Martín-Quirós, A., Nevola, L., Llobet, A., Llebaria, A., Hernando, J., Giralt, E., & Gorostiza, P. (2020). Correction: Photoswitchable dynasore analogs to control endocytosis with light. Chemical Science, 11(35), 9712. https://doi.org/10.1039/d0sc90189j


## Knowledge transfer & Innovation

- Extensímetro para estructuras biológicas. AVCRI243-E
- Almirall, S.A. 309999. Artur Llobet
- Almirall, S.A. 310276. Artur Llobet
- Laboratorios del Dr. Esteve, S.A. 310155. Artur Llobet

# Molecular and cellular neurobiotechnology



Pathophysiology of Nervous System Diseases

## Principal investigators

JOSE ANTONIO DEL RIO

## Members

Rosalina Gavin, Vanesa Gil, Arnau Hervera, Sara Martinez, Ana Lopez-Mengual, Francina Mesquida, Julia Sala, Karen Wells, Miriam Segura

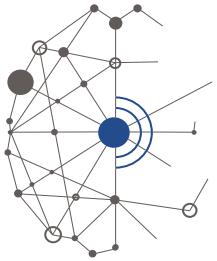
## Active projects

- **Análisis celular y molecular de la siembra y progresión de tau en modelos animales y celulares de distintas taupatías humanas.** Consorcio CIBER del área de Enfermedades Neurodegenerativas. CNED-2018-2. Jose Antonio del Rio
- **Enfermedades neurodegenerativas (CIBERNED).** Instituto de Salud Carlos III. Ministerio de Ciencia e Innovación. CB07/05/2011. Jose Antonio del Rio
- **Modulation of Tau seeding and pathology in tauopathies by BBB-nanocarriers, epitope selective vaccination and ectoPrP Tau receptor bodies (STOPTauPATHOL).** Fundació 'La Caixa'. HR18-00452. Jose Antonio del Rio
- **Nuevas aproximaciones para entender las funciones de la PrPC y miembros secretables de semaforinas durante el desarrollo del hipocampo y en neurotransmisión.** Ministerio de Ciencia, Innovación y Universidades. RTI2018-099773-B-I00. Jose Antonio del Rio
- **Inhibición de la HDAC3 como terapia para lesiones medulares y enfermedades autoinmunes.** Ministerio de Ciencia, Innovación y Universidades. PID2020-119769RA-I00. Arnau Hervera

## Selected publications


- Ferrer, I., Andrés-Benito, P., Zelaya, M. V., Aguirre, M., Carmona, M., Ausín, K., Lachén-Montes, M., Fernández-Irigoyen, J., Santamaría, E., & Del Rio, J. A. (2020). Familial globular glial tauopathy linked to MAPT mutations: molecular neuropathology and seeding capacity of a prototypical mixed neuronal and glial tauopathy. Acta Neuropathologica, 139(4), 735–771. https://doi.org/10.1007/s00401-019-02122-9
- Sala-Jarque, J., Mesquida-Veny, F., Badiola-Mateos, M., Samitier, J., Hervera, A., & Del Río, J. A. (2020). Neuromuscular Activity Induces Paracrine Signaling and Triggers Axonal Regrowth after Injury in Microfluidic Lab-On-Chip Devices. Cells, 9(2), 302. https://doi.org/10.3390/cells9020302
- Del Rio, J. A., & Ferrer, I. (2020). Potential of Microfluidics and Lab-on-Chip Platforms to Improve Understanding of "prion-like" Protein Assembly and Behavior. Frontiers in Bioengineering and Biotechnology, 8, 570692. https://doi.org/10.3389/fbioe.2020.570692
- Gavín, R., Lidón, L., Ferrer, I., & Del Río, J. A. (2020). The Quest for Cellular Prion Protein Functions in the Aged and Neurodegenerating Brain. Cells, 9(3), 591. https://doi.org/10.3390/cells9030591
- Lidón, L., Vergara, C., Ferrer, I., Hernández, F., Ávila, J., Del Rio, J. A., & Gavín, R. (2020). Tau Protein as a New Regulator of Cellular Prion Protein Transcription. Molecular Neurobiology, 57(10), 4170–4186. https://doi.org/10.1007/s12035-020-02025-x

# Research

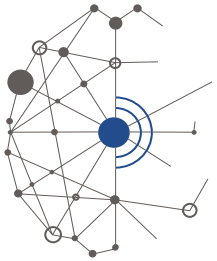


Pathophysiology of Nervous System Diseases

## Selected publications


- Duran, J., Brewer, M. K., Hervera, A., Gruart, A., Del Rio, J. A., Delgado-García, J. M., & Guinovart, J. J. (2020). Lack of Astrocytic Glycogen Alters Synaptic Plasticity but Not Seizure Susceptibility. Molecular Neurobiology, 57(11), 4657–4666. https://doi.org/10.1007/s12035-020-02055-5
- Mesquida-Veny, F., Del Rio, JA., & Hervera, A. (2020). Phenotypical complexity of macrophages and microglia after neuronal injury. Progress in Neurobiology, 101970. https://doi.org/10.1016/j.pneurobio.2020.101970
- Eixarh H, Calvo-Barreiro L, Costa C, Reverter-Vives G, Castillo M, Gil V, Del Rio JA, Montalban X, Espejo C (2020). Inhibition of the BMP-signaling pathway ameliorated established clinical symptoms of experimental autoimmune encephalomyelitis. Neurotherapeutics, Oct;17(4):1988-2003. https://doi.org/10.1007/s13311-020-00885-8
- Lidón L, Urrea L, Llorens F, Gil V, Alvarez I, Diez-Fairén M, Aguilar M, Pastor P, Zerr I, Alcolea D, Lleó A, Vidal E, Gavín R, Ferrer I, Del Rio JA. (2020). Disease-specific changes in Reelin protein and mRNA in neurodegenerative diseases. Cells. 9(5):1252. https://doi.org/10.3390/cells9051252
- Ferrer I, Andres-Benito P, Sala-Jarque J, Gil V, Del Rio JA. (2020). Capacity for seeding and spreading of argyrophilic grain disease in a wild-type murine model; comparisons with primary age-related tauopathy. Frontiers in Molecular Neurosciences, 13:101. https://doi.org/10.3389/fnmol.2020.00101
- Diaz-Lucena D, Escaramis G, Villar-Piqué A, Hermann P, Schmitz M, Varges D, Santana I, Del Rio JA, Martí E, Ferrer I, Baldeiras I, Zerr I, Llorens F. (2020). A new tetra-plex fluorimetric assay for the quantification of cerebrospinal fluid -amyloid 42, total-tau, phospho-tau and -synuclein in the differential diagnosis of neurodegenerative dementia. Journal of Neurology, 267(9):2567-2581. https://doi.org/10.1007/s00415-020-09870-9
- Ferrer I, Zelaya MV, Aguiló M, Carmona M, López-González I, Andrés-Benito P, Lidón P, Gavín R, Garcia-Esparcia P, Del Río JA. (2020). Relevance of host tau in tau seeding and spreading in tauopathies. Brain Pathology, 30(2):298-318. https://doi.org/10.1111/bpa.12778

# Molecular bases of rare brain diseases and channelopathies



Pathophysiology of Nervous System Diseases

## Principal investigators

RAUL ESTEVEZ

## Members

Aida Castellanos, Hector Gaitan, Marta Alonso, Laura Ferigle, Adria Pla, Efren Xicoy

## Active projects

- **Development of novel inhibitors of the chloride channel LRRC8/VRAC, a novel player in ischemia.** Fundació La Marató de TV3. Raul Estevez.
- **Misslocalization of astrocytic VCAM-1 in Megalencephalic leukoencephalopathy. ELA Research Foundation.** ELA2017-012F4. Raul Estevez
- **Estudios iniciales para determiner la estructura 3D de MLC1.** CIBERER. ER20P2AC750.
- **CIBERER. Enfermedades Raras.** Ministerio de Sanidad y Consumo. CB06/07/1003. Raul Estevez
- **Regulación de canales de cloruro en salud y enfermedad.** Ministerio de Ciencia, Innovación y Universidades. RTI2018-093493-B-I00. Raul Estevez.

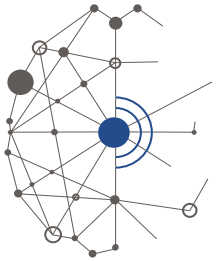
## Selected publications


- Sánchez, A., García-Lareu, B., Puig, M., Prat, E., Ruberte, J., Chillón, M., Nunes, V., Estévez, R., & Bosch, A. (2020). Cerebellar Astrocyte Transduction as Gene Therapy for Megalencephalic Leukoencephalopathy. NeuroTherapeutics : Journal of the American Society for Experimental NeuroTherapeutics, 17(4), 2041–2053. https://doi.org/10.1007/s13311-020-00865-y
- Elorza-Vidal, X., Xicoy-Espaulella, E., Pla-Casillanis, A., Alonso-Gardón, M., Gaitán-Peñas, H., Engel-Pizcueta, C., Fernández-Recio, J., & Estévez, R. (2020). Structural basis for the dominant or recessive character of GLIALCAM mutations found in leukodystrophies. Elorza-Vidal, X., Xicoy-Espaulella, E., Pla-Casillanis, A., Alonso-Gardón, M., Gaitán-Peñas, H., Engel-Pizcueta, C., Fernández-Recio, J., & Estévez, R. (2020). Structural basis for the dominant or recessive character of GLIALCAM mutations found in leukodystrophies. Human Molecular Genetics, 29(7), 1107–1120. https://doi.org/10.1093/hmg/ddaa009


## Knowledge transfer & Innovation

- Application for orphan medicinal product designation. Adeno-associated virus of serotype rh10 encoding human MLC1 under the control of GFAP promoter.

# Neural development



Pathophysiology of Nervous System Diseases

## Principal investigators

SOLEDAD ALCANTARA
(Biomimetic strategies for driving neural development and regeneration)

## Members

Alba Aina Castells Santamaría, Rafel Balada Caballe y Jose Pablo Soriano Esqué

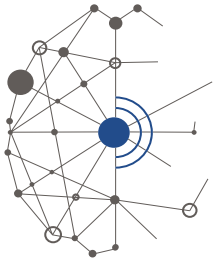
## Active projects

- **Helping the brain to rebuild itself: Understanding physical and metabolic properties of neurogenic niches in search for regenerative therapies for the damaged brain.** Ministerio de Economía y Competitividad. BFU2017-83435-R. Soledad Alcantara
- **i4KIDS, Pediatric Innovation HUB.** Agència de Gestió d'Ajuts Universitaris i de Recerca. Generalitat de Catalunya. Jaume Payarols
- **MeCP2 protein function: Implications in s. MECP2 duplication and s.Rett.** Fundació Privada per a la Recerca i la Docencia Sant Joan de Déu. PFNR00085. Judith Armstrong

## Selected publications


- Balada, R., Tebé, C., León, M., Arca, G., Alsina, M., Castells, A. A., Alcántara, S., & Garcia-Alix, A. (2020). Enquiring beneath the surface: can a gene expression assay shed light into the heterogeneity among newborns with neonatal encephalopathy?. Pediatric Research, 88(3), 451-458. https://doi.org/10.1038/s41390-020-0764-2
- Oyarzabal, A., Xiol, C., Castells, A. A., Grau, C., O'Callaghan, M., Fernández, G., Alcántara, S., Pineda, M., Armstrong, J., Altafaj, X., & García-Cazorla, A. (2020). Comprehensive Analysis of GABAA-A1R Developmental Alterations in Rett Syndrome: Setting the Focus for Therapeutic Targets in the Time Frame of the Disease. International Journal of Molecular Sciences, 21(2), 518. https://doi.org/10.3390/ijms21020518
- Pascual-Alonso, A., Blasco, L., Vidal, S., Gean, E., Rubio, P., O'Callaghan, M., Martínez-Monseny, A. F., Castells, A. A., Xiol, C., Català, V., Brandi, N., Pacheco, P., Ros, C., Del Campo, M., Guillén, E., Ibañez, S., Sánchez, M. J., Lapunzina, P., Nevado, J., Santos, F., … Armstrong, J. (2020). Molecular characterization of Spanish patients with MECP2 duplication syndrome. Clinical Genetics, 97(4), 610–620. https://doi.org/10.1111/cge.13718

# Neuropharmacology, neuroepigenetics, neurodegeneration and ageing



Pathophysiology of Nervous System Diseases

## Principal investigators

CHRISTIAN GRIÑAN-FERRE
(Neuroepigenetics in ageing and Alzheimer's disease)

MERCE PALLAS
(Neuropharmacology in ageing and Alzheimer's disease)

CARME PELEGRI
(Polyglucosan structures and neo-epitopes in ageing and neurodegeneration)

JORDI VILAPLANA
(Biomarkers of neurodegeneration and brain ageing)

## Members

Anna Maria Canudas, Elisabet Auge, Aina Bellver, Julia Companys, Julia Jarne-Ferrer, Jaume Lillo, Alejandro Lillo, Catalina Perez, M. Dolors Puigoriol, Iu Raïch, Marta Riba, Rafael Rivas, Clara Romera, Iraida Tena, Fonteini Vasilopoulou

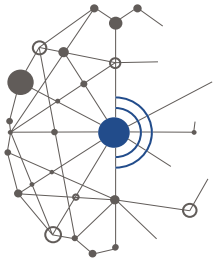
## Active projects

- **Estudio de la presencia de neo-epítopos en estructuras degenerativas cerebrales y de la existencia en el plasma de anticuerpos naturales dirigidos contra dichos neo-epítopos.** Ministerio de Economía y Competitividad. BFU2016-78398-P. Carme Pelegri i Jordi Vilaplana
- **Aplicació i avaluació d'un model híbrid de docència en aula inversa per promoure la millora de l'aprenentatge i de les competències específiques i transversals en Farmacologia i Terapèutica.** Institut de Ciències de l'Educació (ICE) - Universitat de Barcelona (UB). REDICE20-2381. Merce Pallas
- **Inhibidors de l'epòxid hidrolasa soluble per fer front a la malaltia de Niemman-Pick** C. Agència de Gestió d'Ajuts Universitaris i de Recerca. 2018 LLAV 00007. Merce Pallas
- **Modulation of soluble epoxide hydrolase (sEH) in brain and peripheral tissues: role of the intestinal-brain axis in neurodegeneration.** Ministerio de Ciencia, Innovación y Universidades. PID2019-106285RB-C21. Merce Pallas

## Selected publications


- Companys-Alemany, J., Turcu, A. L., Bellver-Sanchis, A., Loza, M. I., Brea, J. M., Canudas, A. M., Leiva, R., Vázquez, S., Pallàs, M., & Griñán-Ferré, C. (2020). A Novel NMDA Receptor Antagonist Protects against Cognitive Decline Presented by Senescent Mice. Pharmaceutics, 12(3), 284. https://doi.org/10.3390/pharmaceutics12030284
- Griñán-Ferré, C., Codony, S., Pujol, E., Yang, J., Leiva, R., Escolano, C., Puigoriol-Illamola, D., Companys-Alemany, J., Corpas, R., Sanfeliu, C., Pérez, B., Loza, M. I., Brea, J., Morisseau, C., Hammock, B. D., Vázquez, S., Pallàs, M., & Galdeano, C. (2020). Pharmacological Inhibition of Soluble Epoxide Hydrolase as a New Therapy for Alzheimer's Disease. Neurotherapeutics, 17(4), 1825–1835. https://doi.org/10.1007/s13311-020-00854-1

# Research

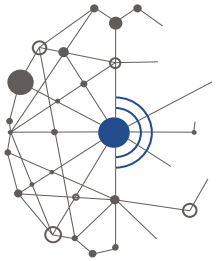


Pathophysiology of Nervous System Diseases

## Selected publications


- Abás, S., Rodríguez-Arévalo, S., Bagán, A., Griñán-Ferré, C., Vasilopoulou, F., Brocos-Mosquera, I., Muguruza, C., Pérez, B., Molins, E., Luque, F. J., Pérez-Lozano, P., de Jonghe, S., Daelemans, D., Naesens, L., Brea, J., Loza, M. I., Hernández-Hernández, E., García-Sevilla, J. A., García-Fuster, M. J., Radan, M., … Escolano, C. (2020). Bicyclic -Iminophosphonates as High Affinity Imidazoline I2 Receptor Ligands for Alzheimer's Disease. Journal of Medicinal Chemistry, 63(7), 3610–3633. https://doi.org/10.1021/acs.jmedchem.9b02080
- Puigoriol-Illamola, D., Martínez-Damas, M., Griñán-Ferré, C., & Pallàs, M. (2020). Chronic Mild Stress Modified Epigenetic Mechanisms Leading to Accelerated Senescence and Impaired Cognitive Performance in Mice. International Journal of Molecular Sciences, 21(3), 1154. https://doi.org/10.3390/ijms21031154
- Pallàs, M., Vázquez, S., Sanfeliu, C., Galdeano, C., & Griñán-Ferré, C. (2020). Soluble Epoxide Hydrolase Inhibition to Face Neuroinflammation in Parkinson's Disease: A New Therapeutic Strategy. Biomolecules, 10(5), 703. https://doi.org/10.3390/biom10050703
- Vilaplana, J., Pelegrí, C., Augé, E. & Riba, M. (2020). Physiological brainnwashing. Atlas of Science. https://atlasofscience.org/physiological-brainwashing/
- Vasilopoulou, F., Bagan, A., Rodriguez-Arevalo, S., Escolano, C., Griñán-Ferré, C., & Pallàs, M. (2020). Amelioration of BPSD-Like Phenotype and Cognitive Decline in SAMP8 Mice Model Accompanied by Molecular Changes after Treatment with I2-Imidazoline Receptor Ligand MCR5. Pharmaceutics, 12(5), 475. https://doi.org/10.3390/pharmaceutics12050475
- Garcia-Just, A., Miró, L., Pérez-Bosque, A., Amat, C., Polo, J., Pallàs, M., Griñán-Ferré, C., & Moretó, M. (2020). Dietary Spray-Dried Porcine Plasma Prevents Cognitive Decline in Senescent Mice and Reduces Neuroinflammation and Oxidative Stress. The Journal of Nutrition, 150(2), 303–311. https://doi.org/10.1093/jn/nxz239
- Sánchez-Melgar, A., Albasanz, J. L., Pallàs, M., & Martín, M. (2020). Resveratrol Differently Modulates Group I Metabotropic Glutamate Receptors Depending on Age in SAMP8 Mice. ACS Chemical Neuroscience, 11(12), 1770–1780. https://doi.org/10.1021/acschemneuro.0c00067
- Sánchez-Melgar, A., Albasanz, J. L., Pallàs, M., & Martín, M. (2020). Adenosine Metabolism in the Cerebral Cortex from Several Mice Models during Aging. International Journal of Molecular Sciences, 21(19), 7300. https://doi.org/10.3390/ijms21197300
- Vasilopoulou, F., Griñán-Ferré, C., Rodríguez-Arévalo, S., Bagán, A., Abás, S., Escolano, C., & Pallàs, M. (2021). I2 imidazoline receptor modulation protects aged SAMP8 mice against cognitive decline by suppressing the calcineurin pathway. GeroScience, 43(2), 965–983. https://doi.org/10.1007/s11357-020-00281-2
- Sánchez-Melgar, A., Albasanz, J. L., Griñán-Ferré, C., Pallàs, M., & Martín, M. (2020). Adenosine and Metabotropic Glutamate Receptors Are Present in Blood Serum and Exosomes from SAMP8 Mice: Modulation by Aging and Resveratrol. Cells, 9(7), 1628. https://doi.org/10.3390/cells9071628

# Research

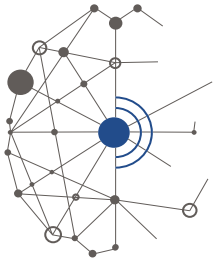


Pathophysiology of Nervous System Diseases

## Knowledge transfer & Innovation

- Composiciones para uso en el tratamiento de trastornos cognitivos. PCT/ES2020/070005
- Compounds as a soluble epoxide hydrolase inhibitors. UBTT0307
- Methods of Treating Behavior Alterations. WO/2019/025588; PCT/EP201
- Synthetic I2 imidazoline receptor ligands for prevention or treatment of human brain disorders. PCT/EP2018/085742
- Synthetic I2 imidazoline receptor ligands for prevention or treatment of human brain disorders. UBTT0327

# Neurophysiology



Pathophysiology of Nervous System Diseases

## Principal investigators

XAVIER ALTAFAJ
(Neurobiology and translational medicine of the NMDA receptor)

GERARD CALLEJO
(Neurobiology of pain and painful disorders)

NURIA COMES
(Neurophysiology of ocular pain and itch)

XAVIER GASULL
(Regulation of sensory neuron's excitability and pain sensitivity)

DAVID SOTO
(Neurophysiology of ionotropic glutamate receptors)

MAR PUIGDELLIVOL
(Microglia biology in health and disease)

## Members

Arcadi Gual, Roberto Garcia, Silvia Locubiche, Federico Miguez, Federico Ponente, Anna Pujol, Lenin Reyes, Ana Santos, Sara Abello, Anna Priscilla Perez

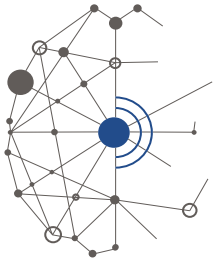
## Active projects

- **Bases neurofisiológicas del picor y dolor crónico: canales iónicos en neuronas sensoriales implicados en enfermedades inflamatorias y oculares.** Ministerio de Economia y Competitividad. PI17/00296. Xavier Gasull
- **Comprehensive delineation and personalised medicine of GRIN-related disorders, a rare paediatric encephalopathy.** Fondo de Investigación Sanitaria. PS19/00348. Xavier Altafaj
- **Estudio funcional del proteoma de los receptores AMPA.** Ministerio de Economia y Competitividad. BFU2017-83317-P. David Soto
- **Molecule-to-man pain network (PAIN-Net). EUUN – European Union.** ITN network. 721841. Xavier Gasull
- **Red Temática de Investigación Cooperativa en Salud – Enfermedades oculares.** Instituto de Salud Carlos III. Ministerio de Economia y Competitividad. RD16/0008/0014. Xavier Gasull
- **Spanish Excellence Network: "Synaptic Role in Cognitive Dysfunction" Network** MINECO. Xavier Altafaj

## Selected publications


- Mannara, F., Radosevic, M., Planagumà, J., Soto, D., Aguilar, E., García-Serra, A., Maudes, E., Pedreño, M., Paul, S., Doherty, J., Quirk, M., Dai, J., Gasull, X., Lewis, M., & Dalmau, J. (2020). Allosteric modulation of NMDA receptors prevents the antibody effects of patients with anti-NMDAR encephalitis. Brain, 143(9), 2709–2720. https://doi.org/10.1093/brain/awaa195
- Miguez-Cabello, F., Sánchez-Fernández, N., Yefimenko, N., Gasull, X., Gratacòs-Batlle, E., & Soto, D. (2020). AMPAR/TARP stoichiometry differentially modulates channel properties. eLife, 9, e53946. https://doi.org/10.7554/eLife.53946

# Research



Pathophysiology of Nervous System Diseases

## Selected publications


- Castellanos, A., Pujol-Coma, A., Andres-Bilbe, A., Negm, A., Callejo, G., Soto, D., Noël, J., Comes, N., & Gasull, X. (2020). TRESK background K+ channel deletion selectively uncovers enhanced mechanical and cold sensitivity. Journal of Physiology, 598(5), 1017–1038. https://doi.org/10.1113/JP279203
- Oliveras, A., Serrano-Novillo, C., Moreno, C., de la Cruz, A., Valenzuela, C., Soeller, C., Comes, N., & Felipe, A. (2020). The unconventional biogenesis of Kv7.1-KCNE1 complexes. Science Advances, 6(14), eaay4472. https://doi.org/10.1126/sciadv.aay4472
- Andres-Bilbe, A., Castellanos, A., Pujol-Coma, A., Callejo, G., Comes, N., & Gasull, X. (2020). The Background K+ Channel TRESK in Sensory Physiology and Pain. International Journal of Molecular Sciences, 21(15), 5206. https://doi.org/10.3390/ijms21155206
- Hockley, J. R., Barker, K. H., Taylor, T. S., Callejo, G., Husson, Z. M., Bulmer, D. C., & Smith, E. (2020). Acid and inflammatory sensitisation of naked mole-rat colonic afferent nerves. Molecular Pain, 16, 1744806920903150. https://doi.org/10.1177/1744806920903150
- Callejo, G., Pattison, L. A., Greenhalgh, J. C., Chakrabarti, S., Andreopoulou, E., Hockley, J., Smith, E., & Rahman, T. (2020). In silico screening of GMQ-like compounds reveals guanabenz and sephin1 as new allosteric modulators of acid-sensing ion channel 3. Biochemical Pharmacology, 174, 113834. https://doi.org/10.1016/j.bcp.2020.113834
- Chakrabarti, S., Hore, Z., Pattison, L. A., Lalnunhlimi, S., Bhebhe, C. N., Callejo, G., Bulmer, D. C., Taams, L. S., Denk, F., & Smith, E. (2020). Sensitization of knee-innervating sensory neurons by tumor necrosis factor--activated fibroblast-like synoviocytes: an in vitro, coculture model of inflammatory pain. Pain, 161(9), 2129–2141. https://doi.org/10.1097/j.pain.0000000000001890
- Chakrabarti, S., Pattison, L. A., Doleschall, B., Rickman, R. H., Blake, H., Callejo, G., Heppenstall, P. A., & Smith, E. (2020). Intraarticular Adeno-Associated Virus Serotype AAV-PHP.S-Mediated Chemogenetic Targeting of Knee-Innervating Dorsal Root Ganglion Neurons Alleviates Inflammatory Pain in Mice. Arthritis & Rheumatology (Hoboken, N.J.), 72(10), 1749–1758. https://doi.org/10.1002/art.41314
- Lee, M. C., Nahorski, M. S., Hockley, J., Lu, V. B., Ison, G., Pattison, L. A., Callejo, G., Stouffer, K., Fletcher, E., Brown, C., Drissi, I., Wheeler, D., Ernfors, P., Menon, D., Reimann, F., Smith, E., & Woods, C. G. (2020). Human Labor Pain Is Influenced by the Voltage-Gated Potassium Channel KV6.4 Subunit. Cell Reports, 32(3), 107941. https://doi.org/10.1016/j.celrep.2020.107941
- Puigdellívol M, Allendorf DH, Brown GC. Sialylation and Galectin-3 in Microglia-Mediated Neuroinflammation and Neurodegeneration. (2020) Front Cell Neurosci., 14:162. http://doi: 10.3389/fncel.2020.00162. eCollection 2020.
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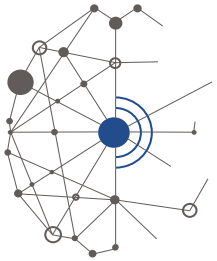
- Moreno-Delgado D, Puigdellívol M, Moreno E, Rodríguez-Ruiz M, Botta J, Gasperini P, Chiarlone A, Howell LA, Scarselli M, Casadó V, Cortés A, Ferré S, Guzmán M, Lluís C, Alberch J, Canela EI, Ginés S, McCormick PJ. (2020) Modulation of dopamine D1 receptors via histamine H3 receptors is a novel therapeutic target for Huntington's disease. Elife, 9:e51093. http://doi: 10.7554/eLife.51093.

# Pharmacological strategies for neuroprotection



Pathophysiology of Nervous System Diseases

## Principal investigators

CARME AULADELL
(Prevention of neuronal death by apoptosis in neurodegenerative processes)

ANTONI CAMINS
(Therapeutic strategies for the treatment of Alzheimer's disease focused on cognitive improvement)

## Members

Ester Verdaguer, Miren Ettcheto, Andres Jimenez, Jordi Olloquequi, Triana Espinosa, Marina Carrasaco, Monica Bullo, Oriol Busquets, Gemma Casadesus, Ruben Dario-Castro, Jaume Folch, Patricia R. Manzine

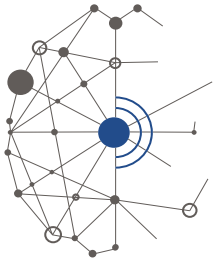
## Active projects

- **Enfermedades neurodegenerativas (CIBERNED).** Instituto de Salud Carlos III. Ministerio de Ciencia e Innovación. CB06/05/0024. Antoni Camins
- **Modulación de la vía del receptor de la insulina hipocampal como estrategia terapéutica para el tratamiento de la pérdida cognitiva.** Ministerio de Economía y Competitividad. SAF2017-84283-R. Investigador principal: Antoni Camins. CoIP Carme Auladell

## Selected publications


- Ettcheto, M., Busquets, O., Espinosa-Jiménez, T., Verdaguer, E., Auladell, C., & Camins, A. (2020). A Chronological Review of Potential Disease-Modifying Therapeutic Strategies for Alzheimer's Disease. Current Pharmaceutical Design, 26(12), 1286–1299. https://doi.org/10.2174/1381612826666200211121416
- Ettcheto, M., Olloquequi, J., Sánchez-López, E., Busquets, O., Cano, A., Manzine, P. R., Beas-Zarate, C., Castro-Torres, R. D., García, M. L., Bulló, M., Auladell, C., Folch, J., & Camins, A. (2020). Benzodiazepines and Related Drugs as a Risk Factor in Alzheimer's Disease Dementia. Frontiers in Aging Neuroscience, 11, 344. https://doi.org/10.3389/fnagi.2019.00344
- Busquets, O., Parcerisas, A., Verdaguer, E., Ettcheto, M., Camins, A., Beas-Zarate, C., Castro-Torres, R. D., & Auladell, C. (2020). c-Jun N-Terminal Kinases in Alzheimer's Disease: A Possible Target for the Modulation of the Earliest Alterations. Journal of Alzheimer's Disease : JAD, 10.3233/JAD-201053. Advance online publication. https://doi.org/10.3233/JAD-201053
- Ettcheto, M., Sánchez-López, E., Gómez-Mínguez, Y., Cabrera, H., Busquets, O., Beas-Zarate, C., García, M. L., Carro, E., Casadesus, G., Auladell, C., Carrera, M. V., Folch, J., & Camins, A. (2020). Correction to: Peripheral and Central Effects of Memantine in a Mixed Preclinical Mice Model of Obesity and Familial Alzheimer's Disease. Molecular Neurobiology, 57(6), 2887–2888. https://doi.org/10.1007/s12035-020-01918-1

# Research

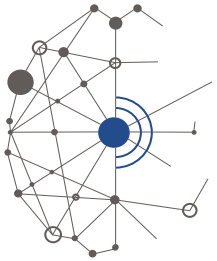


Pathophysiology of Nervous System Diseases

## Selected publications


- Ettcheto, M., Cano, A., Manzine, P. R., Busquets, O., Verdaguer, E., Castro-Torres, R. D., García, M. L., Beas-Zarate, C., Olloquequi, J., Auladell, C., Folch, J., & Camins, A. (2020). Epigallocatechin-3-Gallate (EGCG) Improves Cognitive Deficits Aggravated by an Obesogenic Diet Through Modulation of Unfolded Protein Response in APPswe/PS1dE9 Mice. Molecular Neurobiology, 57(4), 1814–1827. https://doi.org/10.1007/s12035-019-01849-6
- Castro-Torres, R., Busquets, O., Parcerisas, A., Verdaguer, E., Olloquequi, J., Ettcheto, M., Beas-Zarate, C., Folch, J., Camins, A., & Auladell, C. (2020). Involvement of JNK1 in Neuronal Polarization During Brain Development. Cells, 9(8), 1897. https://doi.org/10.3390/cells9081897
- Ettcheto, M., Busquets, O., Cano, A., Sánchez-Lopez, E., Manzine, P. R., Espinosa-Jimenez, T., Verdaguer, E., Sureda, F. X., Olloquequi, J., Castro-Torres, R. D., Auladell, C., Folch, J., Casadesús, G., & Camins, A. (2020). Pharmacological Strategies to Improve Dendritic Spines in Alzheimer's Disease. Journal of Alzheimer's Disease, 10.3233/JAD-201106. Advance online publication. https://doi.org/10.3233/JAD-201106
- Cano, A., Ettcheto, M., Espina, M., López-Machado, A., Cajal, Y., Rabanal, F., Sánchez-López, E., Camins, A., García, M. L., & Souto, E. B. (2020). State-of-the-art polymeric nanoparticles as promising therapeutic tools against human bacterial infections. Journal of Nanobiotechnology, 18(1), 156. https://doi.org/10.1186/s12951-020-00714-2
- Sánchez-López, E., Gomes, D., Esteruelas, G., Bonilla, L., Lopez-Machado, A. L., Galindo, R., Cano, A., Espina, M., Ettcheto, M., Camins, A., Silva, A. M., Durazzo, A., Santini, A., Garcia, M. L., & Souto, E. B. (2020). Metal-Based Nanoparticles as Antimicrobial Agents: An Overview. Nanomaterials, 10(2), 292. https://doi.org/10.3390/nano10020292
- Cano, A., Sánchez-López, E., Ettcheto, M., López-Machado, A., Espina, M., Souto, E. B., Galindo, R., Camins, A., García, M. L., & Turowski, P. (2020). Current advances in the development of novel polymeric nanoparticles for the treatment of neurodegenerative diseases. Nanomedicine, 15(12), 1239–1261. https://doi.org/10.2217/nnm-2019-0443
- Sánchez-López, E., Esteruelas, G., Ortiz, A., Espina, M., Prat, J., Muñoz, M., Cano, A., Calpena, A. C., Ettcheto, M., Camins, A., Alsafi, Z., Souto, E. B., García, M. L., & Pujol, M. (2020). Dexibuprofen Biodegradable Nanoparticles: One Step Closer towards a Better Ocular Interaction Study. Nanomaterials, 10(4), 720. https://doi.org/10.3390/nano10040720
- Ettcheto, M., Busquets, O., Sánchez-Lopez, E., Cano, A., Manzine, P. R., Verdaguer, E., Olloquequi, J., Auladell, C., Folch, J., & Camins, A. (2020). The preclinical discovery and development of opicapone for the treatment of Parkinson's disease. Expert Opinion on Drug Discovery, 15(9), 993–1004. https://doi.org/10.1080/17460441.2020.1767580
- Auladell, C., Castro-Torres , R. D., Busquets, O., Ettcheto, M., Camins, A., & Verdaguer, E. (2020). JNK isoforms control mammal adult hippocampal neurogenesis. Mexican Journal of Medical Research ICSA, 8(16), 5-12. https://doi.org/10.29057/mjmr.v8i16.5548
- Bartolome, F., Antequera, D., de la Cueva, M., Rubio-Fernandez, M., Castro, N., Pascual, C., Camins, A., & Carro, E. (2020). Endothelial-specific deficiency of megalin in the brain protects mice against high-fat diet challenge. Journal of Neuroinflammation, 17(1), 22. https://doi.org/10.1186/s12974-020-1702-2

# Neuropharmacology and pain



Pathophysiology of Nervous System Diseases

## Principal investigators

ESTER ASO
(Cannabinoids in brain)

JORDI BONAVENTURA
(Translational Neuropharmacology)

FRANCISCO CIRUELA
G-protein-coupled receptors (GPCRs) in Neurology)

VICTOR FERNANDEZ-DUENAS
(Pain)

## Members

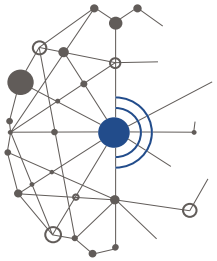
Maria Laura Cuffi, Sebastian Videla, Pilar Hereu, Marc Lopez-Cano, Kristoffer Sahlholm, Josep Argerich, Hector Godoy, Laura Gomez-Acero, Nuria Sanchez-Fernandez, Laura Sarasola, Marta Valle-Leon, Salut Sanchez

## Active projects

- **Cannabinoid actions in the diseased brain.** Unión Iberoamericana de Universidades. UCM-02-2019. Ester Aso
- **Cannabinoid development for the treatment of neurodegenerative diseases.** Programa Iberoamericano de Ciencia y Tecnología para el Desarrollo (CYTED). P219RT0008. Ester Aso
- **Ecto-GPR37: a potential biomarker for Parkinson's disease.** The Michael J. Fox Foundation for Parkinson's Research (MJFF). MJFF-001051. Francisco Ciruela
- **El complejo trans-sináptico formado por CB1-A2A y mGlu5 en el hipocampo como sustrato de los efectos terapéuticos de los cannabinoides en la enfermedad de Alzheimer.** Ministerio de Ciencia, Innovación y Universidades. RTI2018-097773-A-I00. Ester Aso
- **Iluminando los receptores de dopamina, adenosina y GPR37 en enfermedades neurológicas y neuropsiquiátricas.** Ministerio de Economía y Competitividad. SAF2017-87349-R. Francisco Ciruela
- **Música en el tratamiento del dolor con analgésicos opioides.** Sociedad Española del Dolor. Víctor Fernandez-Dueñas
- **Vulnerabilidad a los efectos psicóticos del THC durante la adolescencia: implicación de la interacción entre los receptores CB1, A2A y D2. 2020I041.** Plan Nacional sobre Drogas. Ester Aso

## Selected publications


- Aso, E., Andrés-Benito, P., Grau-Escolano, J., Caltana, L., Brusco, A., Sanz, P., & Ferrer, I. (2020). Cannabidiol-Enriched Extract Reduced the Cognitive Impairment but Not the Epileptic Seizures in a Lafora Disease Animal Model. Cannabis and Cannabinoid Research, 5(2), 150–163. https://doi.org/10.1089/can.2019.0005



Pathophysiology of Nervous System Diseases

## Selected publications


- Köfalvi, A., Moreno, E., Cordomí, A., Cai, N. S., Fernández-Dueñas, V., Ferreira, S. G., Guixà-González, R., Sánchez-Soto, M., Yano, H., Casadó-Anguera, V., Cunha, R. A., Sebastião, A. M., Ciruela, F., Pardo, L., Casadó, V., & Ferré, S. (2020). Control of glutamate release by complexes of adenosine and cannabinoid receptors. BMC Biology, 18(1), 9. https://doi.org/10.1186/s12915-020-0739-0
- Crans, R., Daelemans, S., Raedt, R., Ciruela, F., & Stove, C. P. (2020). Kainic acid-induced status epilepticus decreases mGlu5 receptor and phase-specifically downregulates Homer1b/c expression. Brain Research, 1730, 146640. https://doi.org/10.1016/j.brainres.2019.146640
- Ferré, S., Ciruela, F., Casadó, V., & Pardo, L. (2020). Oligomerization of G protein-coupled receptors: Still doubted?. Progress in Molecular Biology and Translational Science, 169, 297–321. https://doi.org/10.1016/bs.pmbts.2019.11.006
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- Ciruela F. (2020). Special Issue: G Protein-Coupled Adenosine Receptors: Molecular Aspects and Beyond. International Journal of Molecular Sciences, 21(6), 1997. https://doi.org/10.3390/ijms21061997
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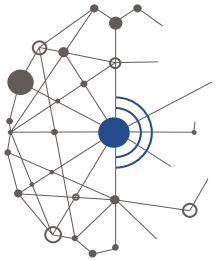
- Pérez-Areales, F. J., Garrido, M., Aso, E., Bartolini, M., De Simone, A., Espargaró, A., Ginex, T., Sabate, R., Pérez, B., Andrisano, V., Puigoriol-Illamola, D., Pallàs, M., Luque, F. J., Loza, M. I., Brea, J., Ferrer, I., Ciruela, F., Messeguer, A., & Muñoz-Torrero, D. (2020). Centrally Active Multitarget Anti-Alzheimer Agents Derived from the Antioxidant Lead CR-6. Journal of Medicinal Chemistry, 63(17), 9360–9390. https://doi.org/10.1021/acs.jmedchem.0c00528
- Celli, R., Wall, M. J., Santolini, I., Vergassola, M., Di Menna, L., Mascio, G., Cannella, M., van Luijtelaar, G., Pittaluga, A., Ciruela, F., Bruno, V., Nicoletti, F., & Ngomba, R. T. (2020). Pharmacological activation of mGlu5 receptors with the positive allosteric modulator VU0360172, modulates thalamic GABAergic transmission. Neuropharmacology, 178, 108240. https://doi.org/10.1016/j.neuropharm.2020.108240

# Research



Pathophysiology of Nervous System Diseases

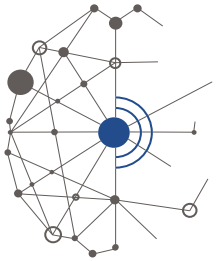
## Selected publications


- Ågren, R., Zeberg, H., Stępniewski, T. M., Free, R. B., Reilly, S. W., Luedtke, R. R., Århem, P., Ciruela, F., Sibley, D. R., Mach, R. H., Selent, J., Nilsson, J., & Sahlholm, K. (2020). Ligand with Two Modes of Interaction with the Dopamine D2 Receptor-An Induced-Fit Mechanism of Insurmountable Antagonism. ACS Chemical Neuroscience, 11(19), 3130–3143. https://doi.org/10.1021/acschemneuro.0c00477
- Betari, N., Sahlholm, K., Morató, X., Godoy-Marín, H., Jáuregui, O., Teigen, K., Ciruela, F., & Haavik, J. (2020). Inhibition of Tryptophan Hydroxylases and Monoamine Oxidase-A by the Proton Pump Inhibitor, Omeprazole-In Vitro and In Vivo Investigations. Frontiers in Pharmacology, 11, 593416. https://doi.org/10.3389/fphar.2020.593416
- Frinchi, M., Verdi, V., Plescia, F., Ciruela, F., Grillo, M., Garozzo, R., Condorelli, D. F., Di Iorio, P., Caciagli, F., Ciccarelli, R., Belluardo, N., Di Liberto, V., & Mudò, G. (2020). Guanosine-Mediated Anxiolytic-Like Effect: Interplay with Adenosine A1 and A2A Receptors. International Journal of Molecular Sciences, 21(23), 9281. https://doi.org/10.3390/ijms21239281


## Knowledge transfer & Innovation

- Laboratorios del Dr. Esteve, S.A. 310048. Francisco Ciruela
- Method to Identify Ligands for SIGMA-1 Receptors. Laboratorios del Dr. Esteve, S.A. WO/2013/104648. Javier Burgueño-Hurtado, Francisco Ciruela-Alferez y Jose Miguel Vela-Hernandez

# Stem cells and neurodevelopment



Pathophysiology of Nervous System Diseases

## Principal investigators

JOSEP M. CANALS
(Stem cells and regenerative medicine)

DANIEL DEL TORO
(in vivo reprogramming during cortex development)

PETIA RADEVA
(Machine learning, Computer Vision, Medical Imaging)

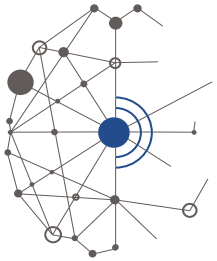
DANIEL TORNERO
(Neural stem cells and brain damage)

## Members

Phil Sanders, Cinta Gomis, Clelia Introna, Francisco J. Molina, Claudia Pelegrina, Cristina Vila, Sofia Zaballa, Silvia Artigas, Georgina Bombau, Mireia Galofre, Anna Lopez, Veronica Monforte, Cristina Salado, Felipe Chiappe, Cristina Herranz, Unai Perpiña, Irene Porcar

## Active projects

- **An EU-Canada joint infrastructure for next-generation multi-Study Heart research (euCanSHare).** European Commission. 825903. Petia Ivanova Radeva i Karim Lekadir
- **LogMeal's SmartTray: Self-checkout system for self-service restaurants (Innovadors).** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). Exp. 2019 INNOV 00069. Petia Radeva
- **Novel Empowering Solutions and Technologies for Older people to Retain Everyday life activities (NESTORE).** European Union. 769643. Petia Radeva
- **Greenhabit365.** European Union. 20646. Petia Radeva
- **ASCTN-Training: Training on Advanced Stem Cell Technologies in Neurology. European Commission. 813851. Josep M. Canals**
- **Cell therapy for knee osteoarthritis. Comparison of treatments with autologous and allogenic mesenchymal stromal cells in a multicenter controlled randomized clinical trial (ARTROCELL).** Instituto de Salud Carlos III. Ministerio de Economia, Industria y Competitividad. PIC 18/00001. Andreu Combalia i Fermin Sanchez-Guijo
- **Desarrollo, diferenciación y maduración neuronal en la enfermedad de Huntington.** Ministerio de Ciencia e Innovación. SAF2015-66505-R. Josep M. Canals
- **European Training Network for Cell-based Regenerative Medicine.** European Commission. 722779. Josep M. Canals, Jordi Alberch i Jenny Emneus
- **In vitro Study of Neurodevelopment in Huntington's disease.** CHDI Foundation Inc. A14079. Josep M. Canals
- **Lot 3 Immunogenicity testing for advanced therapy medicinal product and Lot 4 Autoimmune disease.** European Commission. JRC/IPR/2018/F.3/0035/OC. Josep M. Canals i Marco Straccia
- **Más allá de la Precisión de los Modelos: Icerteza, Explicabilidad y Aprendizaje Entre-modal**. Ministerio de Ciencia, Innovación y Universidades. RTI2018-095232-B-C21. Petia Ivanova Radeva i Santiago Segui Mesquida



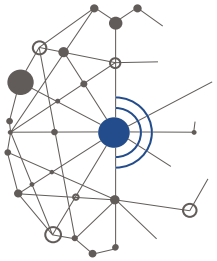
Pathophysiology of Nervous System Diseases

## Active projects

- **Neuronal networks from Cortical human iPSCs for Machine Learning Processing.** FET-Open NeuChip-964877. Daniel Tornero i Jordi Soriano
- **Estudio de la implantantación de las alteraciones del neurodesarrollo en la enfermedad de Huntington.** Ministerio de Ciencia, Innovación y Universidades. RTI2018-099001-B-I00. Josep M. Canals
- **Nuevos mecanismos de migración neuronal implicados en el plegamiento de la corteza cerebral.** Ministerio de Ciencia, Innovación y Universidades. RTI2018-095580-A-100. Daniel del Toro
- **Red de Terapia Celular. Instituto de Salud Carlos III (ISCIII).** Ministerio de Economia, Industria y Competitividad. RD16/0011/0012. Josep M. Canals i Jose M. Moraleda
- **Studying Human MSN Differentiation from PSC using Single-Cell RNAseq and Rodent Chimeric Models**. CHDI Foundation Inc. A12076. Josep M. Canals
- **VIPO customers profiling system to improve the buying experience.** EIT Digital IVZW. Petia Ivanova Radeva

## Selected publications


- Palma-Tortosa, S., Tornero, D., Hansen, M. G., Monni, E., Hajy, M., Kartsivadze, S., Aktay, S., Tsupykov, O., Parmar, M., Deisseroth, K., Skibo, G., Lindvall, O., & Kokaia, Z. (2020). Activity in grafted human iPS cell–derived cortical neurons integrated in stroke-injured rat brain regulates motor behavior. Proceedings of the National Academy of Sciences, 117(16), 9094–9100. https://doi.org/10.1073/PNAS.2000690117
- Peregrina, C., & Del Toro, D. (2020). FLRTing Neurons in Cortical Migration During Cerebral Cortex Development. Frontiers in Cell and Developmental Biology, 8, 578506. https://doi.org/10.3389/fcell.2020.578506
- Comella-Bolla, A., Orlandi, J. G., Miguez, A., Straccia, M., García-Bravo, M., Bombau, G., Galofré, M., Sanders, P., Carrere, J., Segovia, J. C., Blasi, J., Allen, N. D., Alberch, J., Soriano, J., & Canals, J. M. (2020). Human Pluripotent Stem Cell-Derived Neurons Are Functionally Mature In Vitro and Integrate into the Mouse Striatum Following Transplantation. Molecular Neurobiology, 57(6), 2766–2798. https://doi.org/10.1007/s12035-020-01907-4
- Salado-Manzano, C., Perpiña, U., Straccia, M., Molina-Ruiz, F. J., Cozzi, E., Rosser, A. E., & Canals, J. M. (2020). Is the Immunological Response a Bottleneck for Cell Therapy in Neurodegenerative Diseases?. Frontiers in Cellular Neuroscience, 14, 250. https://doi.org/10.3389/fncel.2020.00250
- del Toro, D., Carrasquero-Ordaz, M. A., Chu, A., Ruff, T., Shahin, M., Jackson, V. A., Chavent, M., Berbeira-Santana, M., Seyit-Bremer, G., Brignani, S., Kaufmann, R., Lowe, E., Klein, R., & Seiradake, E. (2020). Structural Basis of Teneurin-Latrophilin Interaction in Repulsive Guidance of Migrating Neurons. Cell, 180(2), 323-339.e19. https://doi.org/10.1016/j.cell.2019.12.014
- Teller, S., Estévez-Priego, E., Granell, C., Tornero, D., Andilla, J., Olarte, O. E., Loza-Alvarez, P., Arenas, A., & Soriano, J. (2020). Spontaneous Functional Recovery after Focal Damage in Neuronal Cultures. eNeuro, 7(1), ENEURO.0254-19.2019. https://doi.org/10.1523/ENEURO.0254-19.2019

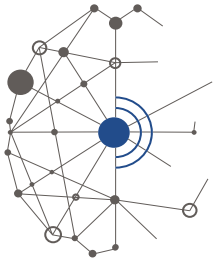


Pathophysiology of Nervous System Diseases

## Selected publications


- Talavera, E., Wuerich, C., Petkov, N., & Radeva, P. (2020). Topic modelling for routine discovery from egocentric photo-streams. Pattern Recognition, 104, 107330. https://doi.org/https://doi.org/10.1016/j.patcog.2020.107330
- Torre, M., Remeseiro, B., Radeva, P., & Martinez Saez, F. (2020). DeepNEM: Deep Network Energy-Minimization for Agricultural Field Segmentation. IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, PP, 1. https://doi.org/10.1109/JSTARS.2020.2971061
- Asnaoui, K. & Radeva, P. (2020). Automatically Assess Day Similarity Using Visual Lifelogs. Journal of Intelligent Systems, 29(1), 298-310. https://doi.org/10.1515/jisys-2017-0364
- Castella, M., Caballero-Baños, M., Ortiz-Maldonado, V., González-Navarro, E. A., Suñé, G., Antoñana-Vidósola, A., Boronat, A., Marzal, B., Millán, L., Martín-Antonio, B., Cid, J., Lozano, M., García, E., Tabera, J., Trias, E., Perpiña, U., Canals, J. M., Baumann, T., Benítez-Ribas, D., … Juan, M. (2020). Point-Of-Care CAR T-Cell Production (ARI-0001) Using a Closed Semi-automatic Bioreactor: Experience From an Academic Phase I Clinical Trial. Frontiers in Immunology, 11, 482. https://doi.org/10.3389/fimmu.2020.00482
- Grønning Hansen, M., Laterza, C., Palma-Tortosa, S., Kvist, G., Monni, E., Tsupykov, O., Tornero, D., Uoshima, N., Soriano, J., Bengzon, J., Martino, G., Skibo, G., Lindvall, O., & Kokaia, Z. (2020). Grafted human pluripotent stem cell-derived cortical neurons integrate into adult human cortical neural circuitry. Stem Cells Translational Medicine, 9(11), 1365–1377. https://doi.org/10.1002/sctm.20-0134
- Memanishvili, T., Monni, E., Tatarishivili, J., Lindvall, O., Tsiskaridze, A., Kokaia, Z., & Tornero, D. (2020). Poly(ester amide) microspheres are efficient vehicles for long-term intracerebral growth factor delivery and improve functional recovery after stroke. Biomedical Materials, 15(6), 065020. https://doi.org/10.1088/1748-605X/aba4f6
- Aguilar-Torres, E., & Radeva, P. (2020). Uncertainty-aware integration of local and flat classifiers for food recognition. Pattern Recognition Letters, 136. https://doi.org/10.1016/j.patrec.2020.06.013
- Cartas, A., Radeva, P., & Dimiccoli, M. (2020). Activities of Daily Living Monitoring via a Wearable Camera: Toward Real-World Applications. IEEE Access, 8, 77344–77363. https://doi.org/10.1109/ACCESS.2020.2990333
- Ortíz-Maldonado, V., Rives, S., Castellà, M., Alonso-Saladrigues, A., Benítez-Ribas, D., Caballero-Baños, M., Baumann, T., Cid, J., Garcia-Rey, E., Llanos, C., Torrebadell, M., Villamor, N., Giné, E., Díaz-Beyá, M., Guardia, L., Montoro, M., Català, A., Faura, A., González, E. A., Español-Rego, M., … Delgado, J. (2021). CART19-BE-01: A Multicenter Trial of ARI-0001 Cell Therapy in Patients with CD19+ Relapsed/Refractory Malignancies. Molecular therapy, 29(2), 636–644. https://doi.org/10.1016/j.ymthe.2020.09.027
- Perpiñá, U., Herranz, C., Martín-Ibáñez, R., Boronat, A., Chiappe, F., Monforte, V., Orpella-Aceret, G., González, E., Olivé, M., Castella, M., Suñé, G., Urbano-Ispizua, Á., Delgado, J., Juan, M., & Canals, J. M. (2020). Cell Banking of HEK293T cell line for clinical-grade lentiviral particles manufacturing. Translational Medicine Communications, 5(1), 22. https://doi.org/10.1186/s41231-020-00075-w
- Peregrina C and del Toro D. 2020. FLRTing Neurons in Cortical Migration During Cerebral Cortex Development. Front. Cell Dev. Biol. https://doi.org/10.3389/fcell.2020.578506

# Research



Pathophysiology of Nervous System Diseases

## Selected publications

- Del Toro D, Carrasquero-Ordaz MA, Chu A, Ruff T, Shahin M, Jackson VA, Chavent M, Berbeira-Santana M, Seyit-Bremer G, Brignani S, Kaufmann R, Lowe E, Klein R and Seiradake E. (1/14). (2020). Structural Basis of Teneurin-Latrophilin Interaction in Repulsive Guidance of Migrating Neurons. Cell, 180, 323–339 https://doi.org/10.1016/j.cell.2019.12.014.

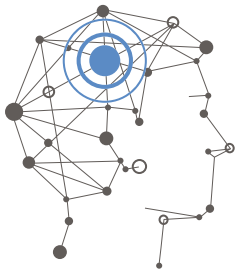
## Knowledge transfer & Innovation

- A European Cancer Image Platform Linked to Biological and Health Data for Next-Generation Artificial Intelligence and Precision Medicine in Oncology (EuCanImage). European Commission. 952103. Petia Ivanova Radeva i Karim Lekadir
- Future Skills for Digital Transformation (FutureSkillSet). EIT Health e.V. Petia Ivanova Radeva
- Modelización de enfermedades neurodegenerativas. Ministerio de Ciencia, Innovación y Universidades. EIN2020-112381. Josep M. Canals
- Non-invasive dynamic neural control by laser-based technology (NEUROPA). European Commission. 863214. Merce Masana Nadal
- Validation of an Innovative Dietary Intake Tool for Healthcare Implementation (VALIDITHI). European Commission. 20675. Petia Ivanova Radeva

# Experimental Neurology

**Annual Report**
2019

# Experimental Neurology

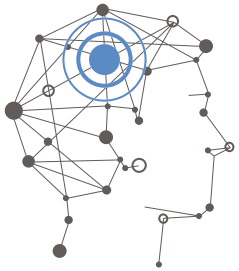


## NEURODEGENERATIVE DISEASES ARE USUALLY LINKED WITH AGING. THUS, NOWADAYS THERE IS AN IMPORTANT INCREASE IN THESE DISORDERS WITH A STRONG SOCIAL AND ECONOMICAL IMPACT IN OUR SOCIETY.

Unfortunately, the majority of therapeutic interventions available are merely symptomatic, often with very limited response, whereas disease-modifying and neuroprotective or neuroregenerative treatments are only experimental with precedents in human clinical trials having been unsuccessful so far.
The research area of Experimental Neurology is focused on the study of the nervous system in normal conditions and during neurologic disorders. A close collaboration between basic neuroscientists and clinical neurologists is already established in the Institute of Neurosciences. The Institute, together with the university hospitals, provides a good environment to perform studies about the correlation between genetic markers, cerebrospinal spinal fluid biomarkers and structural, functional and molecular imaging in patients with movement disorders, dementia, autoimmune synaptic disorders and other neurological disorders. Furthermore, the study of the molecular and biological bases of Alzheimer's disease, Parkinson's disease, Huntington's chorea, and multiple sclerosis in preclinical stages can provide information for diagnosis, prevention and treatment for these neurological diseases.

## SELECTED PROJECTS

- **Estudi de cohort clínic, recerca de biomarcadors i programa d'educació sanitària.** Fundació La Marató de TV3. 202009-10. Yaroslau Compta
- **Dominantly Inherited Alzheimer Network (DIAN).** National Institutes of Health (NIH). UF1 AG032438. Raquel Sanchez-Valle
- **Gliotransmitters and cannabinoid receptors at the hub of cognitive and synaptic plasticity impairments in Huntington's disease.** Fundació La Marató de TV3. Marato/2-02013-30-31-32. Silvia Gines
- **Phospho-proteome analysis of PBMCs in LRRK2 mutation carriers: expansion & validation of findings of the Barcelona LRRK2 Biorepository.** Michael J. Fox Foundation for Parkinson's research. Cristina Malagelada
- **COVID19 and brain: cognition and mental health (DIANA).** Pandemies 2020. Generalitat de Catalunya. 2020PANDE00053. Carme Junque
- **Definiendo el rol de la familia Ikaros en la esquizofrenia (DISC).** RETOS. MINECO. RTI2018-094678-A-100. Albert Giralt
- **Non-invasive dynamic neural control by laser-based technology (NEUROPA).** FET-Open (H2020). Grant agreement 863214. Merce Masana.
- **A Translational Model of Antibody-mediated Synaptic Disease: Symptoms, Neuronal Circuits, and the Mechanisms of Memory Loss and Recovery.** Fundació 'La Caixa'. HR17-00149. Josep Dalmau
- **Network Center for Biomedical Research in Neurodegenerative Diseases (CIBERNED)**
- **Network Center for Biomedical Research in Epidemiology and Public Health (CIBERESP)**



Experimental Neurology

# Clinical and experimental research in Parkinson's disease and other neurodegenerative movement disorders

## Principal investigators

YAROSLAU COMPTA

## Members

Eduard Tolosa, Alicia Garrido, Maria J Marti, Esteban Muñoz, Almudena Sanchez, Francesc Valldeoriola, Mario Ezquerra, Ruben Fernandez, Ana Camara, Celia Painous, Sandra Perez, Manel Fernandez, Laura Maragall, Pilar Santacruz

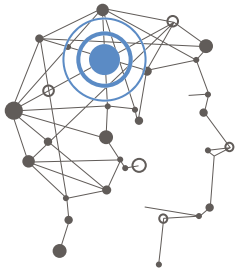
## Active projects

- **Amplificación de autoagregación de alfa-sinucleína y 4R-tau en tejido cerebral y líquido cerebrospinal mediante RTQuIC como biomarcador diferencial de parkinsonismos degenerativos.** Fondo de Investigaciones Sanitarias de la Seguridad Social (FISS). PI17/00096. Yaroslau Compta i Maria J Marti
- **Estudi de cohort clínic, recerca de biomarcadors i programa d'educació sanitària.** Fundació La Marató de TV3. 202009-10. Yaroslau Compta
- **FAIR-PARK-II A multicentre, parallel group, randomized, placebo-controlled trial of deferiprone (DFP) 15 mg/kg BID.** European Commission. EudraCT 2015 003679-31. Yaroslau Compta

## Selected publications


- Painous, C., Martí, M. J., Simonet, C., Garrido, A., Valldeoriola, F., Muñoz, E., Cámara, A., & Compta, Y. (2020). Prediagnostic motor and non-motor symptoms in progressive supranuclear palsy: The step-back PSP study. Parkinsonism & Related Disorders, 74, 67–73. https://doi.org/10.1016/j.parkreldis.2020.03.003
- Respondek, G., Grimm, M. J., Piot, I., Arzberger, T., Compta, Y., Englund, E., Ferguson, L. W., Gelpi, E., Roeber, S., Giese, A., Grossman, M., Irwin, D. J., Meissner, W. G., Nilsson, C., Pantelyat, A., Rajput, A., van Swieten, J. C., Troakes, C., Höglinger, G. U., & Movement Disorder Society-Endorsed Progressive Supranuclear Palsy Study Group (2020). Validation of the movement disorder society criteria for the diagnosis of 4-repeat tauopathies. Movement Disorders, 35(1), 171–176. https://doi.org/10.1002/mds.27872
- Orme, T., Hernandez, D., Ross, O. A., Kun-Rodrigues, C., Darwent, L., Shepherd, C. E., Parkkinen, L., Ansorge, O., Clark, L., Honig, L. S., Marder, K., Lemstra, A., Rogaeva, E., St George-Hyslop, P., Londos, E., Zetterberg, H., Morgan, K., Troakes, C., Al-Sarraj, S., Lashley, T., … Bras, J. (2020). Analysis of neurodegenerative disease-causing genes in dementia with Lewy bodies. Acta Neuropathologica Communications, 8(1), 5. https://doi.org/10.1186/s40478-020-0879-z
- Valente, T., Dentesano, G., Ezquerra, M., Fernandez-Santiago, R., Martinez-Martin, J., Gallastegui, E., Domuro, C., Compta, Y., Martí, M. J., Bachs, O., Márquez-Kisinousky, L., Straccia, M., Solà, C., & Saura, J. (2020). CCAAT/enhancer binding protein  is a transcriptional repressor of -synuclein. Cell Death & Differentiation, 27(2), 509–524. https://doi.org/10.1038/s41418-019-0368-8
- Campabadal, A., Inguanzo, A., Segura, B., Serradell, M., Abos, A., Uribe, C., Gaig, C., Santamaria, J., Compta, Y., Bargallo, N., Junque, C., & Iranzo, A. (2020). Cortical gray matter progression in idiopathic REM sleep behavior disorder and its relation to cognitive decline. NeuroImage: Clinical, 28, 102421. https://doi.org/10.1016/j.nicl.2020.102421
- Rabaneda-Lombarte, N., Blasco-Agell, L., Serratosa, J., Ferigle, L., Saura, J., & Solà, C. (2020). Parkinsonian neurotoxicants impair the anti-inflammatory response induced by IL4 in glial cells: involvement of the CD200-CD200R1 ligand-receptor pair. Scientific Reports, 10(1), 10650. https://doi.org/10.1038/s41598-020-67649-4

# Research

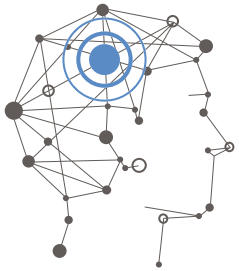


Experimental Neurology

## Selected publications


- Kovacs, G. G., Lukic, M. J., Irwin, D. J., Arzberger, T., Respondek, G., Lee, E. B., Coughlin, D., Giese, A., Grossman, M., Kurz, C., McMillan, C. T., Gelpi, E., Compta, Y., van Swieten, J. C., Laat, L. D., Troakes, C., Al-Sarraj, S., Robinson, J. L., Roeber, S., Xie, S. X., … Höglinger, G. U. (2020). Distribution patterns of tau pathology in progressive supranuclear palsy. Acta neuropathologica, 140(2), 99–119. https://doi.org/10.1007/s00401-020-02158-2
- Moore, K. M., Nicholas, J., Grossman, M., McMillan, C. T., Irwin, D. J., Massimo, L., Van Deerlin, V. M., Warren, J. D., Fox, N. C., Rossor, M. N., Mead, S., Bocchetta, M., Boeve, B. F., Knopman, D. S., Graff-Radford, N. R., Forsberg, L. K., Rademakers, R., Wszolek, Z. K., van Swieten, J. C., Jiskoot, L. C., … FTD Prevention Initiative (2020). Age at symptom onset and death and disease duration in genetic frontotemporal dementia: an international retrospective cohort study. The Lancet. Neurology, 19(2), 145–156. https://doi.org/10.1016/S1474-4422(19)30394-1
- Campabadal, A., Abos, A., Segura, B., Serradell, M., Uribe, C., Baggio, H. C., Gaig, C., Santamaria, J., Compta, Y., Bargallo, N., Junque, C., & Iranzo, A. (2020). Disruption of posterior brain functional connectivity and its relation to cognitive impairment in idiopathic REM sleep behavior disorder. NeuroImage. Clinical, 25, 102138. https://doi.org/10.1016/j.nicl.2019.102138
- Jecmenica Lukic, M., Kurz, C., Respondek, G., Grau-Rivera, O., Compta, Y., Gelpi, E., Troakes, C., Barcelona Brain Bank collaborative group, the MDS-endorsed PSP study group, van Swieten, J. C., Giese, A., Roeber, S., Arzberger, T., & Höglinger, G. (2020). Copathology in Progressive Supranuclear Palsy: Does It Matter?. Movement disorders : official journal of the Movement Disorder Society, 35(6), 984–993. https://doi.org/10.1002/mds.28011
- Grimm, M. J., Respondek, G., Stamelou, M., Arzberger, T., Ferguson, L., Gelpi, E., Giese, A., Grossman, M., Irwin, D. J., Pantelyat, A., Rajput, A., Roeber, S., van Swieten, J. C., Troakes, C., Meissner, W. G., Nilsson, C., Piot, I., Compta, Y., Rowe, J. B., Höglinger, G. U., … Movement Disorder Society-Endorsed PSP Study Group (2020). Clinical Conditions "Suggestive of Progressive Supranuclear Palsy"-Diagnostic Performance. Movement disorders : official journal of the Movement Disorder Society, 35(12), 2301–2313. https://doi.org/10.1002/mds.28263
- Piot, I., Schweyer, K., Respondek, G., Stamelou, M., DescribePSP study group, ProPSP study group, MDS-endorsed PSP study group, Sckopke, P., Schenk, T., Goetz, C. G., Stebbins, G. T., & Höglinger, G. U. (2020). The Progressive Supranuclear Palsy Clinical Deficits Scale. Movement disorders : official journal of the Movement Disorder Society, 35(4), 650–661. https://doi.org/10.1002/mds.27964
- Iankova, V., Respondek, G., Saranza, G., Painous, C., Cámara, A., Compta, Y., Aiba, I., Balint, B., Giagkou, N., Josephs, K. A., Otsuki, M., Golbe, L. I., Bhatia, K. P., Stamelou, M., Lang, A. E., Höglinger, G. U., & Movement Disorder Society-endorsed PSP Study Group (2020). Video-tutorial for the Movement Disorder Society criteria for progressive supranuclear palsy. Parkinsonism & related disorders, 78, 200–203. https://doi.org/10.1016/j.parkreldis.2020.06.030
- Sánchez-Gómez, A., Alcarraz-Vizán, G., Fernández, M., Fernández-Santiago, R., Ezquerra, M., Cámara, A., Serrano, M., Novials, A., Muñoz, E., Valldeoriola, F., Compta, Y., & Martí, M. J. (2020). Peripheral insulin and amylin levels in Parkinson's disease. Parkinsonism & related disorders, 79, 91–96. https://doi.org/10.1016/j.parkreldis.2020.08.018
- Pérez-Soriano, A., Bravo, P., Soto, M., Infante, J., Fernández, M., Valldeoriola, F., Muñoz, E., Compta, Y., Tolosa, E., Garrido, A., Ezquerra, M., Fernández-Santiago, R., Martí, M. J., & Catalan MSA registry (CMSAR) (2020). MicroRNA Deregulation in Blood Serum Identifies Multiple System Atrophy Altered Pathways. Movement disorders : official journal of the Movement Disorder Society, 35(10), 1873–1879. https://doi.org/10.1002/mds.28143
- Pérez-Soriano, A., Arnal Segura, M., Botta-Orfila, T., Giraldo, D., Fernández, M., Compta, Y., Fernández-Santiago, R., Ezquerra, M., Tartaglia, G. G., Martí, M. J., & Catalan MSA Registry (CMSAR) (2020). Transcriptomic differences in MSA clinical variants. Scientific reports, 10(1), 10310. https://doi.org/10.1038/s41598-020-66221-4
- Núñez, C., Callén, A., Lombardini, F., Compta, Y., Stephan-Otto, C., & Alzheimer's Disease Neuroimaging Initiative (2020). Different Cortical Gyrification Patterns in Alzheimer's Disease and Impact on Memory Performance. Annals of neurology, 88(1), 67–80. https://doi.org/10.1002/ana.25741

# Research

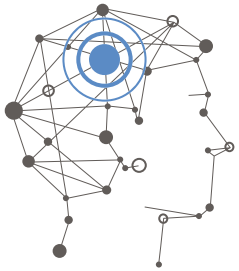


## Experimental Neurology

### Selected publications


- Juárez-Flores, D. L., Ezquerra, M., Gonzàlez-Casacuberta, Ï., Ormazabal, A., Morén, C., Tolosa, E., Fucho, R., Guitart-Mampel, M., Casado, M., Valldeoriola, F., de la Torre-Lara, J., Muñoz, E., Tobías, E., Compta, Y., García-García, F. J., García-Ruiz, C., Fernandez-Checa, J. C., Martí, M. J., Grau, J. M., Cardellach, F., … Garrabou, G. (2020). Disrupted Mitochondrial and Metabolic Plasticity Underlie Comorbidity between Age-Related and Degenerative Disorders as Parkinson Disease and Type 2 Diabetes Mellitus. Antioxidants (Basel, Switzerland), 9(11), 1063. https://doi.org/10.3390/antiox9111063
- Carbayo, Á., Sarto, J., Santana, D., Compta, Y., & Urra, X. (2020). Hemichorea as Presentation of Acute Cortical Ischemic Stroke. Case Series and Review of the Literature. Journal of stroke and cerebrovascular diseases : the official journal of National Stroke Association, 29(10), 105150. https://doi.org/10.1016/j.jstrokecerebrovasdis.2020.105150

# Clinical research in Alzheimer's disease and other cognitive disorders



Experimental Neurology

## Principal investigators

RAQUEL SANCHEZ-VALLE

## Members

Anna Antonell, Beatriz Bosch, Lorena Rami, Sergi Borrego, Jose Miguel Contador, Neus Falgas, Agnes Perez, Oscar Ramos, Adria Tort, Jaume Olives, Mircea Balasa, Magda Castellvi, Guadalupe Fernandez, Albert Llado, Nuria Montagut

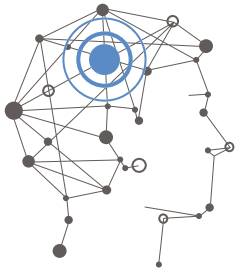
## Active projects

- **Contratos de formación en investigación "Rio Hortega" (Post Formación Sanitaria Especializada).** Instituto de Salud Carlos III. CM18/00028. Raquel Sanchez-Valle
- **Dominantly Inherited Alzheimer Network (DIAN).** National Institutes of Health (NIH). UF1 AG032438. Raquel Sanchez-Valle
- **Estudio de biomarcadores y desarrollo de nuevas estrategias terapéuticas en una cohorte multicéntrica de Demencia Frontotemporal.** Departament de Salut de la Generalitat de Catalunya. SLT002/16/00408. Raquel Sanchez-Valle

## Selected publications


- Falgàs, N., Ruiz-Peris, M., Pérez-Millan, A., Sala-Llonch, R., Antonell, A., Balasa, M., Borrego-Écija, S., Ramos-Campoy, O., Augé, J. M., Castellví, M., Tort-Merino, A., Olives, J., Fernández-Villullas, G., Blennow, K., Zetterberg, H., Bargalló, N., Lladó, A., & Sánchez-Valle, R. (2020). Contribution of CSF biomarkers to early-onset Alzheimer's disease and frontotemporal dementia neuroimaging signatures. Human Brain mapping, 41(8), 2004–2013. https://doi.org/10.1002/hbm.24925
- Borrego-Écija, S., Sala-Llonch, R., van Swieten, J., Borroni, B., Moreno, F., Masellis, M., Tartaglia, C., Graff, C., Galimberti, D., Laforce, R., Jr, Rowe, J. B., Finger, E., Vandenberghe, R., Tagliavini, F., de Mendonça, A., Santana, I., Synofzik, M., Ducharme, S., Levin, J., Danek, A., … Genetic FTD Initiative GENFI (2021). Disease-related cortical thinning in presymptomatic granulin mutation carriers. NeuroImage: Clinical, 29, 102540. https://doi.org/10.1016/j.nicl.2020.102540
- Heller, C., Foiani, M. S., Moore, K., Convery, R., Bocchetta, M., Neason, M., Cash, D. M., Thomas, D., Greaves, C. V., Woollacott, I. O., Shafei, R., Van Swieten, J. C., Moreno, F., Sanchez-Valle, R., Borroni, B., Laforce, R., Jr, Masellis, M., Tartaglia, M. C., Graff, C., Galimberti, D., … GENFI (2020). Plasma glial fibrillary acidic protein is raised in progranulin-associated frontotemporal dementia. Journal of neurology, neurosurgery, and psychiatry, 91(3), 263–270. https://doi.org/10.1136/jnnp-2019-321954

# Research

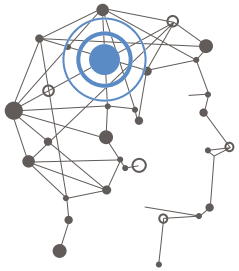


Experimental Neurology

## Selected publications


- Antonell, A., Tort-Merino, A., Ríos, J., Balasa, M., Borrego-Écija, S., Auge, J. M., Muñoz-García, C., Bosch, B., Falgàs, N., Rami, L., Ramos-Campoy, O., Blennow, K., Zetterberg, H., Molinuevo, J. L., Lladó, A., & Sánchez-Valle, R. (2020). Synaptic, axonal damage and inflammatory cerebrospinal fluid biomarkers in neurodegenerative dementias. Alzheimer's & dementia : the journal of the Alzheimer's Association, 16(2), 262–272. https://doi.org/10.1016/j.jalz.2019.09.001
- Brosseron, F., Kolbe, C. C., Santarelli, F., Carvalho, S., Antonell, A., Castro-Gomez, S., Tacik, P., Namasivayam, A. A., Mangone, G., Schneider, R., Latz, E., Wüllner, U., Svenningsson, P., Sánchez-Valle, R., Molinuevo, J. L., Corvol, J. C., Heneka, M. T., & AETIONOMY study group (2020). Multicenter Alzheimer's and Parkinson's disease immune biomarker verification study. Alzheimer's & dementia : the journal of the Alzheimer's Association, 16(2), 292–304. https://doi.org/10.1016/j.jalz.2019.07.018
- Tavares, T. P., Mitchell, D., Coleman, K. K., Coleman, B. L., Shoesmith, C. L., Butler, C. R., Santana, I., Danek, A., Gerhard, A., de Mendonca, A., Borroni, B., Tartaglia, M. C., Graff, C., Galimberti, D., Tagliavini, F., Moreno, F., Frisoni, G., Rowe, J. B., Levin, J., Van Swieten, J. C., … GENFI Initiative (2020). Early symptoms in symptomatic and preclinical genetic frontotemporal lobar degeneration. Journal of neurology, neurosurgery, and psychiatry, 91(9), 975–984. https://doi.org/10.1136/jnnp-2020-322987
- van der Ende, E. L., Xiao, M., Xu, D., Poos, J. M., Panman, J. L., Jiskoot, L. C., Meeter, L. H., Dopper, E. G., Papma, J. M., Heller, C., Convery, R., Moore, K., Bocchetta, M., Neason, M., Peakman, G., Cash, D. M., Teunissen, C. E., Graff, C., Synofzik, M., Moreno, F., … Genetic Frontotemporal Dementia Initiative (GENFI) (2020). Neuronal pentraxin 2: a synapse-derived CSF biomarker in genetic frontotemporal dementia. Journal of neurology, neurosurgery, and psychiatry, 91(6), 612–621. https://doi.org/10.1136/jnnp-2019-322493
- Le Blanc, G., Jetté Pomerleau, V., McCarthy, J., Borroni, B., van Swieten, J., Galimberti, D., Sanchez-Valle, R., LaForce, R., Jr, Moreno, F., Synofzik, M., Graff, C., Masellis, M., Tartaglia, M. C., Rowe, J. B., Vandenberghe, R., Finger, E., Tagliavini, F., de Mendonça, A., Santana, I., Butler, C., … Genetic Frontotemporal Dementia Initiative (GENFI) (2020). Faster Cortical Thinning and Surface Area Loss in Presymptomatic and Symptomatic C9orf72 Repeat Expansion Adult Carriers. Annals of neurology, 88(1), 113–122. https://doi.org/10.1002/ana.25748
- Frontzek, K., Carta, M., Losa, M., Epskamp, M., Meisl, G., Anane, A., Brandel, J. P., Camenisch, U., Castilla, J., Haïk, S., Knowles, T., Lindner, E., Lutterotti, A., Minikel, E. V., Roiter, I., Safar, J. G., Sanchez-Valle, R., Žáková, D., Hornemann, S., Aguzzi, A., … THAUTAN-MC Study Group (2020). Autoantibodies against the prion protein in individuals with PRNP mutations. Neurology, 95(14), e2028–e2037. https://doi.org/10.1212/WNL.0000000000009183
- Falgàs, N., Balasa, M., Bargalló, N., Borrego-Écija, S., Ramos-Campoy, O., Fernández-Villullas, G., Bosch, B., Olives, J., Tort-Merino, A., Antonell, A., Castellví, M., Allen, I. E., Sánchez-Valle, R., & Lladó, A. (2020). Diagnostic Accuracy of MRI Visual Rating Scales in the Diagnosis of Early Onset Cognitive Impairment. Journal of Alzheimer's disease : JAD, 73(4), 1575–1583. https://doi.org/10.3233/JAD-191167

# Research

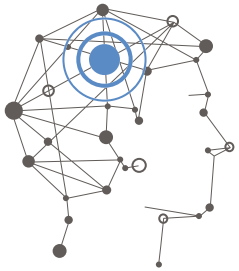


Experimental Neurology

## Selected publications


- Ramos-Campoy, O., Antonell, A., Falgàs, N., Balasa, M., Borrego-Écija, S., Rodríguez-Santiago, B., Datta, D., Armengol, L., Fernández-Villullas, G., Bosch, B., Olives, J., Muñoz-García, C., Castellví, M., Tort-Merino, A., Sánchez-Valle, R., & Lladó, A. (2020). Screening of dementia genes by whole-exome sequencing in Spanish patients with early-onset dementia: likely pathogenic, uncertain significance and risk variants. Neurobiology of aging, 93, e1–e9. https://doi.org/10.1016/j.neurobiolaging.2020.02.008
- Rosas, I., Martínez, C., Clarimón, J., Lleó, A., Illán-Gala, I., Dols-Icardo, O., Borroni, B., Almeida, M. R., van der Zee, J., Van Broeckhoven, C., Bruni, A. C., Anfossi, M., Bernardi, L., Maletta, R., Serpente, M., Galimberti, D., Scarpini, E., Rossi, G., Caroppo, P., Benussi, L., … Menéndez-González, M. (2020). Role for ATXN1, ATXN2, and HTT intermediate repeats in frontotemporal dementia and Alzheimer's disease. Neurobiology of aging, 87, 139.e1–139.e7. https://doi.org/10.1016/j.neurobiolaging.2019.10.017
- Rosas, I., Martínez, C., Clarimón, J., Lleó, A., Illán-Gala, I., Dols-Icardo, O., Borroni, B., Almeida, M. R., van der Zee, J., Van Broeckhoven, C., Bruni, A. C., Anfossi, M., Bernardi, L., Maletta, R., Serpente, M., Galimberti, D., Scarpini, E., Rossi, G., Caroppo, P., Benussi, L., … Menéndez-González, M. (2020). Role for ATXN1, ATXN2, and HTT intermediate repeats in frontotemporal dementia and Alzheimer's disease. Neurobiology of aging, 87, 139.e1–139.e7. https://doi.org/10.1016/j.neurobiolaging.2019.10.017
- Falcon, C., Grau-Rivera, O., Suárez-Calvet, M., Bosch, B., Sánchez-Valle, R., Arenaza-Urquijo, E. M., González-de-Echavarri, J. M., Gispert, J. D., Rami, L., & Molinuevo, J. L. (2020). Sex Differences of Longitudinal Brain Changes in Cognitively Unimpaired Adults. Journal of Alzheimer's disease : JAD, 76(4), 1413–1422. https://doi.org/10.3233/JAD-200293
- Tort-Merino, A., Laine, M., Valech, N., Olives, J., León, M., Ecay-Torres, M., Estanga, A., Martínez-Lage, P., Fortea, J., Sánchez-Valle, R., Rami, L., & Rodríguez-Fornells, A. (2021). Accelerated long-term forgetting over three months in asymptomatic APOE 4 carriers. Annals of clinical and translational neurology, 8(2), 477–484. https://doi.org/10.1002/acn3.51245
- Costa, B., Manzoni, C., Bernal-Quiros, M., Kia, D. A., Aguilar, M., Alvarez, I., Alvarez, V., Andreassen, O., Anfossi, M., Bagnoli, S., Benussi, L., Bernardi, L., Binetti, G., Blackburn, D., Boada, M., Borroni, B., Bowns, L., Bråthen, G., Bruni, A. C., Chiang, H. H., … International FTD-Genetics Consortium (2020). C9orf72, age at onset, and ancestry help discriminate behavioral from language variants in FTLD cohorts. Neurology, 95(24), e3288–e3302. https://doi.org/10.1212/WNL.0000000000010914
- Convery, R. S., Bocchetta, M., Greaves, C. V., Moore, K. M., Cash, D. M., Van Swieten, J., Moreno, F., Sánchez-Valle, R., Borroni, B., Laforce, R., Jr, Masellis, M., Tartaglia, M. C., Graff, C., Galimberti, D., Rowe, J. B., Finger, E., Synofzik, M., Vandenberghe, R., de Mendonca, A., Tagliavini, F., … Genetic FTD Initiative (GENFI) (2020). Abnormal pain perception is associated with thalamo-cortico-striatal atrophy in C9orf72 expansion carriers in the GENFI cohort. Journal of neurology, neurosurgery, and psychiatry, 91(12), 1325–1328. https://doi.org/10.1136/jnnp-2020-323279

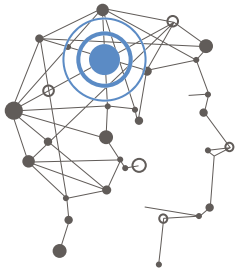
# Research



Experimental Neurology

## Selected publications


- Russell, L. L., Greaves, C. V., Bocchetta, M., Nicholas, J., Convery, R. S., Moore, K., Cash, D. M., van Swieten, J., Jiskoot, L., Moreno, F., Sanchez-Valle, R., Borroni, B., Laforce, R., Jr, Masellis, M., Tartaglia, M. C., Graff, C., Rotondo, E., Galimberti, D., Rowe, J. B., Finger, E., … Genetic FTD Initiative, GENFI (2020). Social cognition impairment in genetic frontotemporal dementia within the GENFI cohort. Cortex; a journal devoted to the study of the nervous system and behavior, 133, 384–398. https://doi.org/10.1016/j.cortex.2020.08.023
- Manzano-Palomo, S., Agüera-Ortiz, L. F., García-Caballero, A., Martínez-Raga, J., Ojea-Ortega, T., Sánchez-Valle, R., Antón-Jiménez, M., Monge-Argilés, J. A., & Ramos-García, I. (2020). Use of Antipsychotics in Patients with Behavioral and Psychological Symptoms of Dementia: Results of a Spanish Delphi Consensus. Dementia and geriatric cognitive disorders, 49(6), 573–582. https://doi.org/10.1159/000510866
- Rajewsky, N., Almouzni, G., Gorski, S. A., Aerts, S., Amit, I., Bertero, M. G., Bock, C., Bredenoord, A. L., Cavalli, G., Chiocca, S., Clevers, H., De Strooper, B., Eggert, A., Ellenberg, J., Fernández, X. M., Figlerowicz, M., Gasser, S. M., Hubner, N., Kjems, J., Knoblich, J. A., … LifeTime Community Working Groups (2020). LifeTime and improving European healthcare through cell-based interceptive medicine. Nature, 587(7834), 377–386. https://doi.org/10.1038/s41586-020-2715-9



Experimental Neurology

# Mechanistic and therapeutic approaches in neurodegenerative disorders

## Principal investigators

VERONICA BRITO
(Epitranscriptomic regulation in brain disorders)

SILVIA GINES
(Neuron and glia crosstalk in Huntington's disease)

CRISTINA MALAGELADA
(mTOR signaling dysregulation in neurodegenerative diseases)

EULALIA MARTI
(Non-coding RNAs regulatory networks in neurodegenerative diseases)

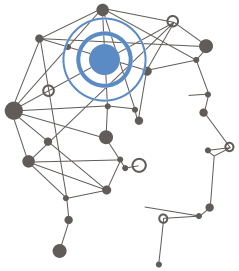
ESTHER PEREZ NAVARRO
(Kinases and Phosphatases in neuronal function and dysfunction)

## Members

Georgina Escaramis, Ana Gamez, Genis Campoy, Carla Castany, Marc Espina, Anna Guisado, Marina Herrero, Laura Lopez-Molina, Maria Solaguren, Julia Solana, Leticia Perez, Anika Pupak

## Active projects

- **Análisis de ARNs con repeticiones CAG como factores patogénicos en la enfermedad de Huntington: implicaciones translacionales en enfermedades de poliglutamina.** Ministerio de Economía, Industria y Competitividad. SAF2017-88452-R. Eulalia Marti
- **Astrocytes at the hub of neuronal dysfunction in Huntington´s disease: Dissecting the role of ARMS/kidins 220 on astrocyte secretome.** EHDN_Seed Fund project 1130_201217.
- **Epidemiología y Salud Pública (CIBERESP).** Instituto de Salud Carlos III. Ministerio de Ciencia e Innovación. Eulalia Marti
- **Exploring the role of RNA editing on the generation of pathogenic huntingtin fragments.** Hereditary Disease Foundation. Veronica Brito
- **Gliotransmitters and cannabinoid receptors at the hub of cognitive and synaptic plasticity impairments in Huntington's disease.** Fundació La Marató de TV3. Marato/2-02013-30-31-32.
- **Interacción CB-Grp78: ¿un nuevo mecanismo regulador de la actividad neuroprotectora de los cannabinoids? (CIBERNED).** Instituto de Salud Carlos III. Ministerio de Ciencia e Innovación. P2018-01. Silvia Gines
- **La enfermedad de Huntington como una laminopatía: interacción entre cerebro y la periferia.** Ministerio de Ciencia, Innovación y Universidades. PID2019-106447RB-I00. Esther Perez Navarro
- **¿La proteína RTP801/REDD1 media la disfunción sináptica en procesos neurodegenerativos?.** Ministerio de Economía y Competitividad. SAF2017-88812-R. Cristina Malagelada
- **Phospho-proteome analysis of PBMCs in LRRK2 mutation carriers: expansion & validation of findings of the Barcelona LRRK2 Biorepository**. Michael J. Fox Foundation for Parkinson's research. Cristina Malagelada
- **Transmitofagia entre astrocitos y neuronas: una nueva forma de comunicación entre neurona y glía en la enfermedad de Huntington?** Ministerio de Ciencia, Innovación y Universidades. RTI2018-094374-B-I00. Silvia Gines



## Experimental Neurology

## Selected publications


- Moreno-Delgado, D., Puigdellívol, M., Moreno, E., Rodríguez-Ruiz, M., Botta, J., Gasperini, P., Chiarlone, A., Howell, L. A., Scarselli, M., Casadó, V., Cortés, A., Ferré, S., Guzmán, M., Lluís, C., Alberch, J., Canela, E. I., Ginés, S., & McCormick, P. J. (2020). Modulation of dopamine D1 receptors via histamine H3 receptors is a novel therapeutic target for Huntington's disease. eLife, 9, e51093. https://doi.org/10.7554/eLife.51093
- Sancho-Balsells, A., Brito, V., Fernández, B., Pardo, M., Straccia, M., Ginés, S., Alberch, J., Hernández, I., Arranz, B., Canals, J. M., & Giralt, A. (2020). Lack of Helios During Neural Development Induces Adult Schizophrenia-Like Behaviors Associated With Aberrant Levels of the TRIF-Recruiter Protein WDFY1. Frontiers in Cellular Neuroscience, 14, 93. https://doi.org/10.3389/fncel.2020.00093
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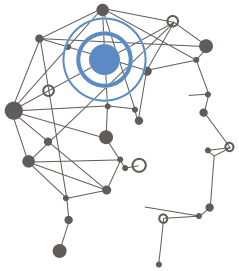
## Knowledge transfer & Innovation

- Methods and pharmaceutical composition for the treatment of neurodegerative disease. UBTT0329-E.
- Method for predicting early onset and severity of levodopa induced dyskinesia (LID) in subjects diagnosed of Parkinson disease (PD). UBTT0304.
- Method for predicting the onset of extrapyramidal symptoms (EPS) induced by an antipsicotic-based treatment. AVCRI196.

# Neuroimaging in degenerative disorders



Experimental Neurology

## Principal investigators

CARME JUNQUE
(Structural connectivity and cognition in neurological and psychiatric disorders)

BARBARA SEGURA
(Functional connectivity and cognition in neurological and psychiatric disorders)

ROSER SALA LLONCH
(Statistical modeling and data analysis for neuroimaging)

## Members

Anna Campabadal, Carme Uribe, Anna Inguanzo, Javier Oltra, Gemma Cristina Monte, Alexandra Abos, Nuria Bargallo, Hugo Cesar Baggio

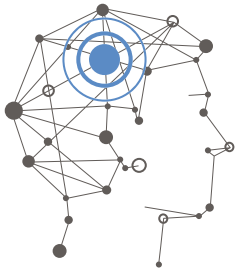
## Active projects

- **COVID19 and brain: cognition and mental health (DIANA). Pandemies 2020.** Generalitat de Catalunya. 2020PANDE00053. Carme Junque
- **Fenotipos cognitivos en la enfermedad de Parkinson mediante la identificación de patrones de neuroimagen multimodal.** Ministerio de Economía y Competitividad. PSI2017-86930-P. Carme Junque
- **Multimodal imaging in parkinsonisms: from the molecular synaptic pruning to the whole-brain connectomics (SYNPARK).)** European Union. 888692. Barbara Segura y Carme Uribe
- **Phenylketonuria: from chilhood to adults through brain functional conectomics, cardiovascular changes, metabolomic and intestinal microbiota characteristics.** Fundació La Marato de TV3. 202014-30. Carme Junque

## Selected publications


- Muñoz-Moreno, E., Tudela, R., López-Gil, X., & Soria, G. (2020). Brain connectivity during Alzheimer's disease progression and its cognitive impact in a transgenic rat model. Network Neuroscience, 4(2), 397–415. https://doi.org/10.1162/netn_a_00126
- Campabadal, A., Abos, A., Segura, B., Serradell, M., Uribe, C., Baggio, H. C., Gaig, C., Santamaria, J., Compta, Y., Bargallo, N., Junque, C., & Iranzo, A. (2020). Disruption of posterior brain functional connectivity and its relation to cognitive impairment in idiopathic REM sleep behavior disorder. NeuroImage: Clinical, 25, 102138. https://doi.org/10.1016/j.nicl.2019.102138
- Uribe, C., Junque, C., Gómez-Gil, E., Abos, A., Mueller, S. C., & Guillamon, A. (2020). Brain network interactions in transgender individuals with gender incongruence. NeuroImage, 211, 116613. https://doi.org/10.1016/j.neuroimage.2020.116613
- Uribe, C., Junque, C., Gómez-Gil, E., Abos, A., Mueller, S. C., & Guillamon, A. (2020). Data for functional MRI connectivity in transgender people with gender incongruence and cisgender individuals. Data in Brief, 31, 105691. https://doi.org/10.1016/j.dib.2020.105691
- Penadés, R., Segura, B., Inguanzo, A., García-Rizo, C., Catalán, R., Masana, G., Bernardo, M., & Junqué, C. (2020). Cognitive remediation and brain connectivity: A resting-state fMRI study in patients with schizophrenia. Psychiatry Research. Neuroimaging, 303, 111140. https://doi.org/10.1016/j.pscychresns.2020.111140
- Inguanzo, A., Sala-Llonch, R., Segura, B., Erostarbe, H., Abos, A., Campabadal, A., Uribe, C., Baggio, H. C., Compta, Y., Marti, M. J., Valldeoriola, F., Bargallo, N., & Junque, C. (2021). Hierarchical cluster analysis of multimodal imaging data identifies brain atrophy and cognitive patterns in Parkinson's disease. Parkinsonism & Related Disorders, 82, 16–23. https://doi.org/10.1016/j.parkreldis.2020.11.010

# Research



Experimental Neurology

## Selected publications


- Sala-Vila, A., Valls-Pedret, C., Rajaram, S., Coll-Padrós, N., Cofán, M., Serra-Mir, M., Pérez-Heras, A. M., Roth, I., Freitas-Simoes, T. M., Doménech, M., Calvo, C., López-Illamola, A., Bitok, E., Buxton, N. K., Huey, L., Arechiga, A., Oda, K., Lee, G. J., Corella, D., Vaqué-Alcázar, L., … Ros, E. (2020). Effect of a 2-year diet intervention with walnuts on cognitive decline. The Walnuts And Healthy Aging (WAHA) study: a randomized controlled trial. The American Journal of Clinical Nutrition, 111(3), 590–600. https://doi.org/10.1093/ajcn/nqz328
- Idland, A. V., Sala-Llonch, R., Watne, L. O., Brækhus, A., Hansson, O., Blennow, K., Zetterberg, H., Sørensen, Ø., Walhovd, K. B., Wyller, T. B., & Fjell, A. M. (2020). Biomarker profiling beyond amyloid and tau: cerebrospinal fluid markers, hippocampal atrophy, and memory change in cognitively unimpaired older adults. Neurobiology of Aging, 93, 1–15. https://doi.org/10.1016/j.neurobiolaging.2020.04.002
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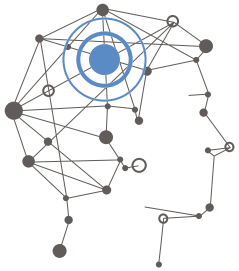
- Campabadal A, Inguanzo A, Segura B, Serradell M, Abos A, Uribe C, Gaig C, Santamaria J, Compta Y, Bargallo N, Junque C, Iranzo A (2020) Cortical gray matter progression in idiopathic REM sleep behavior disorder and its relation to cognitive decline. Neuroimage Clinical,28. https://doi.org/10.1016/j.nicl.2020.102421


## Knowledge transfer & Innovation

- Liposome-encapsulated bicelles and use thereof in diluted systems. PCT/ES2011/070128
- Neurophysiological signatures for fibromyalgia. United States Patent. US 10.881,322 B2. Marina Lopez-Sola and Tor D. Wager



Experimental Neurology

# Neuronal network dysfunction in neurological and psychiatric disorders

## Principal investigators

JORDI ALBERCH
(Neuronal connectivity in Huntington's disease and basal ganglia disorders)

ALBERT GIRALT
(Hippocampal function in health and disease)

MERCE MASANA
(Modulation of neuronal circuitry in brain disorders)

MANUEL RODRIGUEZ
(Neuron-glia interactions in neurodegenerative disorders)

## Members

Ivan Ballasch, Sara Conde, Esther Garcia, Laura Lopez, Ened Rodriguez, Anna Sancho, Laia Sitja, Albert Coll, Carmen Andrade

## Active projects

- **Centro de Investigación Biomédica en Red en Enfermedades Neurodegenerativas (CIBERNED).** Instituto de Salud Carlos III. Ministerio de Ciencia e Innovación. Jordi Alberch
- **Mención de Excelencia Maria de Maetzu al Institut de Neurociències de la Universitat de Barcelona (UBNEURO).** Ministerio de Economia, Industria y Competitividad. MDM-2017-0729. Jordi Alberch
- **Definiendo el rol de la familia Ikaros en la esquizofrenia (DISC).** Ministerio de Ciencia, Innovación y Universidades. RTI2018-094678-A-100. Albert Giralt
- **Modulación de la dinámica de las redes neuronales como estrategia terapéutica para recuperar la disfunción de los ganglios basales en las enfermedades del movimiento.** Ministerio de Economia, Industria y Competitividad. SAF2017-88076-R. Jordi Alberch / Manuel Rodriguez Alue
- **European Training Network for Cell-based Regenerative Medicine (Training4CRM).** European Union. 722779. Jordi Alberch
- **Identification of chorein function in neurodegeneration of the basal ganglia for developing new therapeutical approaches in Chorea-Acanthocytosis.** Fundación ChAc. Jordi Alberch/Manuel J Rodriguez Allue/ Merce Masana
- **Non-invasive dynamic neural control by laser-based technology (NEUROPA).** FET-Open (H2020). Grant agreement 863214. Merce Masana.

## Selected publications


- Fernández-García, S., Orlandi, J. G., García-Díaz Barriga, G. A., Rodríguez, M. J., Masana, M., Soriano, J., & Alberch, J. (2020). Deficits in coordinated neuronal activity and network topology are striatal hallmarks in Huntington's disease. BMC Biology, 18(1), 58. https://doi.org/10.1186/s12915-020-00794-4
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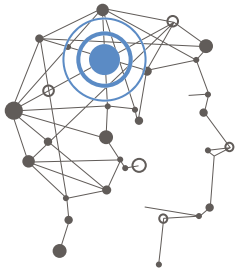
- Sancho-Balsells, A., Brito, V., Fernández, B., Pardo, M., Straccia, M., Ginés, S., Alberch, J., Hernández, I., Arranz, B., Canals, J. M., & Giralt, A. (2020). Lack of Helios During Neural Development Induces Adult Schizophrenia-Like Behaviors Associated With Aberrant Levels of the TRIF-Recruiter Protein WDFY1. Frontiers in Cellular Neuroscience, 14, 93. https://doi.org/10.3389/fncel.2020.00093



Experimental Neurology

## Selected publications


- Llorach-Pares, L., Rodriguez-Urgelles, E., Nonell-Canals, A., Alberch, J., Avila, C., Sanchez-Martinez, M., & Giralt, A. (2020). Meridianins and Lignarenone B as Potential GSK3 Inhibitors and Inductors of Structural Neuronal Plasticity. Biomolecules, 10(4), 639. https://doi.org/10.3390/biom10040639
- Fernández-García, S., Conde-Berriozabal, S., García-García, E., Gort-Paniello, C., Bernal-Casas, D., García-Díaz Barriga, G., López-Gil, J., Muñoz-Moreno, E., Soria, G., Campa, L., Artigas, F., Rodríguez, M. J., Alberch, J., & Masana, M. (2020). M2 cortex-dorsolateral striatum stimulation reverses motor symptoms and synaptic deficits in Huntington's disease. eLife, 9, e57017. https://doi.org/10.7554/eLife.57017
- Kim, A., García-García, E., Straccia, M., Comella-Bolla, A., Miguez, A., Masana, M., Alberch, J., Canals, J. M., & Rodríguez, M. J. (2020). Reduced Fractalkine Levels Lead to Striatal Synaptic Plasticity Deficits in Huntington's Disease. Frontiers in Cellular Neuroscience, 14, 163. https://doi.org/10.3389/fncel.2020.00163
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- de Pins, B., Montalban, E., Vanhoutte, P., Giralt, A., & Girault, J. A. (2020). The non-receptor tyrosine kinase Pyk2 modulates acute locomotor effects of cocaine in D1 receptor-expressing neurons of the nucleus accumbens. Scientific Reports, 10(1), 6619. https://doi.org/10.1038/s41598-020-63426-5
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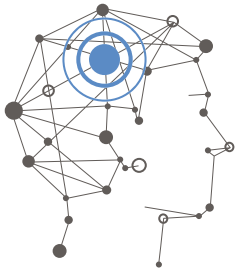
- Vidal-Sancho, L., Fernández-García, S., Solés-Tarrés, I., Alberch, J., & Xifró, X. (2020). Decreased Myocyte Enhancer Factor 2 Levels in the Hippocampus of Huntington's Disease Mice Are Related to Cognitive Dysfunction. Molecular Neurobiology, 57(11), 4549–4562. https://doi.org/10.1007/s12035-020-02041-x


## Knowledge transfer & Innovation

- Cytes Biotechnologies. Spin off. Jordi Alberch, Josep M Canals
- Methods and pharmaceutical composition for the treatment of neurodegenerative disease. Inserm/UB.BIO17159. PCT/EP2018/057462. Jean Antoine Girault, Albert Giralt, Veronica Brito i Silvia Gines
- Photostimulation with REGEnLIFE devices in rodent models of neurological disorders. Universitat de Barcelona/RegenLife. Albert Giralt

# Neuropathology



Experimental Neurology

## Principal investigators

ISIDRO FERRER

## Members

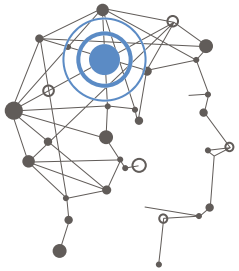
Pol Andres-Benito, Marta Barrachina

## Active projects

- **ARTAG (Aging-related tau astrogliopathy).** Ministerio de Economía y Competitividad. PI17/00809. Isidro Ferrer
- **Contratos I-PFIS: doctorados IIS-empresa en ciencias y tecnologias de la salud.** Ministerio de Economia y Competitividad. IFI15/00035. Isidro Ferrer
- **CIBERNED.** Ministerio de Sanidad y Consumo. CB06/05/0002. Isidro Ferrer
- **Modulation of Tau seeding and pathology in tauopathies by BBB-nanocarriers, epitope selective vaccination and ectoPrP Tau receptor bodies (STOPTauPATHOL).** Fundació 'La Caixa'. HR18-00452. Isidro Ferrer
- **Projecte ELA.** ELA Research Foundation. Isidro Ferrer
- **Red de Investigación Transfronteriza en Enfermedades Priónicas Humanas y Animales (REDPRION).** European Union. EFA148/16 REDPRION. Isidro Ferrer

## Selected publications


- Ferrer, I., Andrés-Benito, P., Sala-Jarque, J., Gil, V., & Del Rio, J. A. (2020). Capacity for Seeding and Spreading of Argyrophilic Grain Disease in a Wild-Type Murine Model; Comparisons With Primary Age-Related Tauopathy. Frontiers in Molecular Neuroscience, 13, 101. https://doi.org/10.3389/fnmol.2020.00101
- Peña-Bautista, C., Torres-Cuevas, I., Baquero, M., Ferrer, I., García, L., Vento, M., & Cháfer-Pericás, C. (2020). Early neurotransmission impairment in non-invasive Alzheimer Disease detection. Scientific Reports, 10(1), 16396. https://doi.org/10.1038/s41598-020-73362-z
- Fourcade, S., Goicoechea, L., Parameswaran, J., Schlüter, A., Launay, N., Ruiz, M., Seyer, A., Colsch, B., Calingasan, N. Y., Ferrer, I., Beal, M. F., Sedel, F., & Pujol, A. (2020). High-dose biotin restores redox balance, energy and lipid homeostasis, and axonal health in a model of adrenoleukodystrophy. Brain Pathology (Zurich, Switzerland), 30(5), 945–963. https://doi.org/10.1111/bpa.12869
- Llorens, F., Villar-Piqué, A., Schmitz, M., Diaz-Lucena, D., Wohlhage, M., Hermann, P., Goebel, S., Schmidt, I., Glatzel, M., Hauw, J. J., Sikorska, B., Liberski, P. P., Riggert, J., Ferrer, I., & Zerr, I. (2020). Plasma total prion protein as a potential biomarker for neurodegenerative dementia: diagnostic accuracy in the spectrum of prion diseases. Neuropathology and Applied Neurobiology, 46(3), 240–254. https://doi.org/10.1111/nan.12573
- Ferrer, I., Zelaya, M. V., Aguiló García, M., Carmona, M., López-González, I., Andrés-Benito, P., Lidón, L., Gavín, R., Garcia-Esparcia, P., & Del Rio, J. A. (2020). Relevance of host tau in tau seeding and spreading in tauopathies. Brain Pathology (Zurich, Switzerland), 30(2), 298–318. https://doi.org/10.1111/bpa.12778
- Younas, N., Zafar, S., Shafiq, M., Noor, A., Siegert, A., Arora, A. S., Galkin, A., Zafar, A., Schmitz, M., Stadelmann, C., Andreoletti, O., Ferrer, I., & Zerr, I. (2020). SFPQ and Tau: critical factors contributing to rapid progression of Alzheimer's disease. Acta Neuropathologica, 140(3), 317–339. https://doi.org/10.1007/s00401-020-02178-y



Experimental Neurology

## Selected publications


- Lidón, L., Urrea, L., Llorens, F., Gil, V., Alvarez, I., Diez-Fairen, M., Aguilar, M., Pastor, P., Zerr, I., Alcolea, D., Lleó, A., Vidal, E., Gavín, R., Ferrer, I., & Del Rio, J. A. (2020). Disease-Specific Changes in Reelin Protein and mRNA in Neurodegenerative Diseases. Cells, 9(5), 1252. https://doi.org/10.3390/cells9051252
- Llorens, F., Hermann, P., Villar-Piqué, A., Diaz-Lucena, D., Nägga, K., Hansson, O., Santana, I., Schmitz, M., Schmidt, C., Varges, D., Goebel, S., Dumurgier, J., Zetterberg, H., Blennow, K., Paquet, C., Baldeiras, I., Ferrer, I., & Zerr, I. (2020). Cerebrospinal fluid lipocalin 2 as a novel biomarker for the differential diagnosis of vascular dementia. Nature Communications, 11(1), 619. https://doi.org/10.1038/s41467-020-14373-2
- Gazulla, J., Ferrer, I., & Berciano, J. (2020). The clinical and radiological profile of primary lateral sclerosis: an annotation on its pathological and clinical background. Journal of Neurology, 267(2), 574. https://doi.org/10.1007/s00415-019-09653-x
- Del Cerro, I., Villarreal, M. F., Abulafia, C., Duarte-Abritta, B., Sánchez, S. M., Castro, M. N., Bocaccio, H., Ferrer, I., Menchón, J. M., Sevlever, G., Nemeroff, C. B., Soriano-Mas, C., & Guinjoan, S. M. (2020). Disrupted functional connectivity of the locus coeruleus in healthy adults with parental history of Alzheimer's disease. Journal of Psychiatric Research, 123, 81–88. https://doi.org/10.1016/j.jpsychires.2020.01.018
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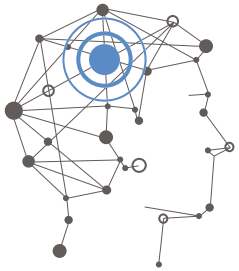
- Jové, M., Pradas, I., Mota-Martorell, N., Cabré, R., Ayala, V., Ferrer, I., & Pamplona, R. (2020). Succination of Protein Thiols in Human Brain Aging. Frontiers in Aging Neuroscience, 12, 52. https://doi.org/10.3389/fnagi.2020.00052
- Torres, P., Andrés-Benito, P., Fernàndez-Bernal, A., Ricart, M., Ayala, V., Pamplona, R., Ferrer, I., & Portero-Otin, M. (2020). Selected cryptic exons accumulate in hippocampal cell nuclei in Alzheimer's disease with and without associated TDP-43 proteinopathy. Brain : a Journal of Neurology, 143(3), e20. https://doi.org/10.1093/brain/awaa013
- Guijarro, I. M., Garcés, M., Andrés-Benito, P., Marín, B., Otero, A., Barrio, T., Carmona, M., Ferrer, I., Badiola, J. J., & Monzón, M. (2020). Assessment of Glial Activation Response in the Progress of Natural Scrapie after Chronic Dexamethasone Treatment. International Journal of Molecular Sciences, 21(9), 3231. https://doi.org/10.3390/ijms21093231
- Martínez-González, L., Rodríguez-Cueto, C., Cabezudo, D., Bartolomé, F., Andrés-Benito, P., Ferrer, I., Gil, C., Martín-Requero, Á., Fernández-Ruiz, J., Martínez, A., & de Lago, E. (2020). Motor neuron preservation and decrease of in vivo TDP-43 phosphorylation by protein CK-1 kinase inhibitor treatment. Scientific Reports, 10(1), 4449. https://doi.org/10.1038/s41598-020-61265-y
- Llorens, F., Villar-Piqué, A., Hermann, P., Schmitz, M., Calero, O., Stehmann, C., Sarros, S., Moda, F., Ferrer, I., Poleggi, A., Pocchiari, M., Catania, M., Klotz, S., O'Regan, C., Brett, F., Heffernan, J., Ladogana, A., Collins, S. J., Calero, M., Kovacs, G. G., … Zerr, I. (2020). Diagnostic Accuracy of Prion Disease Biomarkers in Iatrogenic Creutzfeldt-Jakob Disease. Biomolecules, 10(2), 290. https://doi.org/10.3390/biom10020290



Experimental Neurology

## Selected publications


- Torres, P., Cacabelos, D., Pairada, J., Bauer, K. C., Boada, J., Fontdevila, L., Rossi, C., Povedano, M., Ferrer, I., Pamplona, R., Finlay, B. B., Portero-Otín, M., & Ayala, V. (2020). Gender-Specific Beneficial Effects of Docosahexaenoic Acid Dietary Supplementation in G93A-SOD1 Amyotrophic Lateral Sclerosis Mice. Neurotherapeutics, 17(1), 269–281. https://doi.org/10.1007/s13311-019-00808-2
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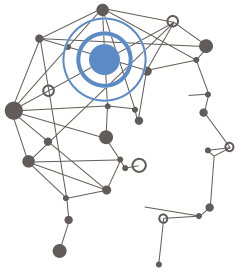

Experimental Neurology

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- Del Cerro, I., Villarreal, M. F., Abulafia, C., Duarte-Abritta, B., Sánchez, S. M., Castro, M. N., Bocaccio, H., Ferrer, I., Menchón, J. M., Sevlever, G., Nemeroff, C. B., Soriano-Mas, C., & Guinjoan, S. M. (2020). Disrupted functional connectivity of the locus coeruleus in healthy adults with parental history of Alzheimer's disease. Journal of psychiatric research, 123, 81–88. https://doi.org/10.1016/j.jpsychires.2020.01.018
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- Andrés-Benito, P., Povedano, M., Domínguez, R., Marco, C., Colomina, M. J., López-Pérez, Ó., Santana, I., Baldeiras, I., Martínez-Yelámos, S., Zerr, I., Llorens, F., Fernández-Irigoyen, J., Santamaría, E., & Ferrer, I. (2020). Increased C-X-C Motif Chemokine Ligand 12 Levels in Cerebrospinal Fluid as a Candidate Biomarker in Sporadic Amyotrophic Lateral Sclerosis. International journal of molecular sciences, 21(22), 8680. https://doi.org/10.3390/ijms21228680
- Lachén-Montes, M., Mendizuri, N., Ausin, K., Andrés-Benito, P., Ferrer, I., Fernández-Irigoyen, J., & Santamaría, E. (2020). Amyotrophic Lateral Sclerosis Is Accompanied by Protein Derangements in the Olfactory Bulb-Tract Axis. International journal of molecular sciences, 21(21), 8311. https://doi.org/10.3390/ijms21218311
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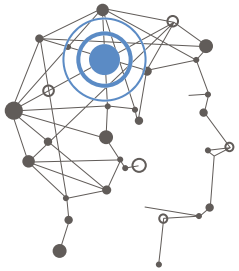
## Knowledge transfer & Innovation

- Mitochondrial markers of neurodegenerative diseases. AVCRI247-E



Experimental Neurology

# Pathogenesis of immune-mediated neuronal disorders

## Principal investigators

JOSEP DALMAU
(Syndromes and mechanisms of paraneoplastic and autoimmune encephalitis)

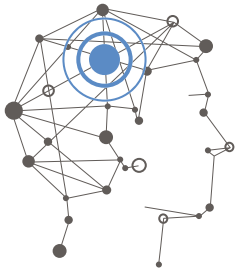
ALBERT SAIZ
(Neuroimmunology and Multiple Sclerosis)

## Members

Thais Armangue, Pablo Jercog, Francesco Mannara, Eugenia Maria Martinez, Jesus Planaguma, Marija Radosevic, Anna Garcia, Jon Landa, Estibaliz Maudes, Gemma Olive, Paula Peixoto, Amir-pasha Zamani, Ester Aguilar, Mercedes Alba, Eva Maria Caballero, Maria Rodes, Myrna Rosenfeld, Lidia Sabater

## Active projects

- **Análisis multiescala de los autoanticuerpos contra el receptor NMDA en psicosis.** Instituto de Salud Carlos III (ISCIII). AC18/00009. Josep Dalmau
- **Centro de Investigación Biomédica en Red de Enfermedades Raras(CIBERER).** Ministerio de Economia y Competitividad. CB15/00010. Josep Dalmau
- **Encefalitis anti-NMDAR: Subclases de anticuerpos, y estudio de los efectos de la presencia crónica de anticuerpos en el cerebro de ratón adulto, desarrollo cerebral fetal y sinaptogénesis.** Ministerio de Economia y Competitividad. PI17/00234. Josep Dalmau
- **A Translational Model of Antibody-mediated Synaptic Disease: Symptoms, Neuronal Circuits, and the Mechanisms of Memory Loss and Recovery.** Fundació 'La Caixa'. HR17-00149. Josep Dalmau
- **Biomarcadores de resonancia magnética avanzada en esclerosis múltiple: asociación con el perfil clínico evolutivo y sustrato genético.** Instituto de Salud Carlos III (ISCIII). PI15/00587. Albert Saiz
- **Immune-mediated diseases of the synapse: symptoms, brain networks, and the link to human memory.** Instituto de Salud Carlos III (ISCIII). PIE16/00014. Josep Dalmau
- **Incorporació del Dr. Jesús Planagumà al grup de recerca del Programa de Neuroimmunologia**. Departament de Salut de la Generalitat de Catalunya. SLT002/16/00346. Josep Dalmau
- **Investigations in anti-NMDAR encephalitis: New diagnostic test, the role of inflammation in an animal model, and allosteric modulation of NMDAR as a therapeutic strategy.** Instituto de Salud Carlos III (ISCIII). PI20/00197. Josep Dalmau
- **Red Temática de Investigación Cooperativa en Salud – Esclerosis múltiple.** Instituto de Salud Carlos III (ISCIII). RD16/0015/0002
- **Rehabilitación cognitiva y plasticidad cerebral en esclerosis múltiple: en búsqueda de la evidencia.** Instituto de Salud Carlos III (ISCIII). PI18/01030. Albert Saiz



Experimental Neurology

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- Graus, F., Saiz, A., & Dalmau, J. (2020). GAD antibodies in neurological disorders – insights and challenges. Nature Reviews Neurology, 16(7), 353–365. https://doi.org/10.1038/s41582-020-0359-x
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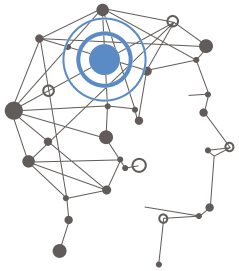

Experimental Neurology

## Selected publications


- Meca-Lallana, J. E., Fernández-Prada, M., García Vázquez, E., Moreno Guillén, S., Otero Romero, S., Rus Hidalgo, M., Villar Guimerans, L. M., Eichau Madueño, S., Fernández Fernández, Ó., Izquierdo Ayuso, G., Álvarez Cermeño, J. C., Arnal García, C., Arroyo González, R., Brieva Ruiz, L., Calles Hernández, C., García Merino, A., González Platas, M., Hernández Pérez, M. Á., Moral Torres, E., Olascoaga Urtaza, J., … Montalbán Gairin, X. (2020). Consensus statement on the use of alemtuzumab in daily clinical practice in Spain. Consenso de expertos sobre el uso de alemtuzumab en la práctica clínica diaria en España. Neurologia, S0213-4853(19)30146-X. Advance online publication. https://doi.org/10.1016/j.nrl.2019.11.003
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- Gil-Varea, E., Spataro, N., Villar, L. M., Tejeda-Velarde, A., Midaglia, L., Matesanz, F., Malhotra, S., Eixarch, H., Patsopoulos, N., Fernández, Ó., Oliver-Martos, B., Saiz, A., Llufriu, S., Ramió-Torrentà, L., Quintana, E., Izquierdo, G., Alcina, A., Bosch, E., Navarro, A., Montalban, X., … Comabella, M. (2020). Targeted resequencing reveals rare variants enrichment in multiple sclerosis susceptibility genes. Human Mutation, 41(7), 1308–1320. https://doi.org/10.1002/humu.24016
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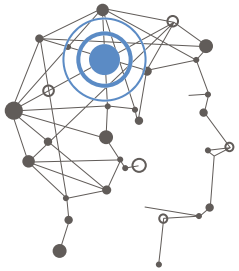
- Martínez-Heras, E., Solana, E., Prados, F., Andorrà, M., Solanes, A., López-Soley, E., Montejo, C., Pulido-Valdeolivas, I., Alba-Arbalat, S., Sola-Valls, N., Sepúlveda, M., Blanco, Y., Saiz, A., Radua, J., & Llufriu, S. (2020). Characterization of multiple sclerosis lesions with distinct clinical correlates through quantitative diffusion MRI. NeuroImage Clinical, 28, 102411. https://doi.org/10.1016/j.nicl.2020.102411



Experimental Neurology

## Selected publications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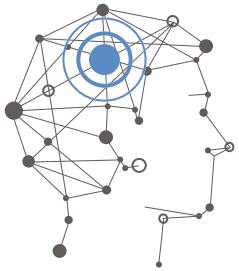


Experimental Neurology

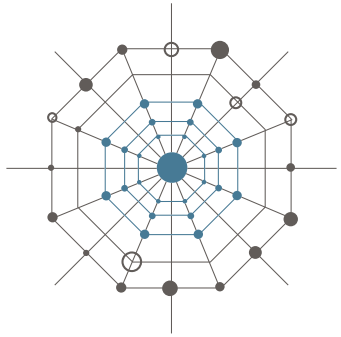
## Knowledge transfer & Innovation

- Diagnostic method for detecting a new form of autoimmune encephalitis and related subject-matter (DPPX). Licensed to Euroimmun, Inc. USA Patent Number: US 9,719,993 B2. European patent application number: 12183919.5. Josep Dalmau
- Fundació Privada CELLEX. 15/318. Josep Dalmau
- Diagnosis of a neurologic disease (IgLON5). Licensed to Euroimmun, Inc. EP2905622A1. Josep Dalmau i Francesc Graus
- Methods and compositions for treatment and diagnosis of autoimmune encephalitis or epilepsy (NMDAR test). Licensed to Euroimmun, Inc, Germany. USA Patent Number: US 7,972,796. European patent number: EP 2 057 466. Canadian patent number: 2,697,742. Josep Dalmau, Myrna R Rosenfeld i David R Lynch
- Methods for diagnosing and treating encephalitis or epilepsy (GABAB autoantibody test). Licensed to Euroimmun, Inc. USA Patent Number: US 8,685,656. European Patent Number: 2483417. Josep Dalmau

# Mental Health

**Annual Report**
2019

# Mental Health

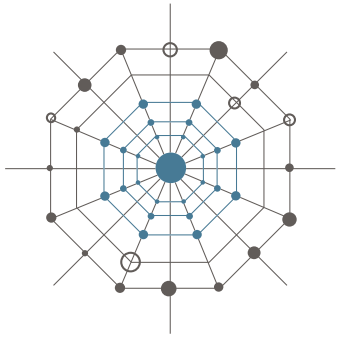


## PSYCHOTIC AND AFFECTIVE DISORDERS ARE AMONG THE MOST DISABLING MENTAL DISORDERS IN THE WORLD.

Depression, schizophrenia and bipolar disorder have a substantial economic impact in mental health and social services. They are a major contributor to increasing direct healthcare system costs (e.g., hospital inpatient stays, prescription drugs), direct social system costs (e.g., pensions, guardianship) and indirect costs (e.g., loss of productivity from unemployment, reduced work productivity among family caregiver). Recently, there has been a paradigm shift in the way we understand mental disorders, moving from pursuing a clinical remission (i.e., symptom-free periods) to a full recovery (i.e., good performance in everyday life). Under a multidisciplinary approach, the Institute actively embraces the challenge of advancing mental health knowledge around underlying neurobiological mechanisms, cognitive and daily life functioning, and new treatments and therapies in psychotic and affective disorders in childhood, adolescence, and adulthood.

## PROJECTS

- **Optimizing response to Li treatment through personalized evaluation of individuals with bipolar I disorder: the R-LiNK initiative.** European Union. 754907-1. Eduard Vieta
- **Clinical, cognitive and neuroimaging characteristics of child and adolescent offspring of patients diagnosed with schizophrenia and ADHD. Instituto de Salud Carlos III.** Ministerio de Economia, Industria y Competitividad. PI18/00696. Josefina Castro-Fornieles
- **Trayectorias asociadas al género en la exclusión de las relaciones sociales en la vejez y sus consecuencias para la salud y bienestar: una perspectiva de ciclo vital.** Ministerio de Ciencia, Innovación y Universidades. PCI2019-103627. Feliciano Villar
- **Schools Against Victimisation from an Early age.** Education, Audiovisual and Culture Executive Agency (EACEA). 2018-1-ES01-KA201-050287. Noemi Pereda
- **Toward recovery in people diagnosed with a severe mental disorder: Definition, assessment and intervention (RECO-DAI).** Ministerio de Innovación, Ciencia y Universidades. PID2019-109887GB-I00. Juana Gomez-Benito i Georgina Guilera
- **Biomarkers of synaptic loss, neuronal damage and inflammation in cerebrospinal fluid (CSF) and peripheral blood in patients with a first psychotic episode.** Instituto de Salud Carlos III. Ministerio de Economía, Industria y Competitividad. PI20/01006. Miquel Bioque i Miquel Bernardo
- **Network Center for Biomedical Research in Mental Health (CIBERSAM)**



Mental Health

# Bipolar disorders

## Principal investigators

EDUARD VIETA

## Members

Antoni Benabarre, Iria Grande, Jose Manuel Goikolea, Ana Isabel Martinez, Marina Garriga, Diego Hidalgo, Ester Jimenez, Andrea Murru, Isabella Pacchiarotti, Carla Torrent, Marc Valenti, Norma Verdolini, Gerard Anmella, Derek Clougher, Giovanna Fico, Anna Gimenez, Susana Gomes-da-Costa, Maria Sague, Laura Montejo, Estela Salagre, Jose Sanchez-Moreno, Brisa Sole, Laura Montejo, Cristina Varo, Maria Serra

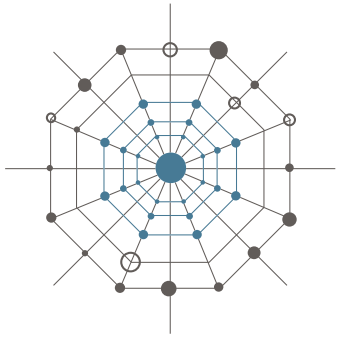
## Active projects

- **A New Intervention for Implementation of Pharmacogenetics in Psychiatry (PSY-PGx).** European Union. 945151. Eduard Vieta
- **Caracterització dels pròdroms i detecció de factors predictors pronòstics en una mostra de pacients bipolars amb un primer episodi maniac.** Departament de Salut de la Generalitat de Catalunya. SLT006/17/00357. Eduard Vieta
- **Recovery with MIND/COVID-19: Development, feasibility and effectiveness of a smartphone application (PRESTOapp) for mental health problems in health workers during the COVID-19 pandemic.** Fundación Española de Psiquiatría y Salud Mental. FEPSM_COVID19_20_1. Eduard Vieta
- **Salud Mental (CIBERSAM).** Ministerio de Sanidad y Consumo. CB07/09/0004. Eduard Vieta
- **Eficacia de la Rehabilitación Funcional adaptada a pacientes con primeros episodios psicóticos coadyuvante al tratamiento farmacológico versus tratamiento farmacológico habitual (FROzEN).** Ministerio de Economia, Industria y Competitividad. PI18/00789. Ana Isabel Martinez
- **Estudio sobre la eficacia de un abordaje psicológico para la potenciación de la reserva cognitiva en población bipolar con un primer episodio reciente.** Ministerio de Economia, Industria y Competitividad. PI18/00805. Eduard Vieta
- **Optimizing response to Li treatment through personalized evaluation of individuals with bipolar I disorder: the R-LiNK initiative.** European Union. 754907-1. Eduard Vieta
- **Early intervention to promote cognitive reserve in subjects at risk and early stages of psychosis (INCREASE).** Fundació Clínic per a la Recerca Biomèdica. FCRB_PonsBalmes20. Josefina Castro, Eduard Vieta.
- **Implicación de variantes del gen DDR1 en la integridad de la mielina y en la velocidad de procesamiento cognitivo en pacientes con trastorno bipolar en fase eutímica.** Fondos de Investigación en Salud, Instituto de Salud Carlos III. PI15/00283. Eduard Vieta

## Publications


- Amare, A. T., Schubert, K. O., Hou, L., Clark, S. R., Papiol, S., Cearns, M., Heilbronner, U., Degenhardt, F., Tekola-Ayele, F., Hsu, Y. H., Shekhtman, T., Adli, M., Akula, N., Akiyama, K., Ardau, R., Arias, B., Aubry, J. M., Backlund, L., Bhattacharjee, A. K., Bellivier, F., … Baune, B. T. (2020). Association of polygenic score for major depression with response to lithium in patients with bipolar disorder. Molecular Psychiatry, 10.1038/s41380-020-0689-5. Advance online publication. https://doi.org/10.1038/s41380-020-0689-5

# Research



Mental Health

## Selected publications


- Carvalho, A. F., Firth, J., & Vieta, E. (2020). Bipolar Disorder. The New England Journal of Medicine, 383(1), 58–66. https://doi.org/10.1056/NEJMra1906193
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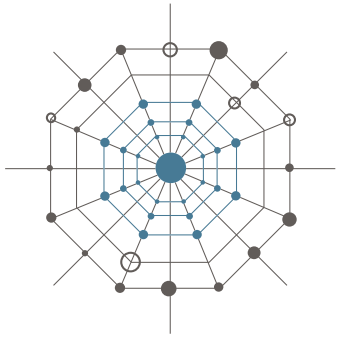
# Research



Mental Health

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- Solé, B., & Vieta, E. (2020). What else is needed for a full functional recovery in bipolar disorder?. Bipolar disorders, 22(4), 411–412. https://doi.org/10.1111/bdi.12866
- Vieta E. (2020). Disruptive treatments in psychiatry. Tratamientos disruptivos en psiquiatría. Revista de Psiquiatria y Salud Mental, 13(1), 1–4. https://doi.org/10.1016/j.rpsm.2019.10.001
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- Pacchiarotti, I., Kotzalidis, G. D., Murru, A., Mazzarini, L., Rapinesi, C., Valentí, M., Anmella, G., Gomes-da-Costa, S., Gimenez, A., Llach, C., Perugi, G., Vieta, E., & Verdolini, N. (2020). Mixed Features in Depression: The Unmet Needs of Diagnostic and Statistical Manual of Mental Disorders Fifth Edition. The Psychiatric Clinics of North America, 43(1), 59–68. https://doi.org/10.1016/j.psc.2019.10.006
- Solé, E., Roca, A., Torres, A., Hernández, A. S., Fernández, N., Díaz, C. N., Vieta, E., & Garcia-Esteve, L. (2020). Obstetric complications in bipolar disorder: Psychiatric factors and the risk of caesarean section. European Neuropsychopharmacology, 32, 47–55. https://doi.org/10.1016/j.euroneuro.2019.12.115
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- Hidalgo-Mazzei, D., Llach, C., & Vieta, E. (2020). mHealth in affective disorders: hype or hope? A focused narrative review. International Clinical Psychopharmacology, 35(2), 61–68. https://doi.org/10.1097/YIC.0000000000000302
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- Lahera, G., Cid, J., Gonzalez-Pinto, A., Cabrera, A., Mariner, C., Vieta, E., Arango, C., & Crespo-Facorro, B. (2020). Needs of people with psychosis and their caregivers: «In their own voice». Necesidades de las personas con psicosis y sus cuidadores: «en voz propia». Revista de Psiquiatria y Salud Mental, 13(2), 80–89. https://doi.org/10.1016/j.rpsm.2019.11.002
- Calabrò, M., Porcelli, S., Crisafulli, C., Albani, D., Kasper, S., Zohar, J., Souery, D., Montgomery, S., Mantovani, V., Mendlewicz, J., Bonassi, S., Vieta, E., Frustaci, A., Ducci, G., Landi, S., Boccia, S., Bellomo, A., Di Nicola, M., Janiri, L., Colombo, R., … Serretti, A. (2020). Genetic variants associated with psychotic symptoms across psychiatric disorders. Neuroscience Letters, 720, 134754. https://doi.org/10.1016/j.neulet.2020.134754
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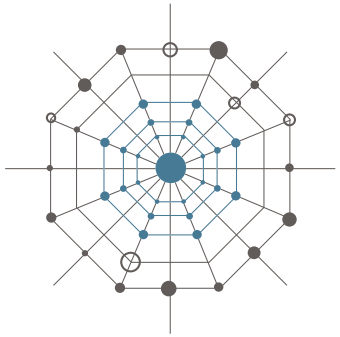
- Stein, D. J., Szatmari, P., Gaebel, W., Berk, M., Vieta, E., Maj, M., de Vries, Y. A., Roest, A. M., de Jonge, P., Maercker, A., Brewin, C. R., Pike, K. M., Grilo, C. M., Fineberg, N. A., Briken, P., Cohen-Kettenis, P. T., & Reed, G. M. (2020). Mental, behavioral and neurodevelopmental disorders in the ICD-11: an international perspective on key changes and controversies. BMC medicine, 18(1), 21. https://doi.org/10.1186/s12916-020-1495-2

# Research



Mental Health

## Selected publications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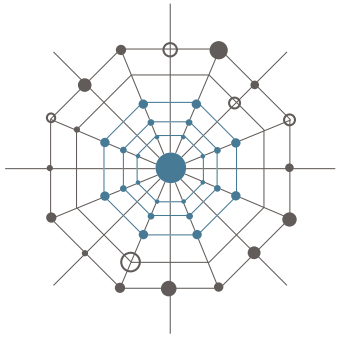
# Research



Mental Health

## Selected publications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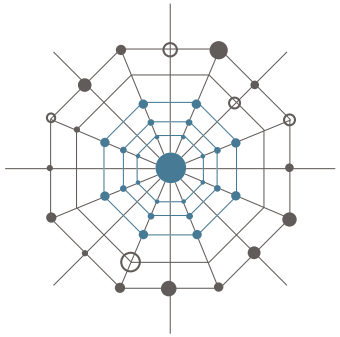
# Research



Mental Health

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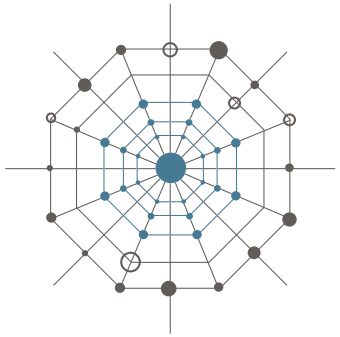
# Research



Mental Health

## Selected publications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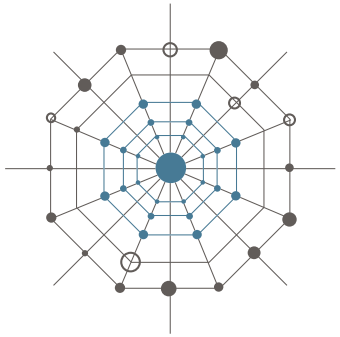
# Research



Mental Health

## Selected publications


- Salvador, R., Verdolini, N., Garcia-Ruiz, B., Jiménez, E., Sarró, S., Vilella, E., Vieta, E., Canales-Rodríguez, E. J., Pomarol-Clotet, E., & Voineskos, A. N. (2020). Multivariate Brain Functional Connectivity Through Regularized Estimators. Frontiers in Neuroscience, 14, 569540. https://doi.org/10.3389/fnins.2020.569540
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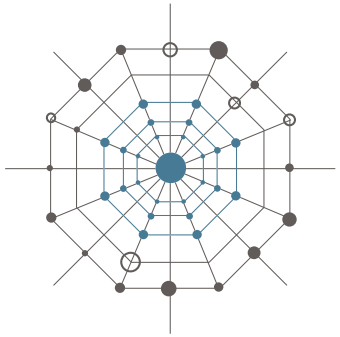


Mental Health

# Child and adolescent psychiatry and psychology

## Principal investigators

JOSEFINA CASTRO-FORNIELES

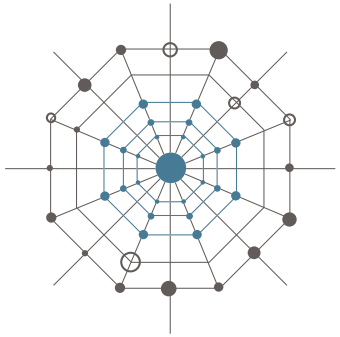
## Members

Susana Andres, Inmaculada Baeza, Rosa Calvo, Maria Luisa Lazaro, Astrid Morer, Olga Puig, Ana Blazquez, Itziar Flamarique, Sara Lera, Ana Encarnacion Ortiz, Ana Perez, Maria Teresa Plana, Soledad Romero, Mireia Rosa, Pilar Santamarina, Elena de la Serna, Gisela Sugranyes, Patricia Camprodon, Blanca Garcia, Daniel Ilzarbe

## Active projects

- **A translational model of autoimmune synaptopathy: symptoms, brain networks, and the link to human memory.** Instituto de Salud Carlos III. Ministerio de Economia y Competitividad. PIE16/00014. Josefina Castro-Fornieles
- **Características comunes y diferenciales en hijos de pacientes con esquizofrenia diagnosticados de TDAH, hijos de padres sanos diagnosticados de TDAH y controles.** Ministerio de Economia y Competitividad. PI18/00696. Josefina Castro-Fornieles
- **Early intervention to improve cognitive reserve in subjects at risk and early stages of phychosis.** Fundació Clínic per a la Recerca Biomèdica. FCRB_PB2_2020. Josefina Castro-Fornieles
- **Autism innovative medicine studies-2-trials.** European Union. H2020-BBIJTI-2016-777394. Rosa Maria Calvo
- **Characterization by neuroimage of predictors and mechanisms of response to cognitive-behavioral therapy in obsessive-compulsive disorder.** PERIS. SLT006/17/00249. Joaquim Radua, Luisa Lazaro
- **Clinical, cognitive and neuroimaging characteristics of child and adolescent offspring of patients diagnosed with schizophrenia and ADHD. Instituto de Salud Carlos III**. Ministerio de Economia y Competitividad. PI18/00696. Josefina Castro-Fornieles
- **Construction of a multimodal model with diagnostic and prognostic capacity in adolescents at high risk of psychosis: integration of genetic, environmental and neuroimaging factors.** PI18/00976. Gisela Sugranyes
- **Detection of the risk of schizophrenia using PGRS in children and adolescents of patients with schizophrenia or bipolar disorder. Instituto de Salud Carlos III.** Ministerio de Economia y Competitividad. Josefina Castro-Fornieles
- **Eight-year follow-up of children and adolescents offspring of patients diagnosed with schizophrenia or bipolar disorder. Instituto de Salud Carlos III.** Ministerio de Economia y Competitividad. PI15/00467. Josefina Castro-Fornieles
- **From the synapse to brain structure and function: a comparative study between youth with early stage psychosis and patients with NMDA receptor encephalitis.** Brain & Behaviour Research foundation. Gisela Sugranyes
- **Influence of genetics and epigenetics on the efficacy of the treatment of Obsessive-Compulsive disorder with cognitive-behavioral therapy or pharmacological treatment.** Instituto de Salud Carlos III. Ministerio de Economia y Competitividad. PI16/01086. Luisa Lazaro

# Research



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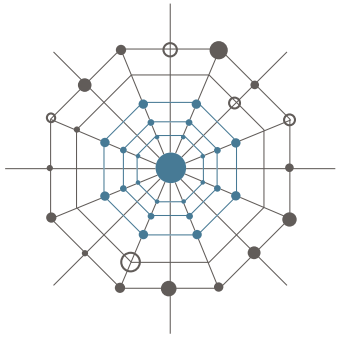
## Active projects

- **Influence of vaccines, infectious and immunological biomarkers and analysis of transcriptome-interactome networks in the course of tic disorders: a longitudinal study. Instituto de Salud Carlos III.** Ministerio de Economia y Competitividad. PI20/01056. Astrid Morer
- **Longitudinal multicenter study on the role of neurobiological markers of stress in children and adolescents with psychosis risk syndrome and the transition to psychosis.** Instituto de Salud Carlos III. Ministerio de Economia y Competitividad. PI15/00444. Inmaculada Baeza
- **Longitudinal study of nutritional and stress markers in children adn adolescents diagnosed with psychosis risk syndrome and the predictive capacity in transition to psychosis.** Ministerio de Economia y Competitividad. PI18/00242. Inmaculada Baeza
- **Phenomenology and neuroimmune pathways of repetitive and restrictive behaviors. Instituto de Salud Carlos III.** Ministerio de Economia y Competitividad. PI19/01122. Luisa Lazaro
- **Placebo-controlled trial in subjects at ultra high risk for psychosis with omega-3 fatty acids in Europe (PURPOSE)**. IBP-FLU-2017-01. Inmaculada Baeza
- **Randomized, double-blind, placebo-controlled psychoactive study to evaluate the efficacy and safety of three fixed doses (28, 56 and 84 mg) of intranasal esketamine in conjunction with conventional comprehensive care in the rapid reduction of symptoms of major depressive disorder, including suicidal ideation, in pediatric subjects considered at risk of imminent suicide.** ESKETINSUI 2002. 2016-004422-42. Luisa Lazaro
- **Study on the efficacy of cognitive reserve enhancement in children, adolescents and young adults at high genetic risk for schizophrenia or bipolar disorder. Instituto de Salud Carlos III.** Ministerio de Economia y Competitividad. PI17/00741. Elena de la Serna
- **Why can't the child stop washing? Learning habits in childhood TOC.** Fundation Alicia Koplowitz. Rosa Calvo Escalona

## Selected publications


- Santamarina-Perez, P., Mendez, I., Singh, M. K., Berk, M., Picado, M., Font, E., Moreno, E., Martínez, E., Morer, A., Borràs, R., Cosi, A., & Romero, S. (2020). Adapted Dialectical Behavior Therapy for Adolescents with a High Risk of Suicide in a Community Clinic: A Pragmatic Randomized Controlled Trial. Suicide & Life-Threatening Behavior, 50(3), 652–667. https://doi.org/10.1111/sltb.12612
- Sugranyes, G., de la Serna, E., Ilzarbe, D., Pariente, J. C., Borras, R., Romero, S., Rosa, M., Baeza, I., Moreno, M. D., Bernardo, M., Vieta, E., & Castro-Fornieles, J. (2020). Brain structural trajectories in youth at familial risk for schizophrenia or bipolar disorder according to development of psychosis spectrum symptoms. Journal of Child Psychology and Psychiatry, and Allied Disciplines, 10.1111/jcpp.13321. Advance online publication. https://doi.org/10.1111/jcpp.13321
- Puig, O., Fisher, M., Loewy, R., Miley, K., Ramsay, I. S., Carter, C. S., Ragland, J. D., Niendam, T., & Vinogradov, S. (2020). Early- Versus Adult-Onset Schizophrenia as a Predictor of Response to Neuroscience-Informed Cognitive Training. Journal of Clinical Psychiatry, 81(2), 18m12369. https://doi.org/10.4088/JCP.18m12369
- Vilaplana-Pérez, A., Pérez-Vigil, A., Sidorchuk, A., Brander, G., Isomura, K., Hesselmark, E., Kuja-Halkola, R., Larsson, H., Mataix-Cols, D., & Fernández de la Cruz, L. (2020). Much more than just shyness: the impact of social anxiety disorder on educational performance across the lifespan. Psychological Medicine, 1–9. Advance online publication. https://doi.org/10.1017/S0033291719003908
- De la Serna, E., Camprodon-Boadas, P., Ilzarbe, D., Sugranyes, G., Baeza, I., Moreno, D., Díaz-Caneja, C. M., Rosa-Justicia, M., Llorente, C., Ayora, M., Borras, R., Torrent, C., Bernardo, M., & Castro-Fornieles, J. (2020). Neuropsychological development in the child and adolescent offspring of patients diagnosed with schizophrenia or bipolar disorder: A two-year follow-up comparative study. Progress in Neuro-Psychopharmacology and Biological Psychiatry, 103, 109972. https://doi.org/10.1016/j.pnpbp.2020.109972
- Cervin, M., Lázaro, L., Martínez-González, A. E., Piqueras, J. A., Rodríguez-Jiménez, T., Godoy, A., Aspvall, K., Barcaccia, B., Pozza, A., & Storch, E. A. (2020). Obsessive-compulsive symptoms and their links to depression and anxiety in clinic- and community-based pediatric samples: A network analysis. Journal of Affective Disorders, 271, 9–18. https://doi.org/10.1016/j.jad.2020.03.090

# Research



Mental Health

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- Ariño, H., Muñoz-Lopetegi, A., Martinez-Hernandez, E., Armangue, T., Rosa-Justicia, M., Escudero, D., Matos, N., Graus, F., Sugranyes, G., Castro-Fornieles, J., Compte, A., Dalmau, J., & Santamaria, J. (2020). Sleep disorders in anti-NMDAR encephalitis. Neurology, 95(6), e671–e684. https://doi.org/10.1212/WNL.0000000000009987
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- Camprodon-Boadas, P., de la Serna, E., Baeza, I., Puig, O., Ilzarbe, D., Sugranyes, G., Borras, R., & Castro-Fornieles, J. (2021). Cognitive reserve in patients with first-episode psychosis as outcome predictor at 5-year follow-up. European Child & Adolescent Psychiatry, 30(12), 1959–1967. https://doi.org/10.1007/s00787-020-01668-4
- Kleine Deters, R., Naaijen, J., Rosa, M., Aggensteiner, P. M., Banaschewski, T., Saam, M. C., Schulze, U., Sethi, A., Craig, M. C., Sagar-Ouriaghli, I., Santosh, P., Castro-Fornieles, J., Penzol, M. J., Arango, C., Werhahn, J. E., Brandeis, D., Franke, B., Glennon, J., Buitelaar, J. K., Hoekstra, P. J., … Dietrich, A. (2020). Executive functioning and emotion recognition in youth with oppositional defiant disorder and/or conduct disorder. The World Journal of Biological Psychiatry, 21(7), 539–551. https://doi.org/10.1080/15622975.2020.1747114
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- Carballo, J. J., Llorente, C., Kehrmann, L., Flamarique, I., Zuddas, A., Purper-Ouakil, D., Hoekstra, P. J., Coghill, D., Schulze, U., Dittmann, R. W., Buitelaar, J. K., Castro-Fornieles, J., Lievesley, K., Santosh, P., Arango, C., & STOP Consortium (2020). Psychosocial risk factors for suicidality in children and adolescents. European Child & Adolescent Psychiatry, 29(6), 759–776. https://doi.org/10.1007/s00787-018-01270-9
- Werhahn, J. E., Mohl, S., Willinger, D., Smigielski, L., Roth, A., Hofstetter, C., Stämpfli, P., Naaijen, J., Mulder, L. M., Glennon, J. C., Hoekstra, P. J., Dietrich, A., Kleine Deters, R., Aggensteiner, P. M., Holz, N. E., Baumeister, S., Banaschewski, T., Saam, M. C., Schulze, U., Lythgoe, D. J., … Brandeis, D. (2021). Aggression subtypes relate to distinct resting state functional connectivity in children and adolescents with disruptive behavior. European Child & Adolescent Psychiatry, 30(8), 1237–1249. https://doi.org/10.1007/s00787-020-01601-9

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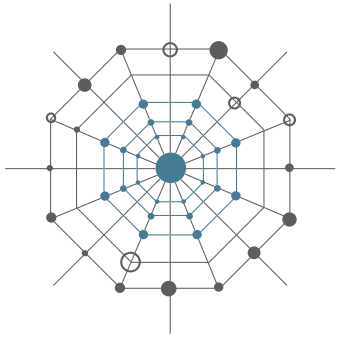

Mental Health

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- Naaijen, J., Mulder, L. M., Ilbegi, S., de Bruijn, S., Kleine-Deters, R., Dietrich, A., Hoekstra, P. J., Marsman, J. C., Aggensteiner, P. M., Holz, N. E., Boettinger, B., Baumeister, S., Banaschewski, T., Saam, M. C., M E Schulze, U., Santosh, P. J., Sagar-Ouriaghli, I., Mastroianni, M., Castro Fornieles, J., Bargallo, N., … Buitelaar, J. K. (2020). Specific cortical and subcortical alterations for reactive and proactive aggression in children and adolescents with disruptive behavior. NeuroImage Clinical, 27, 102344. https://doi.org/10.1016/j.nicl.2020.102344
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- Gárriz, M., Andrés-Perpiñá, S., Plana, M. T., Flamarique, I., Romero, S., Julià, L., & Castro-Fornieles, J. (2021). Personality disorder traits, obsessive ideation and perfectionism 20 years after adolescent-onset anorexia nervosa: a recovered study. Eating and Weight Disorders, 26(2), 667–677. https://doi.org/10.1007/s40519-020-00906-7
- De la Serna, E., Ilzarbe, D., Sugranyes, G., Baeza, I., Moreno, D., Rodríguez-Toscano, E., Espliego, A., Ayora, M., Romero, S., Sánchez-Gistau, V., & Castro-Fornieles, J. (2021). Lifetime psychopathology in child and adolescent offspring of parents diagnosed with schizophrenia or bipolar disorder: a 2-year follow-up study. European Child & Adolescent Psychiatry, 30(1), 117–129. https://doi.org/10.1007/s00787-020-01500-z
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- Carrasco, G., Morillas, J., Calizaya, M., Baeza, I., Molina, R., & Meije, Y. (2020). ICU decision making based on Living Systematic Review strategy during SARS-CoV-2 pandemic. Results of a prospective case serie. Decisiones en UCI basadas en la estrategia Living Systematic Review durante la pandemia de SARS-CoV-2. Resultados de una serie prospectiva de casos. Medicina Intensiva, 44(8), 516–519. https://doi.org/10.1016/j.medin.2020.06.001
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- Forcadell, E., Medrano, L., Garcia-Delgar, B., Fernández-Martínez, I., Orgilés, M., García, C., Lázaro, L., & Lera-Miguel, S. (2020). Psychometric Properties of the Children's Version of the Spence Children's Anxiety Scale (SCAS) in a Spanish Clinical Sample. The Spanish Journal of Psychology, 23, e40. https://doi.org/10.1017/SJP.2020.39
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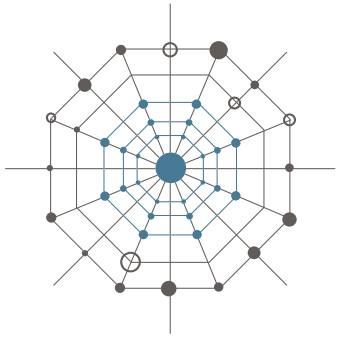
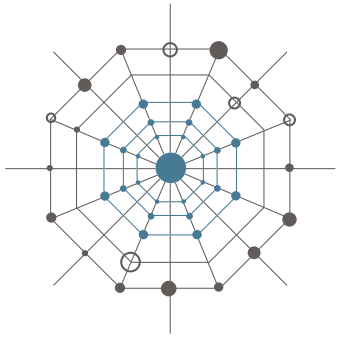
# Research



Mental Health

## Selected publications


- Kong, X. Z., ENIGMA Laterality Working Group, & Francks, C. (2022). Reproducibility in the absence of selective reporting: An illustration from large-scale brain asymmetry research. Human Brain Mapping, 43(1), 244–254. https://doi.org/10.1002/hbm.25154
- Wierenga, L. M., Doucet, G. E., Dima, D., Agartz, I., Aghajani, M., Akudjedu, T. N., Albajes-Eizagirre, A., Alnaes, D., Alpert, K. I., Andreassen, O. A., Anticevic, A., Asherson, P., Banaschewski, T., Bargallo, N., Baumeister, S., Baur-Streubel, R., Bertolino, A., Bonvino, A., Boomsma, D. I., Borgwardt, S., … Tamnes, C. K. (2022). Greater male than female variability in regional brain structure across the lifespan. Human Brain Mapping, 43(1), 470–499. https://doi.org/10.1002/hbm.25204
- Bruin, W. B., Taylor, L., Thomas, R. M., Shock, J. P., Zhutovsky, P., Abe, Y., Alonso, P., Ameis, S. H., Anticevic, A., Arnold, P. D., Assogna, F., Benedetti, F., Beucke, J. C., Boedhoe, P., Bollettini, I., Bose, A., Brem, S., Brennan, B. P., Buitelaar, J. K., Calvo, R., … van Wingen, G. A. (2020). Structural neuroimaging biomarkers for obsessive-compulsive disorder in the ENIGMA-OCD consortium: medication matters. Translational Psychiatry, 10(1), 342. https://doi.org/10.1038/s41398-020-01013-y



Mental Health

# Gerontology: Health and ageing

## Principal investigators

JOSEP LLUIS CONDE-SALA
(Aging, disability and health)

FELICIANO VILLAR
(Active aging)

## Members

Montserrat Celdran, Cristina Portellano, Vanesa Viñas

## Active projects

- **Hacia una concreción del envejecimiento activo: antecedentes y consecuencias según el tipo de actividad realizada.** Ministerio de Economía y Competitividad. PSI2016-77864-R. Feliciano Villar
- **Predicting vascular Risk in Old mediTerranean population. PROTEO Study.** Instituto de Salud Carlos III. PI17/00690. Jose Luis Conde-Sala
- **Sense of Coherence in carers may reduce costs of care in Dementia.** Instituto de Salud Carlos III. PI17/00029. Jose Luis Conde-Sala
- **Trayectorias asociadas al género en la exclusión de las relaciones sociales en la vejez y sus consecuencias para la salud y bienestar: una perspectiva de ciclo vital.** Ministerio de Ciencia, Innovación y Universidades. PCI2019-103627. Feliciano Villar

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- Villar, F., Serrat, R., Celdran, M., & Pinazo, S. (2020). Active Aging and Learning Outcomes: What Can Older People Learn From Participation? Adult Education Quarterly, 70(3), 240–257. https://doi.org/10.1177/0741713619897589
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- Serrat, R., & Villar, F. (2020). Lifecourse transitions and participation in political organisations in older Spanish men and women. Ageing & Society, 40(10), 2174–2190. https://doi.org/10.1017/S0144686X19000618
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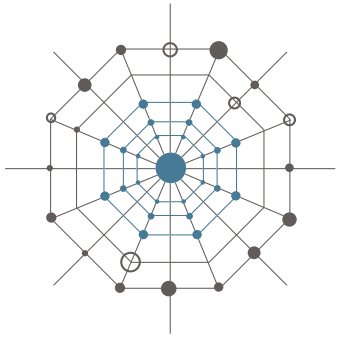
# Research



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## Selected publications


- Burholt, V., Winter, B., Aartsen, M., Constantinou, C., Dahlberg, L., Feliciano, V., De Jong Gierveld, J., Van Regenmortel, S., Waldegrave, C., & Working Group on Exclusion from Social Relations, part of the COST-financed Research Network 'Reducing Old-Age Exclusion: Collaborations in Research and Policy' (ROSENet) (2020). A critical review and development of a conceptual model of exclusion from social relations for older people. European Journal of Ageing, 17(1), 3–19. https://doi.org/10.1007/s10433-019-00506-0
- Serrat, R., Scharf, T., Villar, F., & Gómez, C. (2020). Fifty-Five Years of Research Into Older People's Civic Participation: Recent Trends, Future Directions. The Gerontologist, 60(1), e38–e51. https://doi.org/10.1093/geront/gnz021
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- Bravo-Segal, S., & Villar, F. (2020). La representación de los mayores en los medios durante la pandemia COVID-19: ¿hacia un refuerzo del edadismo? Revista Española de Geriatría y Gerontología, 55(5), 266–271. https://doi.org/10.1016/j.regg.2020.06.002
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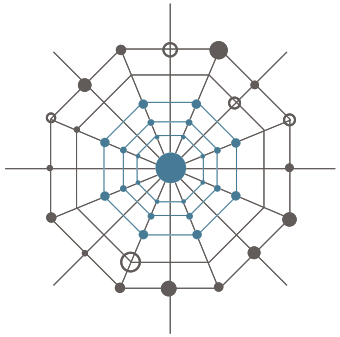


Mental Health

# Interpersonal Violence

## Principal investigators

ANTONIO ANDRES-PUEYO
(Assessment and management of risk of violence)

ALBERTO MAYDEU-OLIVARES
(Structural equation modeling and item response theory)

NOEMI PEREDA
(Child and adolescent victimisation)

SANTIAGO REDONDO ILLESCAS
(Evaluation and treatment of offenders)

ALVARO RODRIGUEZ-CARBALLEIRA
(Psychological violence)

## Members

Jordi Escartin, David Gallardo, Omar Andres Saldaña, Carolina Andana, Emma Antelo, Diego A. Diaz-Faes, Paola Bertomeu, Marta Codina, Jaume Hombrado, Ana Martina, Laura Sicilia

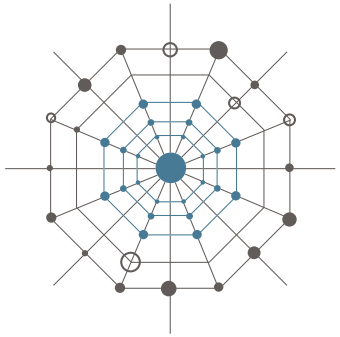
## Active projects

- **Ajut per incentivar i consolidar la recerca d'excel·lència ja existent a les universitats públiques de Catalunya.**
- **Percepción de apoyo social y malestar físico y emocional en víctimas de abuso sexual por parte de representantes de la Iglesia Católica.** Ministerio de Economia y Competitividad. DER2017-85269-C3-2-P. Noemi Pereda
- **Violencia psicológica aplicada para el sometimiento o la exclusión: análisis, evaluación y modelos explicatives. Ministerio de Economia y Competitividad.** PSI2016-75915-P. Alvaro Rodriguez-Carballeira
- **Schools Against Victimisation from an Early age.** Education, Audiovisual and Culture Executive Agency (EACEA). 2018-1-ES01-KA201-050287. Noemi Pereda
- **Step by step standing up a Barnahus in Catalonia: A simulation-based training program to avoid secondary victimization in the assessment and treatment of child sexual abuse.** European Commission, Justice Programme / Rights, Equality and Citizenship Programme. Noemi Pereda

## Selected publications


- Díaz-Faes, D. A., & Pereda, N. (2020). Is There Such a Thing as a Hate Crime Paradigm? An Integrative Review of Bias-Motivated Violent Victimization and Offending, Its Effects and Underlying Mechanisms. Trauma, Violence, & Abuse. https://doi.org/10.1177/1524838020979694
- Maydeu-Olivares, A., Shi, D., & Fairchild, A. J. (2020). Estimating causal effects in linear regression models with observational data: The instrumental variables regression model. Psychological Methods, 25(2), 243–258. https://doi.org/10.1037/met0000226
- Salin, D., Cowan, R. L., Adewumi, O., Apospori, E., Bochantin, J., D'Cruz, P., Djurkovic, N., Durniat, K., Escartín, J., Guo, J., Işik, I., Koeszegi, S. T., McCormack, D., Monserrat, S. I., Olivas-Luján, M. R., & Zedlacher, E. (2020). Prevention of and interventions in workplace bullying: a global study of human resource professionals' reflections on preferred action. The International Journal of Human Resource Management, 31(20), 2622–2644. https://doi.org/10.1080/09585192.2018.1460857

# Research

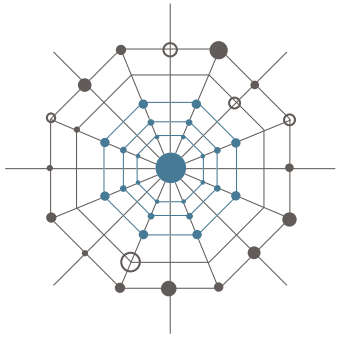


Mental Health

## Selected publications


- Longares, L., Escartín Solanelles, J., Barrientos, J., & Carballeira, A. (2020). Insecure Attachment and Perpetration of Psychological Abuse in Same-Sex Couples: A Relationship Moderated by Outness. Sexuality Research and Social Policy, 17. https://doi.org/10.1007/s13178-018-0363-8
- Weaver, R. G., Hunt, E., Rafferty, A., Beets, M. W., Brazendale, K., Turner-McGrievy, G., Pate, R. R., Maydeu-Olivares, A., Saelens, B., & Youngstedt, S. (2020). The potential of a year-round school calendar for maintaining children's weight status and fitness: Preliminary outcomes from a natural experiment. Journal of Sport and Health Science, 9(1), 18–27. https://doi.org/10.1016/j.jshs.2019.05.006
- Bobbio, A., Arbach, K., & Redondo Illescas, S. (2020). Juvenile delinquency risk factors: Individual, social, opportunity or all of these together? International Journal of Law, Crime and Justice, 62, 100388. https://doi.org/https://doi.org/10.1016/j.ijlcj.2020.100388
- Pereira, S., Catena, A., Pozuelo, F., Alvarado, A., Soler, C., García, M., Ramírez, M., & Illescas, S. (2020). Actualidad y Futuro del Tratamiento y la ReinserciónSsocial de los Delincuentes Sexuales.
- Greco, A. M., Pereda, N., & Guilera, G. (2020). Detection and reporting potential child and youth victimization cases from school: The role of knowledge. Children and Youth Services Review, 119, 105499. https://doi.org/10.1016/j.childyouth.2020.105499
- Pajón, L., Greco, A. M., Pereda, N., & Gallardo-Pujol, D. (2020). Factor structure of the Posttraumatic Growth Inventory in a Spanish sample of adult victims of interpersonal violence in childhood. Revista de Psicopatología Y Psicología Clínica, 25(2), 101–110. https://doi.org/10.5944/rppc.26017
- Redondo, S., Gonçalves, R. A., Nistal, J., Soler, C., Moreira, J. S., Andrade, J., & Andrés-Pueyo, A. (2020). Corrections and Crime in Spain and Portugal during the Covid-19 Pandemic: Impact, Prevention and Lessons for the Future. Victims & Offenders, 15(7–8), 1156–1185. https://doi.org/10.1080/15564886.2020.1827108
- Pereda, N., & Díaz-Faes, D. A. (2020). Family violence against children in the wake of COVID-19 pandemic: a review of current perspectives and risk factors. Child and Adolescent Psychiatry and Mental Health, 14, 40. https://doi.org/10.1186/s13034-020-00347-1
- Suárez-Soto, E., Pereda, N., & Guilera, G. (2019). Poly-victimization, resilience, and suicidality among adolescents in child and youth-serving systems. Children and Youth Services Review, 106, 104500. https://doi.org/10.1016/j.childyouth.2019.104500
- Fabregas, M., Arch, M., García-Arch, J., Segura, J., & Pereda, N. (2020). Assessment criteria in relocation cases: An exploratory study of Spanish family court Judges. Journal of Family Trauma, Child Custody & Child Development, 17(1), 76–88. https://doi.org/10.1080/15379418.2019.1699487
- Kanter, B., & Pereda, N. (2020). Victimización Sexual en la Infancia e Intervención Basada en la Evidencia. Revista de Psicoterapia, 31(115), 197–212. https://doi.org/10.33898/rdp.v31i115.313
- Pinto-Cortez, C., Guerra Vio, C., Barocas, B., & Pereda, N. (2020). Victimization and Poly-victimization in a National Representative Sample of Children and Youth: The Case of Chile. Journal of Aggression, Maltreatment and Trauma. https://doi.org/10.1080/10926771.2020.1796873
- Pereda, N., Segura, A. & Sicilia, L. (2020). Características del abuso sexual infantil por representantes de la Iglesia Católica en España. Revista de Psicopatología y Salud Mental del Niño y del Adolescente, M4, 45-58.
- Contreras Taibo, L., Maffioletti Celedón, F., & Pereda Beltrán, N. (2020). Abuso Sexual Infantil por Representantes de la Iglesia Católica: El caso chileno. Revista Interamericana de Psicología, 54(2), e1315. https://doi.org/10.30849/ripijp.v54i2.1315

# Research



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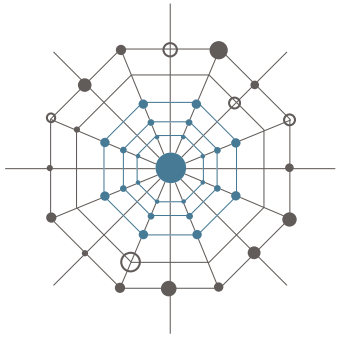
## Selected publications

- Andres-Pueyo,A., & Nguyen,T. (2020). La reincidencia sexual: breve resumen del estado de la cuestión. PostC: La postrevista sobre crimen, ciencia y sociedad en la era PosCovid19.
- Valdivia-Devia, M., Oyanedel, J. C., Andrés-Pueyo, A., Fuentes Araya, M., & Valdivia-Monzón, M. (2020). Cronicidad, violencia y longitud de trayectoria criminal. Hombres detenidos por violencia doméstica. Suma Psicológica, 27(2), 116–124. https://doi.org/10.14349/sumapsi.2020.v27.n2.6
- Costa, R., Bazon, M., Rayó-Bauza, A., & andres-pueyo, A. (2020). Patrones de conductas delictivas y socialización en adolescentes escolares en Brasil. Boletín Criminológico, 27. https://doi.org/10.24310/Boletin-criminologico.2020.v27i.11287

## Knowledge transfer & Innovation

- Departament de Treball, Afers Socials I Famílies. Generalitat de Catalunya. 310519. Antonio Andres-Pueyo
- Diversos. 304621. Antonio Andres-Pueyo
- Diversos. 306714. David Gallardo Pujol
- Generalitat de Catalunya. Centre d'Estudis Jurídics i Formació Especialitzada. 310295. Antonio Andres-Pueyo
- Ministerio del Interior. 310390. Antonio AndresPueyo
- Randstad España, S.L. Sociedad Unipersonal. 309232. Albert Maydeu-Olivares
- Randstad España, S.L. Sociedad Unipersonal. 310070. Albert Maydeu-Olivares
- Universidad Nacional de Colombia. 310405. Antonio Andres-Pueyo



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# Measurement and research

## Principal investigators

M. TERESA ANGUERA
(Observational methodology)

ROSER BONO
(Longitudinal data analysis: Monte Carlo simulation studies and empirical applications)

JUANA GOMEZ-BENITO
(Functioning and recovery in mental health)

GEORGINA GUILERA
(Development and validation of psychological tests),

## Members

Juan Antonio Amador, Teresa Kirchner, Maria Teresa Barrios, Jorge Escartin, Ernesto Magallon, Gomaa Said Mohamed Abdelhamid, Angela Berrio, Chuen Ann Chai, Estefania Daniela Guerrero, Laura Madonado-Murciano

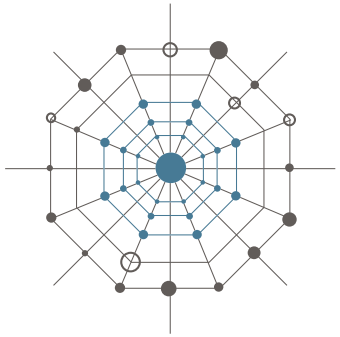
## Active projects

- **Comparison between Linear Mixed Models and Generalized Linear Mixed Models: Simulation Studies and Applications.** Ministerio de Economía, Industria y Competitividad. PSI2016-78737-P. Roser Bono
- **Integration ways between qualitative and quantitative data, multiple case development, and synthesis review as main axis for an innovative future in physical activity and sports research.** Ministerio de Ciencia, Innovación y Universidades / Agencia Estatal de Investigación / Fondo Europeo de Desarrollo Regional. PGC2018-098742-B-C31. Teresa Anguera
- **Aprenentatge en Línia, Ansietats Acadèmiques i Rendiment: Impacte de la Covid-20.** Institut de Ciències de l'Educació (ICE) - Universitat de Barcelona (UB). REDICE20-2520. Roser Bono
- **Research Group and Designs Innovation (GRID). Multimedia and digital technology applied to observational designs.** Agència de Gestió d'Ajuts Universitaris i de Recerca. Reference: 2017SGR1405. PI: M. Teresa Anguera
- **Research Group on Measurement Invariance and Analysis of Change (GEIMAC) in social and health fields**. Agència de Gestió d'Ajuts Universitaris i de Recerca. 2017SGR1681. Juana Gomez-Benito
- **R+D+I in Health Technologies (XarTEC SALUT).** Agència de Gestió d'Ajuts Universitaris i de Recerca and European. 2018 XARDI 00016. M. Teresa Anguera
- **Toward recovery in people diagnosed with a severe mental disorder: Definition, assessment and intervention (RECO-DAI).** Ministerio de Innovación, Ciencia y Universidades. PID2019-109887GB-I00. Juana Gomez-Benito i Georgina Guilera
- **Impacto de la violación de los supuestos en el análisis de datos con medidas repetidas: simulación Monte Carlo y aplicaciones.** Ministerio de ciencia e innovación. PID2020-113191GB-I00. Maria José Blanca

## Selected publications


- Bono, R., Arnau, J., Alarcón, R., & Blanca, M. J. (2020). Bias, Precision, and Accuracy of Skewness and Kurtosis Estimators for Frequently Used Continuous Distributions. Symmetry, 12(1). https://doi.org/10.3390/sym12010019

# Research



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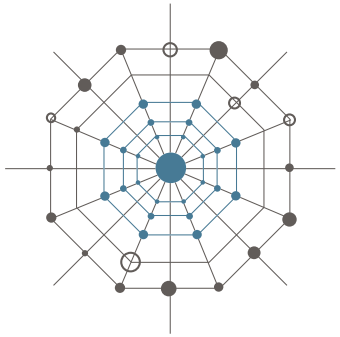
## Selected publications


- Barrios, M., Guilera, G., Nuño, L., & Gómez-Benito, J. (2020). Consensus in the delphi method: What makes a decision change? Technological Forecasting and Social Change, 120484. https://doi.org/10.1016/j.techfore.2020.120484
- Gómez-Benito, J., Abdelhamid, G., Pino, O., Rojo, E., Vieta, E., & Guilera, G. (2020). Disability in bipolar I disorder: Application of Mokken scaling analysis and the graded response model to the World Health Organization Disability Assessment Schedule 2.0. Journal of Affective Disorders, 260, 506–513. https://doi.org/10.1016/j.jad.2019.09.054
- Barrios, M., Guilera, G., Hidalgo, M. D., Cheung, E. C. F., Chan, R. C. K., & Gómez-Benito, J. (2020). The Most Commonly Used Instruments in Research on Functioning in Schizophrenia. European Psychologist, 25(4), 283–292. https://doi.org/10.1027/1016-9040/a000386
- Maldonado-Murciano, L., M Pontes, H., Griffiths, M. D., Barrios, M., Gómez-Benito, J., & Guilera, G. (2020). The Spanish Version of the Internet Gaming Disorder Scale-Short Form (IGDS9-SF): Further Examination Using Item Response Theory. International Journal of Environmental Research and Public Health, 17(19), 7111. https://doi.org/10.3390/ijerph17197111
- Guilera, G., Pino, O., Barrios, M., Rojo, E., Vieta, E., & Gómez-Benito, J. (2020). Towards an ICF Core Set for functioning assessment in severe mental disorders: Commonalities in bipolar disorder, depression and schizophrenia. Psicothema, 32(1), 7–14. https://doi.org/10.7334/psicothema2019.186
- Del Giacco, L., Anguera, M. T., & Salcuni, S. (2020). The Action of Verbal and Non-verbal Communication in the Therapeutic Alliance Construction: A Mixed Methods Approach to Assess the Initial Interactions With Depressed Patients. Frontiers in Psychology, 11, 234. https://doi.org/10.3389/fpsyg.2020.00234
- Ajamil, D., Blanco, F., Amatria, M., Arana Idiakez, X., & Anguera, M. T. (2020). Observational Analysis of the Execution of the "Control" Core Technical/Tactical Concept by Sergio Busquets. Apunts Educación Física y Deportes, 2, 52–62. https://doi.org/10.5672/apunts.2014-0983.es.(2020/2).140.08
- Lapresa Ajamil, D., Pascual Laguna, J., Arana, J., & Anguera, M. T. (2020). Sistema de observación para analizar la interacción en el juego de Boccia por equipos. Cuadernos de Psicología del Deporte, 20(1), 37–47. https://doi.org/10.6018/cpd.393821
- Santoyo, C., Jonsson, G. K., Anguera, M. T., Portell, M., Allegro, A., Colmenares, L., & Torres, G. Y. (2020). T-patterns integration strategy in a longitudinal study: a multiple case analysis. Physiology & Behavior, 222, 112904. https://doi.org/10.1016/j.physbeh.2020.112904
- Bonilla R., P., Armadans, I., & Anguera, M. T. (2020). Conflict Mediation, Emotional Regulation and Coping Strategies in the Educational Field. Frontiers in Education, 5, 50. https://doi.org/10.3389/feduc.2020.00050
- Greco, A. M., Gómez, E. P., Pereda, N., Guilera, G., & González, I. S. (2020). Why Do School Staff Sometimes Fail to Report Potential Victimization Cases? A Mixed-methods Study. Journal of Interpersonal Violence, 886260520969243. Advance online publication. https://doi.org/10.1177/0886260520969243
- Berrío, Á. I., Gómez-Benito, J., & Arias-Patiño, E. M. (2020). Developments and trends in research on methods of detecting differential item functioning. Educational Research Review, 31, 100340. https://doi.org/https://doi.org/10.1016/j.edurev.2020.100340
- Codina, M., Pereda, N., & Guilera, G. (2020). Lifetime Victimization and Poly-Victimization in a Sample of Adults With Intellectual Disabilities. Journal of Interpersonal Violence. https://doi.org/10.1177/0886260520936372
- Anguera, M. T., Blanco-Villaseñor, A., Losada, J. L., & Sánchez-Algarra, P. (2020). Integración de elementos cualitativos y cuantitativos en metodología observacional. Ámbitos. Revista Internacional De Comunicación, (49), 49–70. https://doi.org/10.12795/Ambitos.2020.i49.04

# Research



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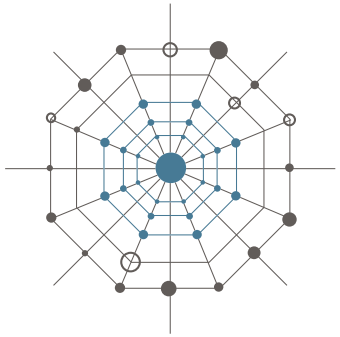
## Selected publications

- Anguera, M. T., Blanco-Villaseñor, A., Jonsson, G. K., Losada, J. L., & Portell, M. (2020). Editorial: Best Practice Approaches for Mixed Methods Research in Psychological Science. Frontiers in Psychology, 11, 590131. https://doi.org/10.3389/fpsyg.2020.590131
- Arias-Pujol, E., & Anguera, M. T. (2020). A Mixed Methods Framework for Psychoanalytic Group Therapy: From Qualitative Records to a Quantitative Approach Using T-Pattern, Lag Sequential, and Polar Coordinate Analyses. Frontiers in Psychology, 11, 1922. https://doi.org/10.3389/fpsyg.2020.01922
- Anguera, M. (2020). La metodología observacional aplicada a la Psicología del Deporte: Mirando con optimismo a los mixed methods. Boletín de la Federación Española de Psicología del Deporte, 28.
- Lapresa, D., Gutiérrez, I.A., Pérez-de-Albéniz, A., Merino, P., & Anguera, M.T. (2020). Teacher-student -task -interactions in a motor skills programme for an adolescent boy with autism spectrum disorder: a systematic observation study (Interacción profesor-alumno-tarea en un programa de desarrollo de capacidades motrices en un adolescente con TEA: un estudio de observación sistemática. Journal for the Study of Education and Development, 44, 553 - 585. https://doi.org/10.1080/02103702.2020.1802148
- Sagastui, J., Herrán, E., & Anguera, M. T. (2020). A Systematic Observation of Early Childhood Educators Accompanying Young Children's Free Play at Emmi Pikler Nursery School: Instrumental Behaviors and Their Relational Value. Frontiers in Psychology, 11, 1731. https://doi.org/10.3389/fpsyg.2020.01731
- Greco, A. M., Pereda, N., & Guilera, G.(2020). Detection and reporting potential child and youth victimization cases from school: The role of knowledge. Children and Youth Services Review 119, 105499. https://doi.org/10.1016/j.childyouth.2020.105499
- Belza, H., Herran, E., & Anguera, M.T. (2020). Early childhood, breakfast and related tools: Analysis of adults' function as mediators. European Journal of Psychology of Education 35, 495–527. https://doi.org/10.1007/s10212-019-00438-4.
- Sene-Mir, A. M., Portell, M., Anguera, M. T., & Chacón-Moscoso, S. (2020). Manual material handling training: The effect of self-observation, hetero-observational and intrinsic feedback on workers' knowledge and behaviour. International Journal of Environmental Research and Public Health, 17(21), 8095. https://doi.org/10.3390/ijerph17218095
- Crespillo-Jurado, M., Anguera, M.T, Reigal, R., & Hernández-Mendo, A. (2020). Análisis de la calidad del dato de un instrumento de observación del clima motivacional: Conductas verbales y proxémicas de monitores de mantenimiento físico. Cuadernos de Psicología del Deporte, 21(1), 18-42. https://doi.org/10.6018/cpd.423051.

## Knowledge transfer & Innovation

- Escala Screen for Cognitive Impairment in Psychiatry en su versión española (SCIP-S): Instrucciones de aplicación y tres formas paralelas. 02/2007/6494. Oscar Pino, Georgina Guilera, Juana Gomez-Benito, J. Emilio Rojo, Julio Vallejo i Scot E. Purdon
- Evaluation optimization of the psychoeducational intervention program Explora. Asociación Experientia. Maite Barrios i Georgina Guilera
- Validation study of the final version of the test PRO3 of psychological training for athletes. Individual Sport Consulting, S.L. Georgina Guilera
- Brain Living Lab – Phase 0. Feasibility study to develop open innovation tools. ACCIÓ, Generalitat de Catalunya. ACE012/20/000027. Juana Gomez-Benito, Georgina Guilera i Maite Barrios



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# Schizophrenia

## Principal investigators

MIQUEL BERNARDO

## Members

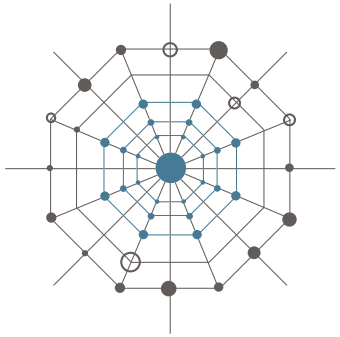
Juan Antonio Amador, Teresa Kirchner, Maria Teresa Barrios, Jorge Escartin, Ernesto Magallon, Gomaa Said Mohamed Abdelhamid, Angela Berrio, Chuen Ann Chai, Estefania Daniela Guerrero, Laura Madonado-Murciano

## Active projects

- **Biomarkers of synaptic loss, neuronal damage and inflammation in cerebrospinal fluid (CSF) and peripheral blood in patients with a first psychotic episode.** Instituto de Salud Carlos III. Ministerio de Economía y competitividad. PI20/01006. Miquel Bioque i Miquel Bernardo
- **Salud Mental (CIBERSAM).** Ministerio de Sanidad y Consumo. CB07/09/0005. Miquel Bernardo
- **Cellular, molecular, genetic and cognitive-behavioral characterization of the antiapoptotic effect of clozapine and glutamate inhibitors in a postnatal ketamine animal model of schizophrenia.** Fundació Clínic per a la recerca Biomèdica. FCRB_PB2_2018. Eduardo Parellada
- **Identificación y caracterización del valor predictivo de la reserva cognitiva en el curso evolutivo y respuesta en terapéutica en personas con un primer episodio psicótico.** Departament de Salut. Generalitat de Catalunya. SLT006/17/00345. Miquel Bernardo
- **La permeabilidad intestinal como causa de inflamación crónica de bajo grado en pacientes con esquizofrenia: relación con la dieta, el síndrome metabólico y la gravedad de la enfermedad. Instituto de Salud Carlos III.** Ministerio de Economía y comeptitividad. PI17/00246 FIS. Belen Arranz
- **Rehabilitación cognitiva en la esquizofrènia: variación genètica en los genes BDNF (Val66Met) y COMT (Val158Met) como posible modulador de la respuesta al tratamiento. Instituto de Salud Carlos III.** Ministerio de Economía y competitividad. PI17/00872 FIS. Rafael Penades
- **Diferencias de género en la respuesta a antipsicóticos: analizando el rol de la menopausia, los cambios epigenéticos en los receptores de estrógenos y los niveles de hormonas sexuales.** Instituto de Salud Carlos III (ISCIII). FIS_PI16/01029. Rosa Catalan
- **Estudio convergente en modelo celular, animal y humano del efecto y mecanismos de acción de la clozapina e inhibidores de glutamato en los síntomas negativos-cognitivos de la esquizofrenia.** Instituto de Salud Carlos III (ISCIII). FIS_PI18/01005. Eduardo Parellada
- **Epigenetic regulation of bdnf expression according to response to cognitive remediation in schizophrenia.** Brain & Behavior Research Foundation. INT_NARSAD16_IIG_002-. Rafael Penades

## Selected publications


- Gassó, P., Arnaiz, J. A., Mas, S., Lafuente, A., Bioque, M., Cuesta, M. J., Díaz-Caneja, C. M., García, C., Lobo, A., González-Pinto, A., Parellada, M., Corripio, I., Vieta, E., Castro-Fornieles, J., Mané, A., Rodríguez, N., Boloc, D., Saiz-Ruiz, J., Bernardo, M., & PEPs Group (2020). Association study of candidate genes with obesity and metabolic traits in antipsychotic-treated patients with first-episode psychosis over a 2-year period. Journal of Psychopharmacology, 34(5), 514–523. https://doi.org/10.1177/0269881120903462



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## Selected publications


- García-Rizo, C., Bioque, M., Mezquida, G., Amoretti, S., Cuesta, M. J., Díaz-Caneja, C. M., Mas, S., Lobo, A., González-Pinto, A., Fraguas, D., Corripio, I., Vieta, E., Baeza, I., Bergé, D., Fernandez-Egea, E., Garriga, M., Bernardo, M., Parellada, E., Meseguer, A., … Selva-Vera, G. (2020). Birth weight and antipsychotic induced weight gain: A prenatal programming approach in the PEPs study. Schizophrenia Research, 218, 292–294. https://doi.org/10.1016/j.schres.2019.12.030
- Bioque, M., Parellada, E., García-Rizo, C., Amoretti, S., Fortea, A., Oriolo, G., Palau, P., Boix-Quintana, E., Safont, G., & Bernardo, M. (2020). Clozapine and paliperidone palmitate antipsychotic combination in treatment-resistant schizophrenia and other psychotic disorders: A retrospective 6-month mirror-image study. European Psychiatry, 63(1), e71. https://doi.org/10.1192/j.eurpsy.2020.72
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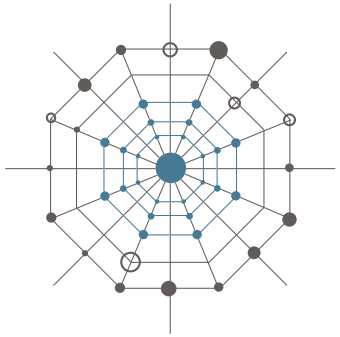
# Research



Mental Health

## Selected publications


- van Os, J., Pries, L. K., Delespaul, P., Kenis, G., Luykx, J. J., Lin, B. D., Richards, A. L., Akdede, B., Binbay, T., Altınyazar, V., Yalınçetin, B., Gümüş-Akay, G., Cihan, B., Soygür, H., Ulaş, H., Cankurtaran, E. Ş., Kaymak, S. U., Mihaljevic, M. M., Petrovic, S. A., Mirjanic, T., … Guloksuz, S. (2020). Replicated evidence that endophenotypic expression of schizophrenia polygenic risk is greater in healthy siblings of patients compared to controls, suggesting gene-environment interaction. The EUGEI study. Psychological Medicine, 50(11), 1884–1897. https://doi.org/10.1017/S003329171900196X
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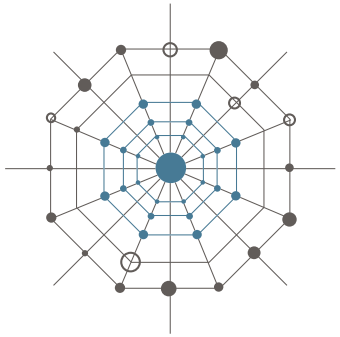
# Research



Mental Health

## Selected publications


- van Os, J., Pries, L. K., Ten Have, M., de Graaf, R., van Dorsselaer, S., Delespaul, P., Bak, M., Kenis, G., Lin, B. D., Luykx, J. J., Richards, A. L., Akdede, B., Binbay, T., Altınyazar, V., Yalınçetin, B., Gümüş-Akay, G., Cihan, B., Soygür, H., Ulaş, H., Cankurtaran, E. Ş., … Guloksuz, S. (2020). Evidence, and replication thereof, that molecular-genetic and environmental risks for psychosis impact through an affective pathway. Psychological Medicine, 1–13. Advance online publication. https://doi.org/10.1017/S0033291720003748
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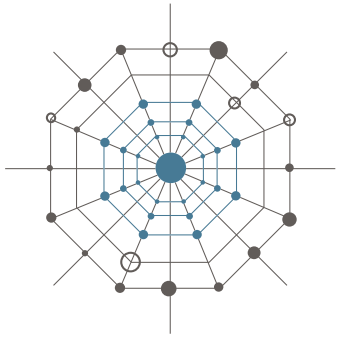
- González-Rodríguez A, Cobo J, Soria V, Usall J, Garcia-Rizo C, Bioque M, Monreal JA, Labad J. (2020) Women Undergoing Hormonal Treatments for Infertility: A Systematic Review on Psychopathology and Newly Diagnosed Mood and Psychotic Disorders. Frontiers in Psychiatry. 11:479. https://doi.org/10.3389/fpsyt.2020.00479
- Penadés R; Segura B; Inguanzo A; García-Rizo C; Catalán R; Masana G; Bernardo M; Junqué C. (2020) Cognitive remediation and brain connectivity: A resting-state fMRI study in patients with schizophrenia. Psychiatry Research-Neuroimaging. 303:111140. https://doi.org/10.1016/j.pscychresns.2020.111140

# Research



Mental Health

## Selected publications

- Costas-Carrera A, Garcia-Rizo C, Bitanihirwe B, Penadés R. (2020) Obstetric Complications and Brain Imaging in Schizophrenia: A Systematic Review. Biological Psychiatry: Cognitive Neuroscience and Neuroimaging. 5(12):1077-1084. https://doi.org/10.1016/j.bpsc.2020.07.018
- Garcia-Rizo, Clemente; Bitanihirwe, Byron KY. (2020) Implications of early life stress on fetal metabolic programming of schizophrenia: A focus on epiphenomena underlying morbidity and early mortality. Progress in Neuro-Psychopharmacology & Biological Psychiatry. 101:109910. https://doi.org/10.1016/j.pnpbp.2020.109910
- Fernández-Candil J, Castelltort Mascó L, Fàbregas Julià N, Urretavizcaya Sarachaga M, Bernardo Arroyo M, Valero Castell R. (2020). Anaesthesia in electroconvulsive therapy. Special conditions. Revista de Psiquiatria y Salud Mental. 13(1):36-46. https://doi.org/10.1016/j.rpsm.2018.05.002
- García-Rizo C, Bioque M, Mezquida G, Amoretti S, Cuesta MJ, Díaz-Caneja CM, Mas S, Lobo A, González-Pinto A, Fraguas D, Corripio I, Vieta E, Baeza I, Bergé D, Fernandez-Egea E, Garriga M, Bernardo M, PEPs GROUP. (2020) Birth weight and antipsychotic induced weight gain: A prenatal programming approach in the PEPs study. Schizophrenia Research. 218:292-294. https://doi.org/10.1016/j.schres.2019.12.030
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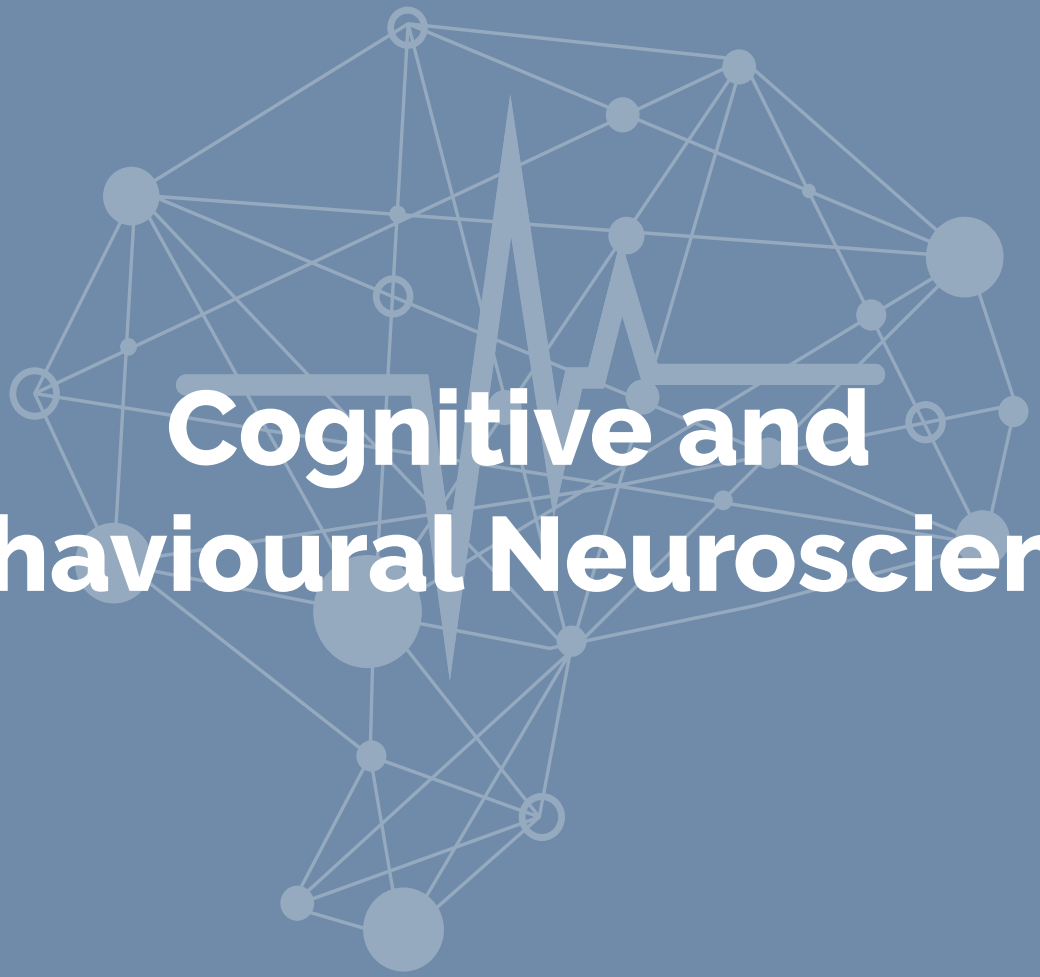
## Knowledge transfer & Innovation

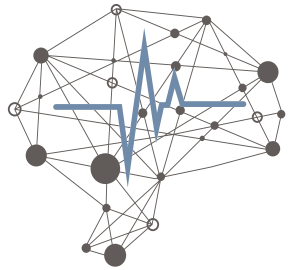
- Method for predicting the onset of extrapyramidal symptoms (EPS) induced by an antipsicotic-based treatment. AVCRI196



# Cognitive and Behavioural Neuroscience

**Annual Report**
2019

# Cognitive and behavioural neuroscience



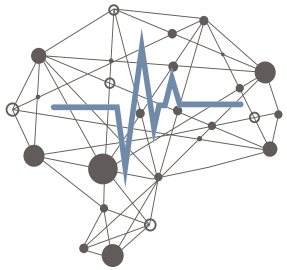
## THIS AREA FOCUS ON THE CEREBRAL CIRCUITS, NETWORKS, PROCESSES AND COMPUTATIONAL MECHANISMS THAT UNDERPIN A PLETHORA OF FUNCTIONS, SUCH AS PERCEPTION, ATTENTION, MEMORY, LANGUAGE, DECISION MAKING, EMOTION AND THE CONTROL OF ACTION, TO NAME A FEW.

These functions are at the essence of cognition and give rise to the uniqueness of our human nature, rich mental activity that can even generate the subjective phenomenon of consciousness.
Research at the Institute of Neurosciences pushes boundaries of existing knowledge in areas such as language, music, auditory perception, sensorimotor and cognitive decision-making, and neuropsychology. The Institute has contributed important findings regarding in the genetic determinants of speech sounds encoding, language acquisition and musical anhedonia, the brain connectivity in the preterm born baby and neurobehavioural plasticity after early brain injury, addictions, and the abnormal control of reward in obesity.

## PROJECTS

- **Motivación y recompensa intrinsica asociada a la acquisición del conocimiento: evidencias neuronales.** Ministerio de Ciencia, Innovación y Universidades. PGC2018-099859-B-I00. Antonio Rodriguez-Fornells
- **Executive function training in childhood obesity: food choice, quality of life and brain connectivity (TOuCH).** Fundació La Marató de TV3. 201616-10. Maria Angeles Jurado Luque
- **Indicadores estadísticos para el estudio de redes de conectividad cerebral en registros de resonancia magnética funcional (FMRI) y su aplicación para el diagnóstico del deterioro cognitivo.** Ministerio de Ciencia, Innovación y Universidades. PGC2018-095829-B-I00. Joan Guardia-Olmos
- **The Frequency-Following Response (FFR) in newborns and its role as a potential biomarker for neurocognitive development.** Ministerio de Ciencia, Innovación y Universidades. PGC2018-094765-B-I00. Carles Escera
- **The sound of special places: exploring rock art soundscapes and the sacred (ARTSOUNDSCAPES).** European Union. ERC-2017-ADG. 787842. Margarita Diaz-Andreu Garcia i Carles Escera
- **Modification of attentional bias, with virtual reality, for improving anorexia nervosa treatment.** Ministerio de Ciencia e Innovación. Project PID2019-108657RB-I00. Jose Gutierrez-Maldonado
- **Moments in Time in Immersive Virtual Environments (MoTIVE).** European Union. ERC-2016-ADG- 742989. Mel Slater
- **Psychotherapy for young adults with mild-to-moderate depression: Does virtual reality increase its efficacy?** Ministerio de Ciencia, Innovación y Universidades. RTI2018-094294-B-I00. Guillem Feixas

# Brain Plasticity and connectivity: Language, memory and reward



Cognitive
and Behavioural
Neuroscience

## Principal investigators

LAURA BOSCH
(Precursors to language: attention, speech perception and word learning skills)

TONI CUNILLERA
(Cognitive basis underlying eating behavior)

RUTH DE DIEGO-BALAGUER
(Brain mechanisms of language learning)

LLUIS FUENTEMILLA
(Dynamics of memory formation)

MIREIA HERNANDEZ
(Neurolinguistics, Multilingualism and Cognition)

JOSEP MARCO-PALLARES
(Brain mechanisms of learning and reward)

FERRAN PONS
(Language acquisition and cognitive development)

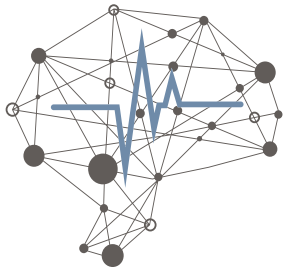
ANTONIO RODRIGUEZ-FORNELLS
(Learning and Brain Plasticity)

## Members

Marta Ramon, Joan Birules, Ernest Mas, Alexis Perez, Marc Ballestero, Barbara Braida, Josue Garcia, Alba Gomez, Paula Lopez, Marta Marques de Almeido e Silva, Berta Nicolas, Stella Nicolaou, Ludovico Saint-Amour di Channaz, Carlota Saumell, Joan Tarrida, Xiongho Wu, David Cucurell, Jessica Sanchez, Emma Segura, Joan Rodriguez

## Active projects

- **Atendiendo al ritmo: predicción temporal y atención selectivaen el aprendizaje del lenguaje.** Ministerio de Economía, Industria y Competitividad. BFU2017-87109-P. Ruth de Diego-Balaguer
- **Event Structured Cognition. Ministerio de Ciencia, Innovación y Universidades.** PID2019-111199GB-I00. Lluis Fuentemilla
- **Información y Curiosidad como fuentes de recompensa en humanos: Mecanismos oscilatorios y neuronales.** Ministerio de Ciencia, Innovación y Universidades. PGC2018-098032-B-I00. Josep Marco-Pallares
- **La influencia de la información probabilística sobre estructura argumental en el procesamiento de verbos y comprensión de oraciones.** Ministerio de Ciencia, Innovación y Universidades. PGC2018-094891-A-I00. Mireia Hernandez Pardo
- **La inhibición de respuestas y el control atencional en la restricción dietética.** Ministerio de Economía, Industria y Competitividad. PSI2016-79678-P. Toni Cunillera
- **Motivación y recompensa intrinsica asociada a la acquisición del conocimiento: evidencias neuronales.** Ministerio de Ciencia, Innovación y Universidades. PGC2018-099859-B-I00. Antonio Rodriguez-Fornells
- **Playing and Singing for the Recovering Brain: Efficacy of Enriched Social-Motivational Musical Interventions in Stroke Rehabilitation.** Fundació La Marató de TV3. 201729.30. Antonio Rodriguez-Fornells
- **The Adapting Brain – Preparing for parenthood.** Bial Foundation. Lluis Fuentemilla
- **Resonancia magnética funcional e imagen de tensor de difusión en la valoración prequirúrgica del paciente pediátrico con hipoacusia prelingual neurosensorial profunda bilateral de detección en el cribado neonatal como potenciales biomarcadores de desarrollo de lenguaje oral tras la colocación de un implante coclear.** Sociedad Española de Neuro-radiología. Proyecto SERN2017 - PCP00215. Mónica Rebollo i Laura Bosch.
- **Variabilidad en el procesamiento audiovisual del habla en la infancia: rol de la experiencia lingüística, maduración neurológica y capacidad sensorial.** Ministerio de Ciencia, Innovación y Universidades. PGC2018-097487-B-I00. Ferran Pons i Laura Bosch



Cognitive and Behavioural Neuroscience

## Selected publications


- Calabria, M., Hernández, M., Cattaneo, G., Suades, A., Serra, M., Juncadella, M., Reñé, R., Sala, I., Lleó, A., Ortiz-Gil, J., Ugas, L., Ávila, A., Ruiz, I. G., Ávila, C., & Costa, A. (2020). Active bilingualism delays the onset of mild cognitive impairment. Neuropsychologia, 146, 107528. https://doi.org/https://doi.org/10.1016/j.neuropsychologia.2020.107528
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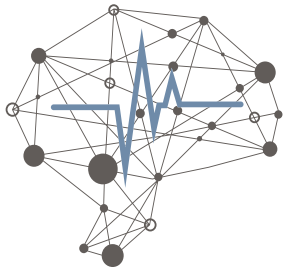
- O'Rourke, T., & de Diego Balaguer, R. (2020). Names and their meanings: A dual-process account of proper-name encoding and retrieval. Neuroscience and Biobehavioral reviews, 108, 308–321. https://doi.org/10.1016/j.neubiorev.2019.11.005
- Costumero, V., Marin-Marin, L., Calabria, M., Belloch, V., Escudero, J., Baquero, M., Hernandez, M., Ruiz de Miras, J., Costa, A., Parcet, M. A., & Ávila, C. (2020). A cross-sectional and longitudinal study on the protective effect of bilingualism against dementia using brain atrophy and cognitive measures. Alzheimer's Research & Therapy, 12(1), 11. https://doi.org/10.1186/s13195-020-0581-1
- Villar-Rodríguez, E., Palomar-García, M. Á., Hernández, M., Adrián-Ventura, J., Olcina-Sempere, G., Parcet, M. A., & Ávila, C. (2020). Left-handed musicians show a higher probability of atypical cerebral dominance for language. Human Brain Mapping, 41(8), 2048–2058. https://doi.org/10.1002/hbm.24929
- Nicolás, B., Sala-Padró, J., Cucurell, D., Santurino, M., Falip, M., & Fuentemilla, L. (2021). Theta rhythm supports hippocampus-dependent integrative encoding in schematic/semantic memory networks. NeuroImage, 226, 117558. https://doi.org/10.1016/j.neuroimage.2020.117558
- Palomar-García, M. Á., Olcina-Sempere, G., Hernández, M., Parcet, M. A., Mandell, J. C., & Ávila, C. (2020). The Jake Mandell Test as a measure of individual differences in pitch discrimination: Validity and reliability properties. Revista Electronica Complutense de Investigacion En Educacion Musical, 17, 143–151. https://doi.org/10.5209/RECIEM.66326
- Palomar-García, M. Á., Hernández, M., Olcina, G., Adrián-Ventura, J., Costumero, V., Miró-Padilla, A., Villar-Rodríguez, E., & Ávila, C. (2020). Auditory and frontal anatomic correlates of pitch discrimination in musicians, non-musicians, and children without musical training. Brain Structure & Function, 225(9), 2735–2744. https://doi.org/10.1007/s00429-020-02151-1
- Sala-Padro, J., Miró, J., Rodriguez-Fornells, A., Quintana, M., Vidal, N., Plans, G., Santurino, M., Falip, M., & Camara, E. (2020). Hippocampal microstructural architecture and surgical outcome: Hippocampal diffusivity could predict seizure relapse. Seizure, 76, 84–88. Advance online publication. https://doi.org/10.1016/j.seizure.2020.01.006
- Siponkoski, S. T., Martínez-Molina, N., Kuusela, L., Laitinen, S., Holma, M., Ahlfors, M., Jordan-Kilkki, P., Ala-Kauhaluoma, K., Melkas, S., Pekkola, J., Rodriguez-Fornells, A., Laine, M., Ylinen, A., Rantanen, P., Koskinen, S., Lipsanen, J., & Särkämö, T. (2020). Music Therapy Enhances Executive Functions and Prefrontal Structural Neuroplasticity after Traumatic Brain Injury: Evidence from a Randomized Controlled Trial. Journal of Neurotrauma, 37(4), 618–634. https://doi.org/10.1089/neu.2019.6413
- Coran, M., Rodriguez-Fornells, A., Ramos-Escobar, N., Laine, M., & Martin, N. (2020). Word learning in aphasia: Treatment implication and estructural connectivity analyses. Topics in Language Disorders, 40(1), 81–109. https://doi.org/10.1097/TLD.0000000000000204
- Miró, J., Ripollés, P., Sierpowska, J., Santurino, M., Juncadella, M., Falip, M., & Rodríguez-Fornells, A. (2020). Autobiographical memory in epileptic patients after temporal lobe resection or bitemporal hippocampal sclerosis. Brain Imaging and Mehavior, 14(4), 1074–1088. https://doi.org/10.1007/s11682-019-00113-8
- Cardona, G., Rodriguez-Fornells, A., Nye, H., Rifà-Ros, X., & Ferreri, L. (2020). The impact of musical pleasure and musical hedonia on verbal episodic memory. Scientific Reports, 10(1), 16113. https://doi.org/10.1038/s41598-020-72772-3
- François, C., Rodriguez-Fornells, A., Teixidó, M., Agut, T., & Bosch, L. (2021). Attenuated brain responses to speech sounds in moderate preterm infants at term age. Developmental Science, 24(1), e12990. https://doi.org/10.1111/desc.12990



Cognitive
and Behavioural
Neuroscience

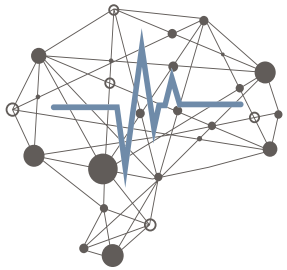
## Selected publications


- Vega, D., Torrubia, R., Marco-Pallarés, J., Soto, A., & Rodriguez-Fornells, A. (2020). Metacognition of daily self-regulation processes and personality traits in borderline personality disorder. Journal of Affective Disorders, 267, 243–250. https://doi.org/10.1016/j.jad.2020.02.033
- Grau-Sánchez, J., Münte, T. F., Altenmüller, E., Duarte, E., & Rodríguez-Fornells, A. (2020). Potential benefits of music playing in stroke upper limb motor rehabilitation. Neuroscience and Biobehavioral Reviews, 112, 585–599. https://doi.org/10.1016/j.neubiorev.2020.02.027
- Sierpowska, J., León-Cabrera, P., Camins, À., Juncadella, M., Gabarrós, A., & Rodríguez-Fornells, A. (2020). The black box of global aphasia: Neuroanatomical underpinnings of remission from acute global aphasia with preserved inner language function. Cortex, 130, 340–350. https://doi.org/10.1016/j.cortex.2020.06.009
- Sihvonen, A. J., Leo, V., Ripollés, P., Lehtovaara, T., Ylönen, A., Rajanaro, P., Laitinen, S., Forsblom, A., Saunavaara, J., Autti, T., Laine, M., Rodríguez-Fornells, A., Tervaniemi, M., Soinila, S., & Särkämö, T. (2020). Vocal music enhances memory and language recovery after stroke: pooled results from two RCTs. Annals of Clinical and Translational Neurology, 7(11), 2272–2287. https://doi.org/10.1002/acn3.51217
- Birulés, J., Bosch, L., Pons, F., & Lewkowicz, D. J. (2020). Highly proficient L2 speakers still need to attend to a talker's mouth when processing L2 speech. Language, Cognition and Neuroscience, 35(10), 1314–1325. https://doi.org/10.1080/23273798.2020.1762905
- Martínez-Nadal, S., & Bosch, L. (2020). Cognitive and Learning Outcomes in Late Preterm Infants at School Age: A Systematic Review. International Journal of Environmental Research and Public Health, 18(1), 74. https://doi.org/10.3390/ijerph18010074
- Alicart, H., Cucurell, D., & Marco-Pallarés, J. (2020). Gossip information increases reward-related oscillatory activity. NeuroImage, 210, 116520. https://doi.org/10.1016/j.neuroimage.2020.116520
- Packard, P. A., Steiger, T. K., Fuentemilla, L., & Bunzeck, N. (2020). Neural oscillations and event-related potentials reveal how semantic congruence drives long-term memory in both young and older humans. Scientific Reports, 10(1), 9116. https://doi.org/10.1038/s41598-020-65872-7
- Baena, D., Cantero, J. L., Fuentemilla, L., & Atienza, M. (2020). Weakly encoded memories due to acute sleep restriction can be rescued after one night of recovery sleep. Scientific Reports, 10(1), 1449. https://doi.org/10.1038/s41598-020-58496-4


## Knowledge transfer & Innovation

- European Foundation for the Care of Newborn Infants (EFCNI). Member of a Topic Expert Group for the European Standards of Care for Newborn Health Project (Standard for Communication, Speech and Language).

# Neuropsychology



Cognitive
and Behavioural
Neuroscience

## Principal investigators

ANA ADAN
(Addiction and dual disorders)

DAVID BARTRES-FAZ
(Brain health and neuromodulation)

MARIA ANGELES JURADO
(Obesity and neuroimaging)

MARIA MATARO
(Healthy ageing and cerebrovascular disease)

ROSER PUEYO
(Cerebral palsy and neuroimaging)

JOSEP M SERRA-GRABULOSA
(Neural basis of learning difficulties)

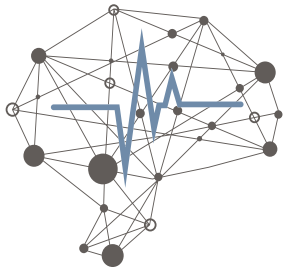
ANTONIO RODRIGUEZ-FORNELLS
(Learning and Brain Plasticity)

## Members

Xavier Caldu, Isabel Garcia, Julia Ballester-Plane, Julia Miralbell, Juan Jose Soriano, Kilian Amadeus Abellaneda, Mar Ariza, Cristina Sanchez, Lidia Vaque, Adria Bermudo, Montse Blasco, Maria del Rocio Cabello, Alba Castells, Maria Garcia-Galant, Noemi Lamonja, Sandra Luis, Juan Pablo Martin, Lidia Mulet, Ruben Perellon, Xavier Prats, Anna Prunell, Francesca Roig, Laura Rio, Olga Laporta-Hoyos

## Active projects

- **Ajut per incentivar i consolidar la recerca d'excel·lència ja existent a les universitats públiques de Catalunya.** Programa ICREA Academia 2019. Fundació Institució Catalana de Recerca i Estudis Avançats. David Bartres-Faz
- **Ajut per incentivar i consolidar la recerca d'excel·lència ja existent a les universitats públiques de Catalunya.** Programa ICREA Academia 2018. Fundació Institució Catalana de Recerca i Estudis Avançats. Maria Mataro
- **Efectes de teràpies combinades d'exercici, mindfulness i estimulació cognitiva en la cognició i la neuroplasticitat en pacients amb ictus isquèmic crònic.** Fundació La Marató de TV3. Maria Mataro
- **Inflamación, estrés y microbiota como mediadores entre la obesidad y el funcionamiento cerebral durante la adolescència.** Ministerio de Economia y Competitividad. PSI2017-86536-C2-1-R. Maria Angeles Jurado Luque
- **Estudio de los cambios cerebrales inducidos por estimulación cerebral no invasiva, como predictores del estado de salud cerebral futuro en personas de edad avanzada.** Ministerio de Ciencia, Innovación y Universidades. RTI2018-095181-B-C21. David Bartres-Faz
- **Entrenamiento ejecutivo en parálisis cerebral: participación, calidad de vida y conectividad cerebral.** Ministerio de Economia y Competitividad. PSI2016-75979-R. Roser Pueyo
- **Executive function training in childhood obesity: food choice, quality of life and brain connectivity (TOuCH).** Fundació La Marató de TV3. 201616-10. Maria Angeles Jurado Luque
- **Healthy minds from 0-100 years: Optimising the use of European brain imaging cohorts (Lifebrain).** European Union. 732592. David Bartres-Faz
- **Psicobiología de la patología dual.** Ministerio de Economia y Competitividad. PSI2015-65026-P. Ana Adan



Cognitive
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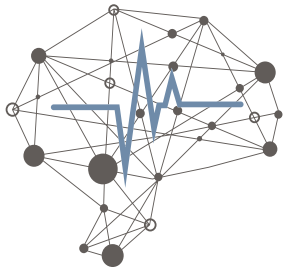
Neuroscience

## Selected publications


- Roig-Coll, F., Castells-Sánchez, A., Lamonja-Vicente, N., Torán-Monserrat, P., Pera, G., García-Molina, A., Tormos, J. M., Montero-Alía, P., Alzamora, M. T., Dacosta-Aguayo, R., Soriano-Raya, J. J., Cáceres, C., Erickson, K. I., & Mataró, M. (2020). Effects of Aerobic Exercise, Cognitive and Combined Training on Cognition in Physically Inactive Healthy Late-Middle-Aged Adults: The Projecte Moviment Randomized Controlled Trial. Frontiers in Aging Neuroscience, 12, 590168. https://doi.org/10.3389/fnagi.2020.590168
- Luis-Ruiz, S., Caldú, X., Sánchez-Castañeda, C., Pueyo, R., Garolera, M., & Jurado, M. Á. (2020). Is cognitive training an effective tool for improving cognitive function and real-life behaviour in healthy children and adolescents? A systematic review. Neuroscience & Biobehavioral Reviews, 116, 268–282. https://doi.org/10.1016/j.neubiorev.2020.06.019
- Prats-Soteras, X., Jurado, M. A., Ottino-González, J., García-García, I., Segura, B., Caldú, X., Sánchez-Garre, C., Miró, N., Tor, C., Sender-Palacios, M., & Garolera, M. (2020). Inflammatory agents partially explain associations between cortical thickness, surface area, and body mass in adolescents and young adulthood. International Journal of Obesity, 44(7), 1487–1496. https://doi.org/10.1038/s41366-020-0582-y
- Castells-Sánchez, A., Roig-Coll, F., Lamonja-Vicente, N., Torán-Monserrat, P., Pera, G., Montero, P., Dacosta-Aguayo, R., Bermudo-Gallaguet, A., Bherer, L., Erickson, K. I., & Mataró, M. (2020). Sex Matters in the Association between Physical Activity and Fitness with Cognition. Medicine and Science in Sports and Exercise, 10.1249/MSS.0000000000002570. https://doi.org/10.1249/MSS.0000000000002570
- García-Galant, M., Blasco, M., Reid, L., Pannek, K., Leiva, D., Laporta-Hoyos, O., Ballester-Plané, J., Miralbell, J., Caldú, X., Alonso, X., Toro-Tamargo, E., Meléndez-Plumed, M., Gimeno, F., Coronas, M., Soro-Camats, E., Boyd, R., & Pueyo, R. (2020). Study protocol of a randomized controlled trial of home-based computerized executive function training for children with cerebral palsy. BMC Pediatrics, 20(1), 9. https://doi.org/10.1186/s12887-019-1904-x
- Bartrés-Faz, D., Arenaza-Urquijo, E., Ewers, M., Belleville, S., Chételat, G., Franzmeier, N., Gonneaud, J., de Echevarri, J., Okonkwo, O., Schultz, S., Valenzuela, M., Stern, Y., & Vemuri, P. (2020). Theoretical frameworks and approaches used within the Reserve, Resilience and Protective Factors professional interest area of the Alzheimer's Association International Society to Advance Alzheimer's Research and Treatment. Alzheimer's & Dementia, 12(1), e12115. https://doi.org/10.1002/dad2.12115
- Prunell-Castañé, A., Jurado, M. Á., & García-García, I. (2020). Clinical binge eating, but not uncontrolled eating, is associated with differences in executive functions: Evidence from meta-analytic findings. Addictive Behaviors Reports, 13, 100337. https://doi.org/10.1016/j.abrep.2020.100337
- Crespo-Cuevas, A. M., Canento, T., Hernández-Perez, M., Cáceres, C., González, A., Ispierto, L., Mataró, M., Vilas, D., Planas-Ballvé, A., Martin, L., Muñoz-Ortiz, L., Arenillas, J. F., Via, M., Castañón, M., Millan, M., Dorado, L., & López-Cancio, E. (2020). The Barcelona-Asymptomatic Intracranial Atherosclerosis (AsIA) study: Subclinical cervico-cerebral stenosis and middle cerebral artery pulsatility index as predictors of long-term incident cognitive impairment. Atherosclerosis, 312, 104–109. https://doi.org/10.1016/j.atherosclerosis.2020.08.025
- Arrona-Palacios, A., Díaz-Morales, J. F., Adan, A., & Randler, C. (2020). Sleep habits, circadian preferences and substance use in a Mexican population: the use of the Morningness-Eveningness-Stability-Scale improved (MESSi). Chronobiology International, 37(1), 111–122. https://doi.org/10.1080/07420528.2019.1688339
- Marquez-Arrico, J. E., Navarro, J. F., & Adan, A. (2020). Health-Related Quality of Life in Male Patients under Treatment for Substance Use Disorders with and without Major Depressive Disorder: Influence in Clinical Course at One-Year Follow-Up. Journal of Clinical Medicine, 9(10), 3110. https://doi.org/10.3390/jcm9103110
- Forero, D., Adan, A., & Lopez Leon, S. (2020). Association Between a Functional Polymorphism in the Monoamine Oxidase A (MAOA) Gene and Both Emotional Coping Style and Neuroticism. The Open Neurology Journal, 14, 10–14. https://doi.org/10.2174/1874205X02014010010
- Río-Martínez, L., Marquez-Arrico, J. E., Prat, G., & Adan, A. (2020). Temperament and Character Profile and Its Clinical Correlates in Male Patients with Dual Schizophrenia. Journal of clinical medicine, 9(6), 1876. https://doi.org/10.3390/jcm9061876
- Oliveira, M., Epifano, K., Mathur, S., Carvalho, F. G., Scop, M., Carissimi, A., Francisco, A. P., Garay, L., Adan, A., Hidalgo, M. P., & Frey, B. N. (2020). Validation of the English version of the Mood Rhythm Instrument. BMC Psychology, 8(1), 35. https://doi.org/10.1186/s40359-020-00397-2
- Parnetti, L., Reay, J., Martella, G., Donato, R. F., Memo, M., Morona, R., Schubert, F., & Adan, A. (2020). NeuroSci, 1(1), 15–16. https://doi.org/10.3390/neurosci1010002



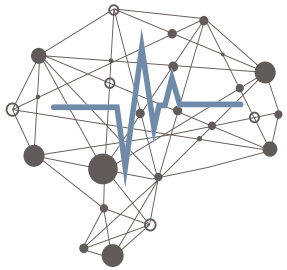
Cognitive and Behavioural Neuroscience

## Selected publications


- Mateu-Estivill, R., Forné, S., López-Sala, A., Falcón, C., Caldú, X., Sopena, J. M., Sans, A., Adan, A., Grau, S., Bargalló, N., & Serra-Grabulosa, J. M. (2021). Functional connectivity alterations associated with literacy difficulties in early readers. Brain Imaging and Behavior, 15(4), 2109–2120. https://doi.org/10.1007/s11682-020-00406-3
- Benejam, B., Videla, L., Vilaplana Martínez, E., Barroeta, I., Carmona Iragui, M., Altuna Azkargorta, M., Valldeneu, S., Fernandez, S., Gimenez, S., Iulita, M. F., Garzon, D., Bejanin, A., Bartrés-Faz, D., Videla, S., Alcolea, D., Blesa, R., Lleó, A., & Fortea, J. (2020). Diagnosis of prodromal and Alzheimer's disease dementia in adults with Down syndrome using neuropsychological tests. Alzheimer's & Dementia: Diagnosis, Assessment & Disease Monitoring, 12. https://doi.org/10.1002/dad2.12047
- Gorbach, T., Pudas, S., Bartrés-Faz, D., Brandmaier, A. M., Düzel, S., Henson, R. N., Idland, A. V., Lindenberger, U., Macià Bros, D., Mowinckel, A. M., Solé-Padullés, C., Sørensen, Ø., Walhovd, K. B., Watne, L. O., Westerhausen, R., Fjell, A. M., & Nyberg, L. (2020). Longitudinal association between hippocampus atrophy and episodic-memory decline in non-demented APOE 4 carriers. Alzheimer's & Dementia, 12(1), e12110. https://doi.org/10.1002/dad2.12110
- Budin-Ljøsne, I., Friedman, B. B., Suri, S., Solé-Padullés, C., Düzel, S., Drevon, C. A., Baaré, W., Mowinckel, A. M., Zsoldos, E., Madsen, K. S., Carver, R. B., Ghisletta, P., Arnesen, M. R., Bartrés Faz, D., Brandmaier, A. M., Fjell, A. M., Kvalbein, A., Henson, R. N., Kievit, R. A., Nawijn, L., … Zasiekina, L. (2020). The Global Brain Health Survey: Development of a Multi-Language Survey of Public Views on Brain Health. Frontiers in Public Health, 8, 387. https://doi.org/10.3389/fpubh.2020.00387
- Lombardo, D., Cassé-Perrot, C., Ranjeva, J. P., Le Troter, A., Guye, M., Wirsich, J., Payoux, P., Bartrés-Faz, D., Bordet, R., Richardson, J. C., Felician, O., Jirsa, V., Blin, O., Didic, M., & Battaglia, D. (2020). Modular slowing of resting-state dynamic functional connectivity as a marker of cognitive dysfunction induced by sleep deprivation. NeuroImage, 222, 117155. https://doi.org/10.1016/j.neuroimage.2020.117155
- Quattrini, G., Pievani, M., Jovicich, J., Aiello, M., Bargalló, N., Barkhof, F., Bartres-Faz, D., Beltramello, A., Pizzini, F. B., Blin, O., Bordet, R., Caulo, M., Constantinides, M., Didic, M., Drevelegas, A., Ferretti, A., Fiedler, U., Floridi, P., Gros-Dagnac, H., Hensch, T., PharmaCog Consortium (2020). Amygdalar nuclei and hippocampal subfields on MRI: Test-retest reliability of automated volumetry across different MRI sites and vendors. NeuroImage, 218, 116932. https://doi.org/10.1016/j.neuroimage.2020.116932
- Chan Kwong, A., Cassé-Perrot, C., Costes-Salon, M. C., Jouve, E., Lanteaume, L., Audebert, C., Rouby, F., Lefebvre, M. N., Ranjeva, J. P., Beck, A., Deplanque, D., Ponchel, A., Vervueren, C., Truillet, R., Babilon, C., Auffret, A., Richardson, J. C., Payoux, P., Bartrés-Faz, D., Blin, O., … Pharmacog Consortium (2020). An Alzheimer Disease Challenge Model: 24-Hour Sleep Deprivation in Healthy Volunteers, Impact on Working Memory, and Reversal Effect of Pharmacological Intervention: A Randomized, Double-Blind, Placebo-Controlled, Crossover Study. Journal of Clinical Psychopharmacology, 40(3), 222–230. https://doi.org/10.1097/JCP.0000000000001199
- Cattaneo, G., Bartrés-Faz, D., Morris, T. P., Solana Sánchez, J., Macià, D., Tormos, J. M., & Pascual-Leone, A. (2020). The Barcelona Brain Health Initiative: Cohort description and first follow-up. PloS One, 15(2), e0228754. https://doi.org/10.1371/journal.pone.0228754
- Abellaneda-Pérez, K., Vaqué-Alcázar, L., Perellón-Alfonso, R., Bargalló, N., Kuo, M. F., Pascual-Leone, A., Nitsche, M. A., & Bartrés-Faz, D. (2020). Differential tDCS and tACS Effects on Working Memory-Related Neural Activity and Resting-State Connectivity. Frontiers in Neuroscience, 13, 1440. https://doi.org/10.3389/fnins.2019.01440
- Fjell, A. M., Sørensen, Ø., Amlien, I. K., Bartrés-Faz, D., Bros, D. M., Buchmann, N., Demuth, I., Drevon, C. A., Düzel, S., Ebmeier, K. P., Idland, A. V., Kietzmann, T. C., Kievit, R., Kühn, S., Lindenberger, U., Mowinckel, A. M., Nyberg, L., Price, D., Sexton, C. E., Solé-Padullés, C., … Walhovd, K. B. (2020). Self-reported sleep relates to hippocampal atrophy across the adult lifespan: results from the Lifebrain consortium. Sleep, 43(5), zsz280. https://doi.org/10.1093/sleep/zsz280
- Friedman, B. B., Suri, S., Solé-Padullés, C., Düzel, S., Drevon, C. A., Baaré, W., Bartrés-Faz, D., Fjell, A. M., Johansen-Berg, H., Madsen, K. S., Nyberg, L., Penninx, B., Sexton, C., Walhovd, K. B., Zsoldos, E., & Budin-Ljøsne, I. (2020). Are People Ready for Personalized Brain Health? Perspectives of Research Participants in the Lifebrain Consortium. The Gerontologist, 60(6), 1050–1059. https://doi.org/10.1093/geront/gnz155


- Friedman, B. B., Suri, S., Solé-Padullés, C., Düzel, S., Drevon, C. A., Baaré, W., Bartrés-Faz, D., Fjell, A. M., Johansen-Berg, H., Madsen, K. S., Nyberg, L., Penninx, B., Sexton, C., Walhovd, K. B., Zsoldos, E., & Budin-Ljøsne, I. (2020). Are People Ready for Personalized Brain Health? Perspectives of Research Participants in the Lifebrain Consortium. The Gerontologist, 60(6), 1050–1059. https://doi.org/10.1093/geront/gnz155

# Quantitative psychology



Cognitive
and Behavioural
Neuroscience

## Principal investigators

JOAN GUARDIA-OLMOS
(Quantitative psychology)

MONTSERRAT COLELL
(Research in primatology)

## Members

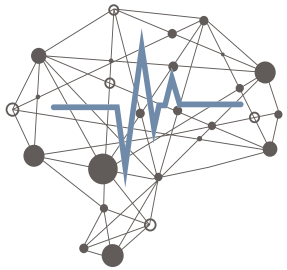
Maribel Pero, Vicenç Quera, Francesc Salvador, Antonio Solanas, David Leiva, Rumen Rumenov, Maria Carbo, Ruth Dolado, Sonia Benitez, Laia Farras, Cristina Castañe, Elisabet Gimeno, Nuria Mancho, Marc Montala, Jordi Galbany, Alvaro Lopez Caicoya

## Active projects

- **Impact of diet and physical activity on cognitive reserve and quality of life in persons with down syndrome.** Ministerio de Economia y Competitividad. EIN2019-103265. Joan Guardia-Olmos
- **Doctorats industrials 2019. Empresa: Consorci Sant Gregori.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2019DI69. Joan Guardia-Olmos
- **People with Intellectual Disability as Physical Activity Leaders Part 2 (PPALs 2).** European Union. 20593. Joan Guardia-Olmos
- **Indicadores estadísticos para el estudio de redes de conectividad cerebral en registros de resonancia magnética funcional (FMRI) y su aplicación para el diagnostico del deterioro cognitivo.** Ministerio de Ciencia, Innovación y Universidades. PGC2018-095829-B-I00. Joan Guardia-Olmos
- **Cognición, conservación y bienestar en ungulados en peligro: Gacela dorcas, gacela dama y órix cimitarra.** Beca PRIC 2019. Ref. 62002_2 Montserrat Colell

## Selected publications


- Manolov, R., Solanas, A., & Sierra, V. (2020). Changing Criterion Designs: Integrating Methodological and Data Analysis Recommendations. Journal of Experimental Education, 88(2), 335–350. https://doi.org/10.1080/00220973.2018.1553838
- Carbó-Carreté, M., Cañete-Massé, C., Peró-Cebollero, M., & Guàrdia-Olmos, J. (2020). Eliminate the effect of severity of the Personal Outcomes Scale: Linear regression in persons with intellectual disability. Psicothema, 32(3), 420–428. https://doi.org/10.7334/psicothema2019.353
- Pedersini, C. A., Guàrdia-Olmos, J., Montalà-Flaquer, M., Cardobi, N., Sanchez-Lopez, J., Parisi, G., Savazzi, S., & Marzi, C. A. (2020). Functional interactions in patients with hemianopia: A graph theory-based connectivity study of resting fMRI signal. PLOS ONE, 15(1), e0226816. https://doi.org/10.1371/journal.pone.0226816
- Carbó-Carreté, M., Cañete-Massé, C., Figueroa-Jiménez, M. D., Peró-Cebollero, M., & Guàrdia-Olmos, J. (2020). Relationship between Quality of Life and the Complexity of Default Mode Network in Resting State Functional Magnetic Resonance Image in Down Syndrome. International Journal of Environmental Research and Public Health, 17(19), 7127. https://www.mdpi.com/1660-4601/17/19/7127
- Mancho-Fora, N., Montalà-Flaquer, M., Farràs-Permanyer, L., Bartrés-Faz, D., Vaqué-Alcázar, L., Peró-Cebollero, M., & Guàrdia-Olmos, J. (2020). Resting-State Functional Connectivity Dynamics in Healthy Aging: An Approach Through Network Change Point Detection. Brain Connectivity, 10(3), 134–142. https://doi.org/10.1089/brain.2019.0735
- Carbó-Carreté, M., Cañete-Massé, C., Peró-Cebollero, M., & Guàrdia-Olmos, J. (2020). Using fMRI to Assess Brain Activity in People With Down Syndrome: A Systematic Review. Frontiers in Human Neuroscience, 14, 147. https://doi.org/10.3389/fnhum.2020.00147
- Moeyaert, M., Manolov, R., & Rodabaugh, E. (2020). Meta-Analysis of Single-Case Research via Multilevel Models: Fundamental Concepts and Methodological Considerations. Behavior Modification, 44(2), 265–295. https://doi.org/10.1177/0145445518806867



Cognitive and Behavioural Neuroscience

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- Lluch-Canut, T., Sequeira, C., Falcó-Pegueroles, A., Pinho, J. A., Rodrigues-Ferreira, A., Olmos, J. G., & Roldan-Merino, J. (2020). Ethical conflicts and their characteristics among critical care nurses. Nursing Ethics, 27(2), 537–553. https://doi.org/10.1177/0969733019857785
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- Hidalgo-Blanco, M. A., Puig-Llobet, M., Lluch-Canut, M. T., Guàrdia-Olmos, J., Moreno-Arroyo, C., & Amador-Campos, J. A. (2020). Expectations of nursing degree students: A longitudinal analysis. Nurse Education Today, 92, 104474. https://doi.org/10.1016/j.nedt.2020.104474
- Krieger, V., Amador-Campos, J. A., & Guàrdia-Olmos, J. (2020). Executive functions, Personality traits and ADHD symptoms in adolescents: A mediation analysis. PloS One, 15(5), e0232470. https://doi.org/10.1371/journal.pone.0232470
- Gudayol-Ferré, E., Duarte-Rosas, P., Peró-Cebollero, M., & Guàrdia-Olmos, J. (2020). The Effect of Second-Generation Antidepressant Treatment on the Memory of Patients With Major Depressive Disorder: A Meta-analysis Study With Structural Equation Models. Journal of Clinical Psychopharmacology, 40(1), 54–62. https://doi.org/10.1097/JCP.0000000000001150
- Mumbardó-Adam, C., Guàrdia-Olmos, J., & Giné Giné, C. (2020). An integrative model of self-determination and related contextual variables in adolescents with and without disabilities. Journal of Applied Research in Intellectual Disabilities : JARID, 33(5), 856–864. https://doi.org/10.1111/jar.12705
- Campos-Magdaleno, M., Leiva, D., Pereiro, A. X., Lojo-Seoane, C., Mallo, S. C., Nieto-Vieites, A., Juncos-Rabadán, O., & Facal, D. (2020). Longitudinal Patterns of the Tip-of-the-Tongue Phenomenon in People With Subjective Cognitive Complaints and Mild Cognitive Impairment. Frontiers in Psychology, 11, 425. https://doi.org/10.3389/fpsyg.2020.00425
- Campos-Magdaleno, M., Leiva, D., Pereiro, A. X., Lojo-Seoane, C., Mallo, S. C., Facal, D., & Juncos-Rabadán, O. (2021). Changes in visual memory in mild cognitive impairment: a longitudinal study with CANTAB. Psychological Medicine, 51(14), 2465–2475. https://doi.org/10.1017/S0033291720001142
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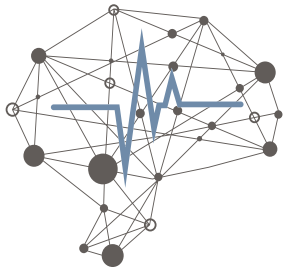
- Hervás, A., Soriano, P. P., Olmos, J. G. i, Peró, M., Capilla, R., & Montañana, J. M. (2020). Modelling the Process to Access the Spanish Public University System Based on Structural Equation Models. Mathematical and Computational Applications, 25(2), 31. https://doi.org/10.3390/mca25020031



Cognitive
and Behavioural
Neuroscience

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- Figueroa-Jimenez, M. D., Cañete-Massé, C., Carbó-Carreté, M., Zarabozo-Hurtado, D., Peró-Cebollero, M., Salazar-Estrada, J. G., & Guàrdia-Olmos, J. (2021). Resting-state default mode network connectivity in young individuals with Down syndrome. Brain and Behavior, 11(1), e01905. https://doi.org/10.1002/brb3.1905
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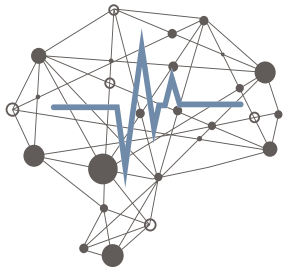
- Valente, R., Valera, S., & Guàrdia, J. (2020). Feeling unsafe in Italy's biggest cities. European Journal of Criminology. https://doi.org/10.1177/1477370820932075
- Schaffer, A.; Caicoya, A.L.; Colell, M.; Holland, R.; Ensenyat, C.; Amici, F. Gaze Following in Ungulates: Domesticated and Non-domesticated Species Follow the Gaze of Both Humans and Conspecifics in an Experimental Context. (2020) Frontiers in Psychology, 19 https://doi.org/10.3389/fpsyg.2020.604904
- Bueno-Guerra, N.; Colell, M.; Call, J. (2020). Effects of Indirect reputation and type of rearing on food choices in chimpanzees (pan troglodytes) Behavioral Ecology and Sociobiology 79 (6) https://doi.org/10.1007/s00265-020-02861-w
- Caicoya, A. L., Colell, M., Holland, R., Ensenyat, C., & Amici, F. (2020). Giraffes go for more: A quantity discrimination study in giraffes (Giraffa camelopardalis). Animal Cognition, 24(3), 483–495. https://doi.org/10.1007/s10071-020-01442-8
- Galbany J, Twahirwa JC, Baiges-Sotos L, Kane EE, Tuyisingize D, Kaleme P, Rwetsiba A, Bitariho R, Cranfield MR, Bromage TG, Mudakikwa A, Stoinski TS, Robbins MM, McFarlin SC (2020) Dental macrowear in catarrhine primates: Variability across species. In: Schmidt C & Watson JT (Eds.) Dental wear in evolutionary and biocultural contexts. Pp. 11-37. Elsevier. https://doi.org/10.1016/B978-0-12-815599-8.00002-2
- Martínez LM, Estebaranz-Sánchez F, Ferràndez-Cañadell C, Romero A, Ribot F, Galbany J, Gibert L & Pérez-Pérez A (2020) Buccal dental-microwear and feeding ecology of Early Pleistocene Theropithecus oswaldi from Cueva Victoria (Spain). Journal of Human Evolution 142: 102736 (12p.). https://doi.org/10.1016/j.jhevol.2019.102736
- Wright E, Galbany J, McFarlin SC, Ndayishimiye E, Stoinski TS & Robbins MM (2020) Dominance rank but not body size influences female reproductive success in mountain gorillas. Plos One 15(6): e0233235. https://doi.org/10.1371/journal.pone.0233235Amici, F., Caicoya, A.L., Majolo, B. et al. Innovation in wild Barbary macaques (Macaca sylvanus). Sci Rep 10, 4597 (2020). https://doi.org/10.1038/s41598-020-61558-2

# The auditory, motor, emotional and numerical brain



Cognitive
and Behavioural
Neuroscience

## Principal investigators

CARLES ESCERA
(Neural mechanisms of speech
encoding and auditory perception)

JUDITH DOMINGUEZ-BORRAS
(Emotion interactions with perception
and attention: amygdala function)

MARIA ISABEL NUÑEZ-PEÑA
(Numerical cognition and math anxiety)

IRIA SANMIGUEL
(Motor-sensory interactions and predictive processing)

MARC VIA
(Cognitive neurogenetics)

## Members

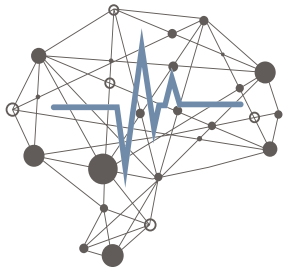
Concepcion Clemente, Maria Jose Corral, Jordi Costa, Raquel Aparicio, Sonia Arenillas, Trisia Cinca, Marta Font, Belen Gonzalez, Samantha Lopez, Konstantina Paraskevoudi, Giannina Puddu, Marta Puertollano, Teresa Ribas, Stefanie Sturm, Natalia Gorina, Jose Valenzuela

## Active projects

- **Ajut per incentivar i consolidar la recerca d'excel·lència ja existent a les universitats públiques de Catalunya.** Programa ICREA Academia 2020. Fundació Institució Catalana de Recerca i Estudis Avançats. Carles Escera
- **Codificación de estímulos referenciados a uno mismo versus estímulos referenciados a entes externos: Consecuencias a corto y largo plazo.** Ministerio de Economia y Competitividad. PSI2017-85600-P. Iria San Miguel
- **Fetal alcohol spectrum disorder (FASD): Early detection and risk biomarkers for neurocognitive abnormalities derived from the Frequency-Following Response (FFR).** Fundación Alicia Koplowitz. Carles Escera
- **Role of genes and epigenetic factors in modulating brain potentials associated to speech and musical processing.** Ministerio de Ciencia, Innovación y Universidades. PGC2018-099013-A-I00. Marc Via
- **The Frequency-Following Response (FFR) in newborns and its role as a potential biomarker for neurocognitive development.** Ministerio de Ciencia, Innovación y Universidades. PGC2018-094765-B-I00. Carles Escera
- **The sound of special places: exploring rock art soundscapes and the sacred (ARTSOUNDSCAPES).** Europan Union. ERC-2017-ADG, 787842. Margarita Diaz-Andreu Garcia, Carles Escera

## Selected publications


- Font-Alaminos, M., Cornella, M., Costa-Faidella, J., Hervás, A., Leung, S., Rueda, I., & Escera, C. (2020). Increased subcortical neural responses to repeating auditory stimulation in children with autism spectrum disorder. Biological Psychology, 149, 107807. https://doi.org/10.1016/j.biopsycho.2019.107807
- Domínguez-Borràs, J., Moyne, M., Saj, A., Guex, R., & Vuilleumier, P. (2020). Impaired emotional biases in visual attention after bilateral amygdala lesion. Neuropsychologia, 137, 107292. https://doi.org/10.1016/j.neuropsychologia.2019.107292

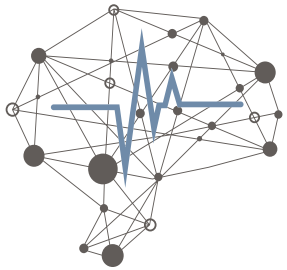


Cognitive
and Behavioural
Neuroscience

## Selected publications


- Campos-Rodríguez, C., Núñez-Peña, I., González-Gómez, B., & Colomé, À. (2020). ¡Los números me dan vueltas! Ansiedad matemática y habilidades espaciales. Ciencia Cognitiva, 14(2), 49–52. www.cienciacognitiva.org
- Valenzuela, J., Díaz-Andreu, M., & Escera, C. (2020). Psychology Meets Archaeology: Psychoarchaeoacoustics for Understanding Ancient Minds and Their Relationship to the Sacred. Frontiers in Psychology, 11, 550794. https://doi.org/10.3389/fpsyg.2020.550794
- López-Caballero, F., Martin-Trias, P., Ribas-Prats, T., Gorina-Careta, N., Bartrés-Faz, D., & Escera, C. (2020). Effects of cTBS on the Frequency-Following Response and Other Auditory Evoked Potentials. Frontiers in Human Neuroscience, 14, 250. https://doi.org/10.3389/fnhum.2020.00250
- Guex, R., Méndez-Bértolo, C., Moratti, S., Strange, B., Spinelli, L., Murray, R., Sander, D., Seeck, M., Vuilleumier, P., Domínguez-Borràs, J. (2020). Temporal dynamics of amygdala response to emotion- and action-relevance. Scientific Reports, 10: 11138. https://doi.org/10.1038/s41598-020-67862-1

# Virtual reality



Cognitive
and Behavioural
Neuroscience

## Principal investigators

FRANCISCO JOSE EIROA-OROSA
(Citizenship, identity and mental health)

GUILLEM FEIXAS
(Intervention in clinical and health psychology)

JOSE GUTIERREZ-MALDONADO
(Virtual Reality applications of new technologies in clinical and health psychology)

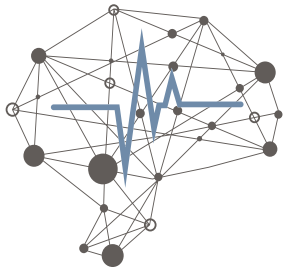
MEL SLATER
(Virtual environments in psychology and cognitive neuroscience),

## Members

Maria Carmen Saldaña, Marta Ferrer, Adela Fuste, Jose Ruiz, Domna Banakou, Alejandro Beacco, Jaime Gallego, Ramon Oliva, Maria Belen Aguirre, Helena Garcia, Alexandra Ghita, Tania Jonhson, Sergio Macho, Francisco Macia, Danilo Moggia, Joana Margarita Pla, Gizem Senel, Victor Suarez, Helena Vall, Ferran Vilalta, Carlos Cabreira, Irene Sanjuan, Alexis Andreu Gracia, Joan Ribas, Mavi Sanchez

## Active projects

- **ALCO-VR: Virtual Reality-based protocol for the treatment of patients diagnosed with severe alcohol use disorder.** Ministerio de Sanidad, Servicios Sociales e Igualdad. 2016I078. Jose Gutierrez-Maldonado
- **Modification of attentional bias, with virtual reality, for improving anorexia nervosa treatment.** Ministerio de Ciencia e Innovación. PID2019-108657RB-I00. Jose Gutierrez-Maldonado
- **Self Conversation in Virtual Reality Embodiment to Enhance Healthier Lifestyles Among Obese People.** Through Virtual Bodyworks S.L. 308571, H2020-EU.2.1.1., Grant Agreement – 951930. Mel Slater
- **Contextualising psychosocial wellbeing and mental health within sociocultural dynamics (PSYCHOCONTEXT).** European Union. 654808. Guillem Feixas
- **Development of virtual reality-based exposure techniques for improving anorexia nervosa treatment.** Ministerio de Economía y Competitividad. PSI2015-70389-R. Jose Gutierrez-Maldona**do**
- **Grup d'investigació sobre aplicaciones de realitat virtual i altres noves tecnologies en psicologia clínica i de la salut (VR-PSY Lab).** Agència de Gestió d'Ajuts Universitaris i de Recerca. 2017SGR1693. Jose Gutierrez-Maldonado
- **Identidad Personal y Cambio en Procesos Sociales.** Ministerio de Economía y Competitividad. EUIN2017-88733. Guillem Feixas
- **Immersive Virtual Reality Cognitive Treatment (VRCT) for persecutory delusions.** Medical Research Council. HQR00930 (MR/PO2629X/1). Mel Slater
- **Moments in Time in Immersive Virtual Environments (MoTIVE).** European Union. ERC-2016-ADG- 742989. Mel Slater
- **Psychotherapy for young adults with mild-to-moderate depression: Does virtual reality increase its efficacy?** Ministerio de Ciencia, Innovación y Universidades. RTI2018-094294-B-I00. Guillem Feixas
- **Significados personales, identidad y procesos de cambio.** Ministerio de Economia y Competitividad. EIN2019-103060. Guillem Feixas



Cognitive and Behavioural Neuroscience

## Selected publications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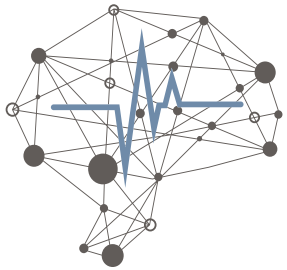
- Ivan Patané, Anne Lelgouarch, Domna Banakou, Gregoire Verdelet, Clement Desoche, Eric Koun, Romeo Salemme, Mel Slater, Alessandro Farnè (2020) Exploring the effect of cooperation in reducing implicit racial bias and its relationship with dispositional empathy and political attitudes. Frontiers in Psychology. 11:510787. https://doi.org/10.3389/fpsyg.2020.510787
- A W de Borst, M V Sanchez-Vives, M Slater, B de Gelder (2020) First person virtual embodiment modulates cortical network that encodes the bodily self and its surrounding space during the experience of domestic violence. ENEURO. 0263-19.2019 https://doi.org/10.1523/ENEURO.0263-19.2019
- Solène Neyret, Anna Isabel Bellido, Xavi Navarro, Mel Slater (2020) Which body would you like to have? The impact of embodied perspective on body perception and body evaluation in virtual reality. Frontiers in Robotics and AI / Virtual Environments AI 7:31 https://doi.org/10.3389/frobt.2020.00031
- Mel Slater, Cristina Gonzalez-Liencres, Patrick Haggard, Charlotte Vinkers, Rebecca Gregory-Clarke, Steve Jelley, Zillah Watson, Graham Breen, Raz Schwarz, William Steptoe, Dalila Szostak, Shivashankar Halan, Deborah Fox, Jeremy Silver (2020) The ethics of realism in virtual and augmented reality. Frontiers in Virtual Reality 13: 1. https://doi.org/10.3389/frvir.2020.00001
- Marieke Ag Martens, Angus Antley, Daniel Freeman, Mel Slater, Paul J Harrison, Elizabeth M Tunbridge (2019) It feels real: physiological responses to a stressful virtual reality environment and its impact on working memory. Journal of Psychopharmacology 2019;33(10):1264-1273. https://doi.org/10.1177/0269881119860156
- A. Beacco, J. Gallego and M. Slater, "Automatic 3D Character Reconstruction from Frontal and Lateral Monocular 2D RGB Views," 2020 IEEE International Conference on Image Processing (ICIP), 2020, pp. 2785-2789, https://doi.org/10.1109/ICIP40778.2020.9191091
- M. Murcia-López, T. Collingwoode-Williams, W. Steptoe, R. Schwartz, T. J. Loving and M. Slater, "Evaluating Virtual Reality Experiences Through Participant Choices," 2020 IEEE Conference on Virtual Reality and 3D User Interfaces (VR), 2020, pp. 747-755, https://doi.org/10.1109/VR46266.2020.00098
- Gonzalez-Liencres C, Zapata LE, Iruretagoyena G, Seinfeld S, Perez-Mendez L, Arroyo-Palacios J, Borland D, Slater M and Sanchez-Vives MV (2020) Being the Victim of Intimate Partner Violence in Virtual Reality: First- Versus Third-Person Perspective. Front. Psychol. 11:820. https://doi.org/10.3389/fpsyg.2020.00820
- M Roussou, M Slater (2020) Comparison of the Effect of Interactive versus Passive Virtual Reality Learning Activities in Evoking and Sustaining Conceptual Change. IEEE Transactions on Emerging Topics in Computing 8: 1. 233-244. https://doi.org/10.1109/TETC.2017.2737983
- Neyret, S., Navarro, X., Beacco, A., Oliva, R., Bourdin, P., Valenzuela, J., Barberia, I., & Slater, M. (2020). An Embodied Perspective as a Victim of Sexual Harassment in Virtual Reality Reduces Action Conformity in a Later Milgram Obedience Scenario. Scientific Reports, 10(1), 6207. https://doi.org/10.1038/s41598-020-62932-w
- Moggia, D., Lutz, W., Arndt, A., & Feixas, G. (2020). Patterns of change and their relationship to outcome and follow-up in group and individual psychotherapy for depression. Journal of Consulting and Clinical Psychology, 88(8), 757–773. https://doi.org/10.1037/ccp0000562
- Banakou, D., Beacco, A., Neyret, S., Blasco-Oliver, M., Seinfeld, S., & Slater, M. (2020). Virtual body ownership and its consequences for implicit racial bias are dependent on social context. Royal Society Open Science, 7(12), 201848. https://doi.org/10.1098/rsos.201848
- Georghiades, A., & Eiroa-Orosa, F. J. (2020). A Randomised Enquiry on the Interaction Between Wellbeing and Citizenship. Journal of Happiness Studies, 21(6), 2115–2139. https://doi.org/10.1007/s10902-019-00173-z
- Scott, J., Etain, B., Manchia, M., Brichant-Petitjean, C., Geoffroy, P. A., Schulze, T., Alda, M., Bellivier, F., & ConLiGen collaborators (2020). An examination of the quality and performance of the Alda scale for classifying lithium response phenotypes. Bipolar Disorders, 22(3), 255–265. https://doi.org/10.1111/bdi.12829
- Porras-Garcia, B., Serrano-Troncoso, E., Carulla-Roig, M., Soto-Usera, P., Ferrer-Garcia, M., Figueras-Puigderrajols, N., Yilmaz, L., Onur Sen, Y., Shojaeian, N., & Gutiérrez-Maldonado, J. (2020). Virtual Reality Body Exposure Therapy for Anorexia Nervosa. A Case Report With Follow-Up Results. Frontiers in Psychology, 11, 956. https://doi.org/10.3389/fpsyg.2020.00956



Cognitive
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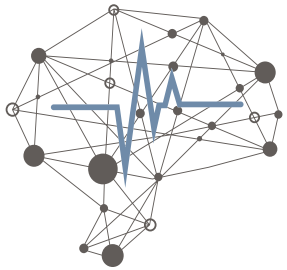
Neuroscience

## Selected publications


- Ochoa-Arnedo, C., Flix-Valle, A., Medina, J. C., Escriche, E., Rodríguez, A., Villanueva, C., Sumalla, E. C., Alabèrnia-Segura, M., Prats, C., Corral, M. J., Gallardo-Pujol, D., Feixas, G., Calle, C., Trelis, J., & Borràs, J. M. (2020). Programa E-Health ICOnnecta't: un ecosistema para fomentar el bienestar en cáncer a través de la propuesta europea ONCOMMUN. Psicooncología, 17(1), 41-58. https://doi.org/10.5209/psic.68240
- Paz, C., Aguilera, M., Salla, M., Compañ, V., Medina, J. C., Bados, A., García-Grau, E., Castel, A., Cañete Crespillo, J., Montesano, A., Medeiros-Ferreira, L., & Feixas, G. (2020). Personal Construct Therapy vs Cognitive Behavioral Therapy in the Treatment of Depression in Women with Fibromyalgia: Study Protocol for a Multicenter Randomized Controlled Trial. Neuropsychiatric Disease and Treatment, 16, 301–311. https://doi.org/10.2147/NDT.S235161
- Carapeto, M. J., & Feixas, G. (2020). The Organization of Self-Knowledge in Adolescence: Some Contributions Using the Repertory Grid Technique. European Journal of Investigation in Health, Psychology and Education, 10(1), 408–423. https://doi.org/10.3390/ejihpe10010031
- Ortiz, E. L. L., Macias-Esparza, L. K., Amell, R. C., & Viaplana, G. F. I. (2020). Facilitando la separación psicológica de las mujeres en proceso de terminar una relación de pareja violenta. Clínica Contemporánea, 11(1), 1–17. https://doi.org/10.5093/cc2020a4
- Porras-Garcia, B., Ferrer-Garcia, M., Yilmaz, L., Sen, Y. O., Olszewska, A., Ghita, A., Serrano-Troncoso, E., Treasure, J., & Gutiérrez-Maldonado, J. (2020). Body-related attentional bias as mediator of the relationship between body mass index and body dissatisfaction. European Eating Disorders Review, 28(4), 454–464. https://doi.org/10.1002/erv.2730
- García Mieres, H., Montesano, A., Villaplana, A., Trujillo, A., Salla, M., Paz, C., Ochoa, S., & Feixas, G. (2020). Common and differential dimensions of personal identity between psychosis and depression: The relevance of gender and depressive mood. Journal of Psychiatric Research. https://doi.org/10.1016/j.jpsychires.2020.05.015
- Roussou, M., & Slater, M. (2020). Comparison of the Effect of Interactive versus Passive Virtual Reality Learning Activities in Evoking and Sustaining Conceptual Change. IEEE Transactions on Emerging Topics in Computing, 8(1), 233–244. https://doi.org/10.1109/TETC.2017.2737983
- Arias-de la Torre, J., Puigdomenech, E., García, X., Valderas, J. M., Eiroa-Orosa, F. J., Fernández-Villa, T., Molina, A. J., Martín, V., Serrano-Blanco, A., Alonso, J., & Espallargues, M. (2020). Relationship Between Depression and the Use of Mobile Technologies and Social Media Among Adolescents: Umbrella Review. Journal of Medical Internet Research, 22(8), e16388. https://doi.org/10.2196/16388
- Porras-Garcia, B., Exposito-Sanz, E., Ferrer-Garcia, M., Castillero-Mimenza, O., & Gutiérrez-Maldonado, J. (2020). Body-Related Attentional Bias among Men with High and Low Muscularity Dissatisfaction. Journal of Clinical Medicine, 9(6), 1736. https://doi.org/10.3390/jcm9061736
- Hernández-Serrano, O., Ghiță, A., Figueras-Puigderrajols, N., Fernández-Ruiz, J., Monras, M., Ortega, L., Mondon, S., Teixidor, L., Gual, A., Ugas-Ballester, L., Fernández, M., Montserrat, R., Porras-Garcia, B., Ferrer-Garcia, M., & Gutiérrez-Maldonado, J. (2020). Predictors of Changes in Alcohol Craving Levels during a Virtual Reality Cue Exposure Treatment among Patients with Alcohol Use Disorder. Journal of Clinical Medicine, 9(9), 3018. https://doi.org/10.3390/jcm9093018
- Riva, G., Bernardelli, L., Browning, M., Castelnuovo, G., Cavedoni, S., Chirico, A., Cipresso, P., de Paula, D., Di Lernia, D., Fernández-Alvarez, J., Figueras-Puigderrajols, N., Fuji, K., Gaggioli, A., Gutiérrez-Maldonado, J., Hong, U., Mancuso, V., Mazzeo, M., Molinari, E., Moretti, L. F., Ortiz de Gortari, A. B., … Wiederhold, B. K. (2020). COVID Feel Good-An Easy Self-Help Virtual Reality Protocol to Overcome the Psychological Burden of Coronavirus. Frontiers in Psychiatry, 11, 563319. https://doi.org/10.3389/fpsyt.2020.563319
- Porras-Garcia, B., Ferrer-Garcia, M., Serrano-Troncoso, E., Carulla-Roig, M., Soto-Usera, P., Miquel-Nabau, H., Shojaeian, N., de la Montaña Santos-Carrasco, I., Borszewski, B., Díaz-Marsá, M., Sánchez-Díaz, I., Fernández-Aranda, F., & Gutiérrez-Maldonado, J. (2020). Validity of Virtual Reality Body Exposure to Elicit Fear of Gaining Weight, Body Anxiety and Body-Related Attentional Bias in Patients with Anorexia Nervosa. Journal of Clinical Medicine, 9(10), 3210. https://doi.org/10.3390/jcm9103210
- Mata-González, E. E., Meza-Peña, C., & Saldaña García, C. (2020). Programas de intervención a través de Internet para la reducción de peso en adultos con sobrepeso y obesidad: una revisión sistemática. Revista Española De Nutrición Humana Y Dietética, 24(4), 324–335. https://doi.org/10.14306/renhyd.24.4.984

# Research



## Cognitive and Behavioural Neuroscience

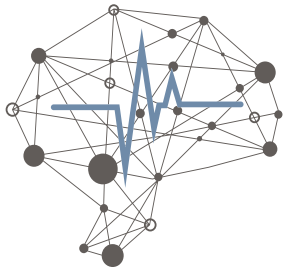
### Selected publications

- García-Mieres, H., Usall, J., IDENTITY Group, Feixas, G., & Ochoa, S. (2020). Gender differences in the complexity of personal identity in psychosis. Schizophrenia Research, 222, 467–469. https://doi.org/10.1016/j.schres.2020.06.024
- García-Mieres, H., De Jesús-Romero, R., IDENTITY group, Ochoa, S., & Feixas, G. (2020). Beyond the cognitive insight paradox: Self-reflectivity moderates the relationship between depressive symptoms and general psychological distress in psychosis. Schizophrenia Research, 222, 297–303. https://doi.org/10.1016/j.schres.2020.05.027
- Suarez, V., & Feixas, G. (2020). Cognitive Conflict in Borderline Personality Disorder: A Study Protocol. Behavioral Sciences, 10(12), 180. https://doi.org/10.3390/bs10120180
- García-Mieres, H., Usall, J., Feixas, G., & Ochoa, S. (2020). Placing Cognitive Rigidity in Interpersonal Context in Psychosis: Relationship With Low Cognitive Reserve and High Self-Certainty. Frontiers in Psychiatry, 11, 594840. https://doi.org/10.3389/fpsyt.2020.594840

### Knowledge transfer & Innovation

- Evaluación del cambio terapéutico de los pacientes con TCA tratados con el modelo ITA. ITA Clinic BCN, S.L. 309562. Guillem Feixas
- GRID CONSULTOR (GRIDCON): A 3D Tool for the Exploration of Professional Identity in Health Organizations. Ajuts Llavor, Agaur, Generalitat de Catalunya, FEDER. 600243. Guillem Feixas
- Methods and systems for gradual exposure to a fear. UBTT0345
- Mind and Identity SL, UB spin-off. Guillem Feixas. eyme-vr.com
- Motor training AVCRI263-E
- Physiological response AVCRI264-E
- Virtual Bodyworks. Mel Slater. www.virtualbodyworks.com

# Vision and control of action



Cognitive
and Behavioural
Neuroscience

## Principal investigators

JOAN LOPEZ-MOLINER
(Optic flow, visual motion, sensori-motor decision-making, Perception and action)

JAVIER RODRIGUEZ-FERREIRO
(Reasoning, language and learning)

HANS SUPER
(Fixational eye movements and cognitive processing)

MATTHIAS SVEN KEIL
(Computational modeling biologically inspired image and video processing, networks and complex systems)

## Members

Itxaso Barberia, Angels Colome, Elisabet Tubau, Borja Aguado, Jaume Boned, Marta Natalia Torres

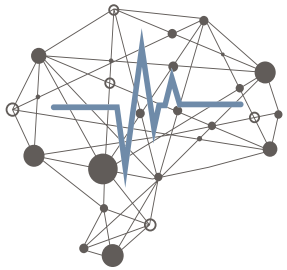
## Active projects

- **Fundamento cognitivo de las creencias pseudocientíficas.** Agencia Estatal de Investigación. PID2019-106102GB-I00. Javier Rodriguez-Ferreiro
- **Muestreo activo del movimiento 3D y flujo óptico.** Ministerio de Economia y Competitividad. PSI2017-83493-R. Joan Lopez-Moliner
- **Perception and Action in Complex Environments (PACE).** European Union. H2020-MSCA-ITN-2014-642961. Joan Lopez-Moliner
- **Sincronización de movimientos oculares y sincronización de las neuronas.** Ministerio de Ciencia, Innovación y Universidades. PGC2018-096074-B-I00. Hans Super
- **Un Estudio Computacional de mecanismos de codificación predictiva para la percepción visual del movimiento.** Ministerio de Ciencia, Innovación y Universidades. PGC2018-099506-B-I00. Matthias Sven Keil

## Selected publications


- Jiménez, E. C., Avella-Garcia, C., Kustow, J., Cubbin, S., Corrales, M., Richarte, V., Esposito, F. L., Morata, I., Perera, A., Varela, P., Cañete, J., Faraone, S. V., Supèr, H., & Ramos-Quiroga, J. A. (2020). Eye Vergence Responses During an Attention Task in Adults With ADHD and Clinical Controls. Journal of Attention Disorders, 1087054719897806. Advance online publication. https://doi.org/10.1177/1087054719897806
- Jiménez, E. C., Romeo, A., Pérez Zapata, L., Solé Puig, M., Bustos-Valenzuela, P., Cañete, J., Varela Casal, P., & Supèr, H. (2020). Eye vergence responses in children with and without reading difficulties during a word detection task. Vision Research, 169, 6–11. https://doi.org/https://doi.org/10.1016/j.visres.2020.02.001
- Knelange, E. B., & López-Moliner, J. (2020). Increased error-correction leads to both higher levels of variability and adaptation. PloS One, 15(2), e0227913. https://doi.org/10.1371/journal.pone.0227913
- Torres, M. N., Barberia, I., & Rodríguez-Ferreiro, J. (2020). Causal illusion as a cognitive basis of pseudoscientific beliefs. British Journal of Psychology, 111. https://doi.org/10.1111/bjop.12441
- Houben, A. M., & Keil, M. S. (2020). A calcium-influx-dependent plasticity model exhibiting multiple STDP curves. Journal of Computational Neuroscience, 48(1), 65–84. https://doi.org/10.1007/s10827-019-00737-1

# Research



Cognitive
and Behavioural
Neuroscience

## Selected publications

- Rodríguez-Ferreiro, J., Aguilera, M., & Davies, R. (2020). Positive Schizotypy Increases the Acceptance of Unpresented Materials in False Memory Tasks in Non-clinical Individuals. Frontiers in Psychology, 11, 262. https://doi.org/10.3389/fpsyg.2020.00262
- Cámara, C., López-Moliner, J., Brenner, E., & de la Malla, C. (2020). Looking away from a moving target does not disrupt the way in which the movement toward the target is guided. Journal of Vision, 20(5), 5. https://doi.org/10.1167/jov.20.5.5
- Civile, C., Chamizo, V. D., Artigas, A. A., & McLaren, I. (2020). Directional cues and landmark configurations: The effect of rotating one set of landmarks relative to another. Journal of experimental psychology. Animal Learning and Cognition, 46(1), 28–39. https://doi.org/10.1037/xan0000224
- Christou, S., Guerra, E., Coloma, C. J., Andreu Barrachina, L., Araya, C., Rodriguez-Ferreiro, J., Buj Pereda, M. J., & Sanz-Torrent, M. (2020). Real time comprehension of Spanish articles in children with developmental language disorder: Empirical evidence from eye movements. Journal of Communication Disorders, 87, 106027. https://doi.org/10.1016/j.jcomdis.2020.106027
- Rodríguez-Ferreiro, J., Aguilera, M., & Davies, R. (2020). Semantic priming and schizotypal personality: reassessing the link between thought disorder and enhanced spreading of semantic activation. PeerJ, 8, e9511. https://doi.org/10.7717/peerj.9511
- Jörges, B., & López-Moliner, J. (2020). Determining mean and standard deviation of the strong gravity prior through simulations. PloS One, 15(8), e0236732. https://doi.org/10.1371/journal.pone.0236732

## Knowledge transfer & Innovation

- Measuring and improving attention. EP20382992.4. Hendrik Anne Super
- Method of Measuring Attention. EP12380018.
- Method of Measuring Attention. *PCT/*EP2012/076654.
- Sistema y procedimiento de medir la atención. ES2589000 T3. Hendrik Anne Super
- Braingaze. Spin off. Hendrik Anne Super

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# Images

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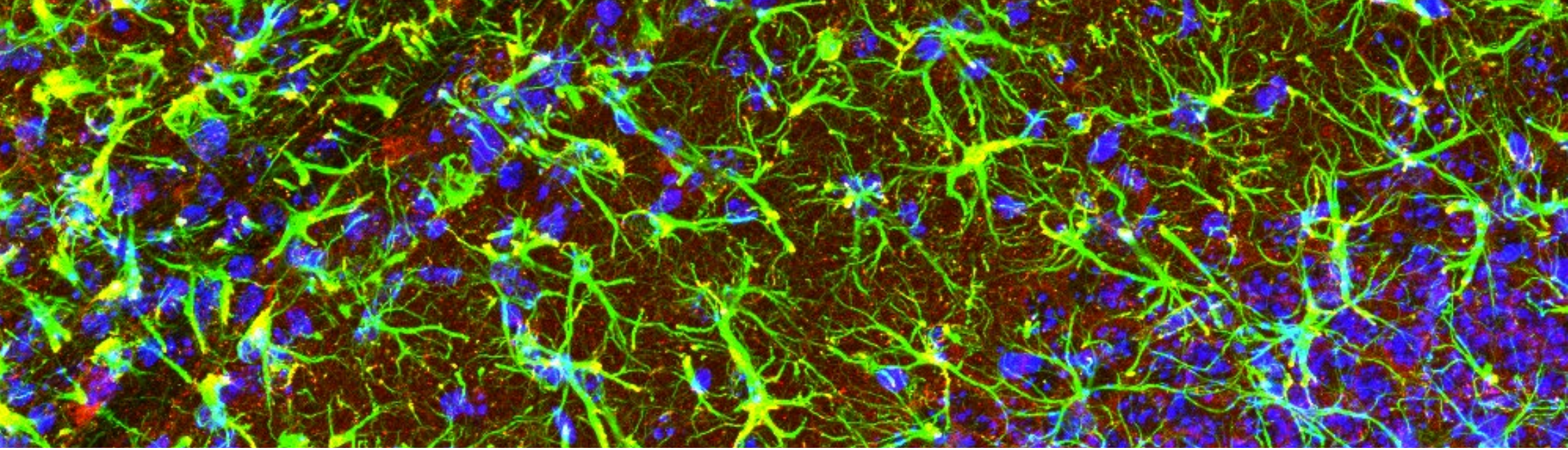

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