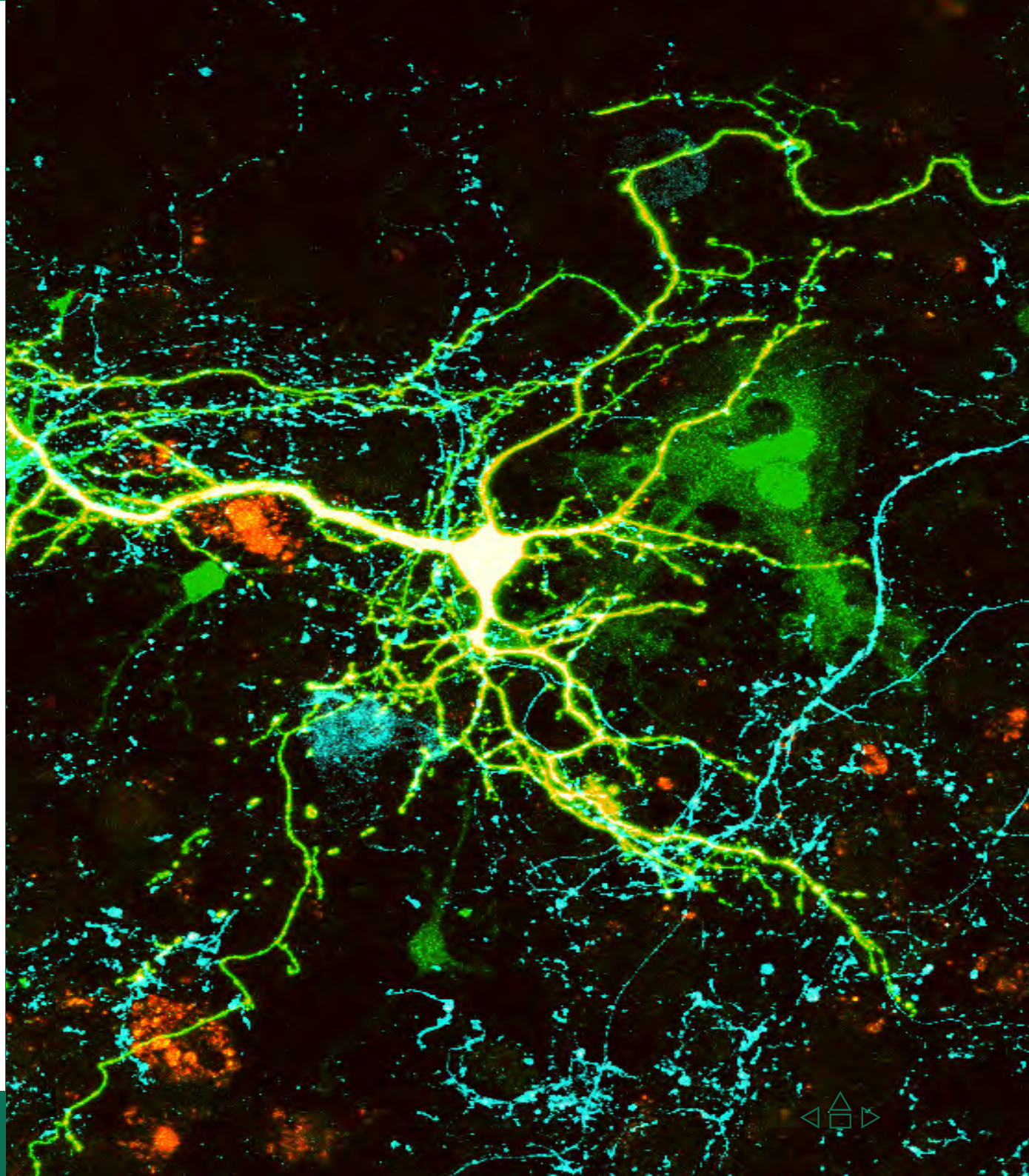
UNIVERSITAT DE BARCELONA

Institute of Neurosciences of the University of Barcelona

ANNUAL REPORT 2022



Institut de Neurociències
UNIVERSITAT DE BARCELONA

EXCELENCIA MARÍA DE MAEZTU

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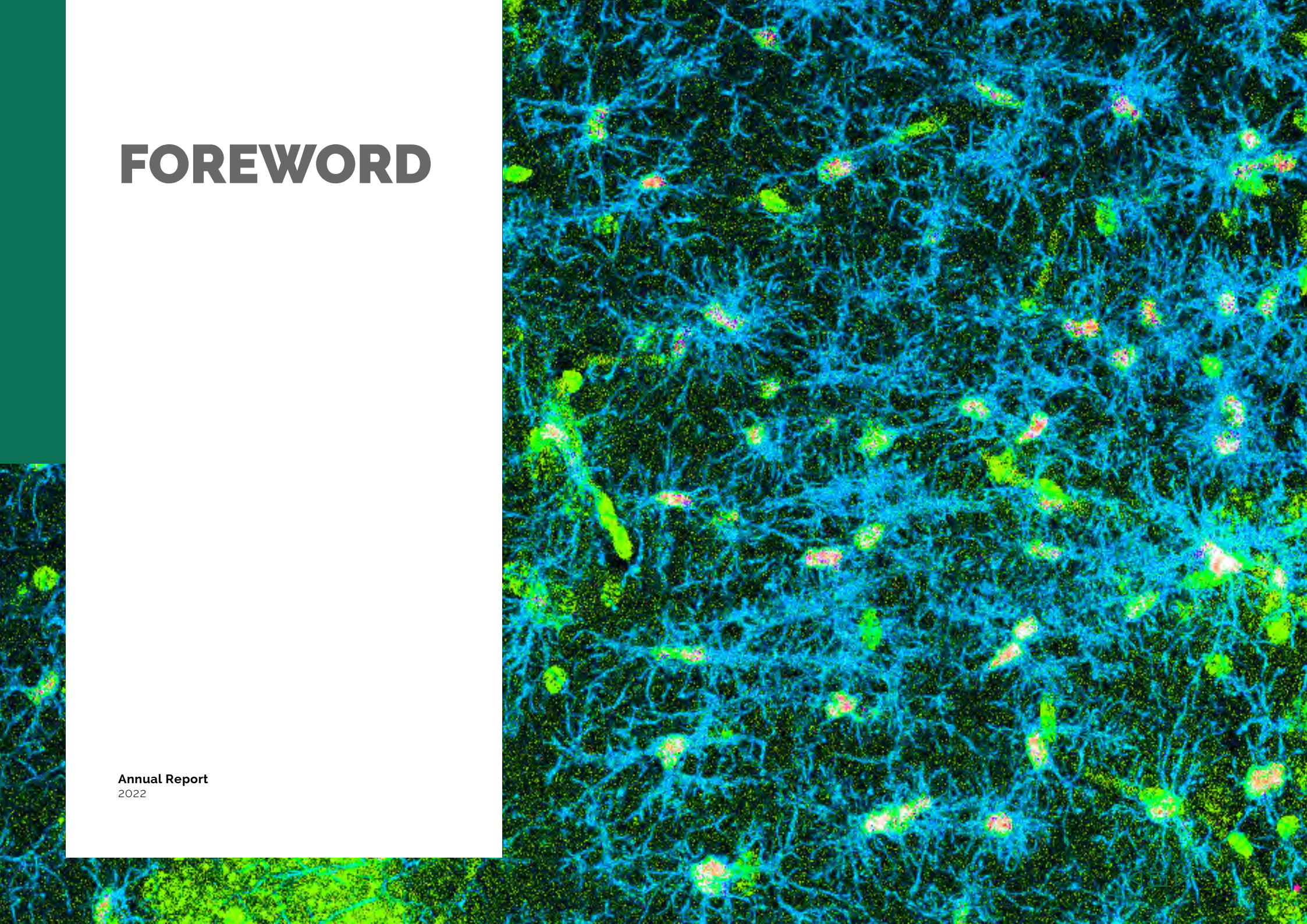

Foreword

Institute of Neurosciences

The **Institute of Neurosciences** (UBneuro) was launched in 2015 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.

The Institute has been awarded with the María de Maeztu Excellence Unit accreditation, and gathers more than 450 researchers from the University of Barcelona, in the multicultural city of Barcelona. We encourage and welcome collaborations with international research groups and organisations!

Our members enjoy benefits such as being part of a close community, learning from some of the best neuroscience researchers in the world, collaborating in both the private and public sectors, and state-of-the-art facilities.

#39 Neuroscience and Behaviour

Foreword

Dr. Jordi Alberch
Director

Message from the Director

I hope this message finds you in good health and high spirits.

It is my pleasure to release the 2022 edition of the Annual Report of the Institute of Neurosciences of the University of Barcelona (UBneuro). As the Director, I am honored to address you and reflect on the remarkable achievements and exciting opportunities that lie ahead.

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 39th in the Neuroscience and Behaviour in the US News Best Global Universities Ranking (out of 400). This result would not have been possible without our researchers and their investigation that using multidisciplinary approaches, have obtained novel findings in understanding brain function and pathology from the molecular levels to cognition and behaviour. Many of these fascinating discoveries have only been possible thanks to the wide international collaborative networks of the researchers of the Institute.

UBneuro provides an excellent environment for translational research, keeping a close interaction between basic and clinical research. Hence, we are very proud that UBneuro has been selected, once again, as the Maria de Maeztu Unit of Excellence by the Spanish Ministry of Science and Innovation for the next 4 years.

To harness the full potential of these opportunities, I encourage each of you to continue pursuing excellence in your respective areas of expertise, while also embracing collaboration and interdisciplinary approaches. Let us nurture an environment that fosters innovation, inclusivity, and intellectual curiosity.

Looking ahead, I am filled with great optimism for the future of our institute. We stand at the precipice of remarkable opportunities that will shape the landscape of neuroscience for years to come. Exciting times are coming in brain research, since emerging technologies, such as advanced neuroimaging techniques, artificial intelligence, and neuroengineering, offer unprecedented avenues to explore the complexities of the brain. By embracing these cutting-edge tools, we will uncover new frontiers and pave the way for transformative breakthroughs in our understanding of cognition, mental health, experimental neuroscience and pathological disorders, and of course UBneuro wants to be part of this new exciting era.

In closing, 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. Together, we have accomplished great things, and I am confident that our collective efforts will continue to propel us towards new horizons.

With warm regards and sincere gratitude,

Jordi Alberch

MD, PhD, Director, Institute of Neurosciences University of Barcelona

Governing and Advisory Bodies

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

Deputy Director

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  Department of Cognition, Development and Educational Psychology

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- **Yaroslau Compta, MD, PhD**
  Experimental Neurology
- **Maite Barrios, PhD**
  Mental Health
- **David Bartrés, PhD**
  Cognitive and Behavioural Neuroscience

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  Communications manager – until July
- **Marta Rubio**
  Communications manager – since December

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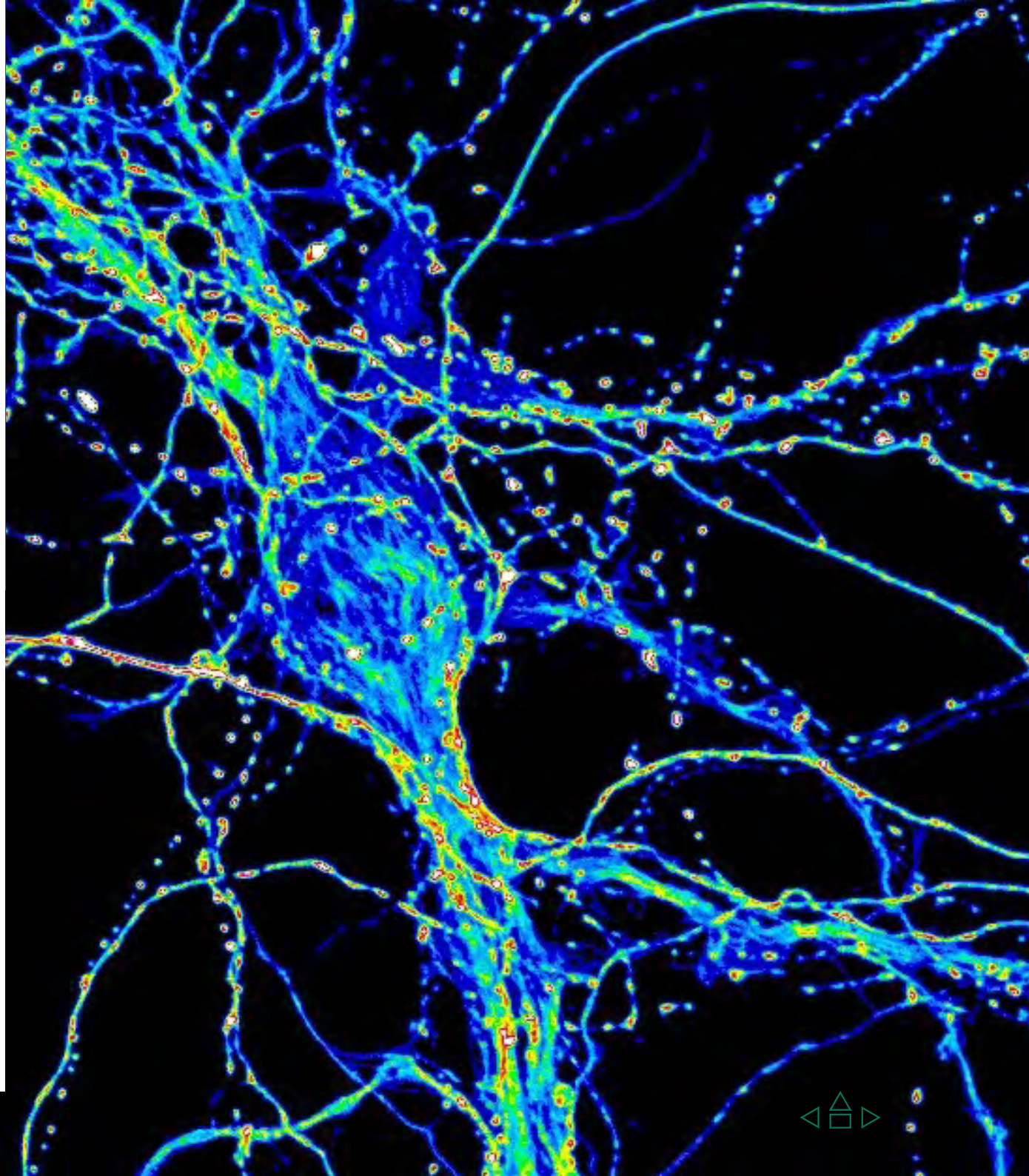
  Ecole Polytechnique Federale de Lausanne, Switzerland

2022 IN A NUTSHELL

KEY FIGURES



Annual Report
2022

550 Total articles

1

- Cell
- Nature Neuroscience
- Nature Aging
- Lancet Neurology
- JAMA Neurology
- JAMA Psychiatry
- JAMA Network Open
- Nature Metabolism
- New England Journal of Medicine
- Journal of the American Chemical Society
- Acta Neuropathologica
- Arthritis & Rheumatology
- Journal of the American Academy of Child and Adolescent Psychiatry

2

- JAMA Neurology
- Eclinicalmedicine
- Alzheimers & Dementia
- Neurology

3

- Nature Communications
- Proceedings of the National Academy of Sciences of the United States of America - PNAS

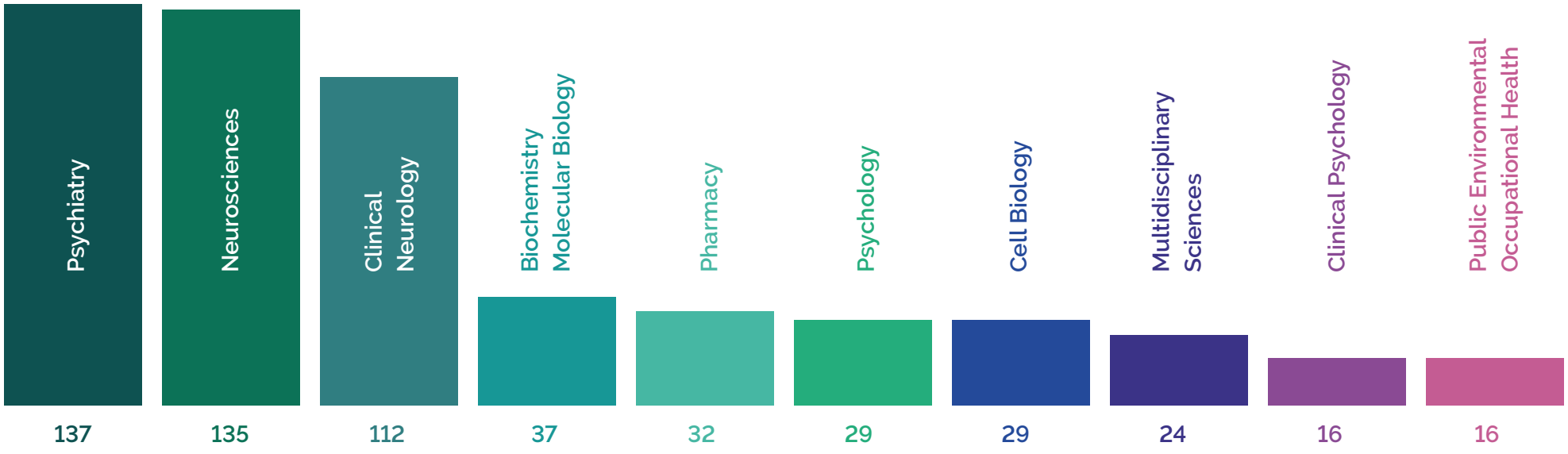
4

- Brain

7

- Molecular Psychiatry

This years articles can be summed up in the following science categories



432 Ongoing Projects | **54 M€**

76% National projects
42M€

24% International projects
13M€

87% Public Funding
47M€

13% Private Funding
7M€

EXCELENCIA 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
5 Academia professors

MSCA

2 Postdoctoral Fellowships 2021

4

CIBERs

CIBERNED, CIBERSAM, CIBERER, CIBERESP

15

Patents ongoing

6

Spin-offs ongoing

411 Total human resources

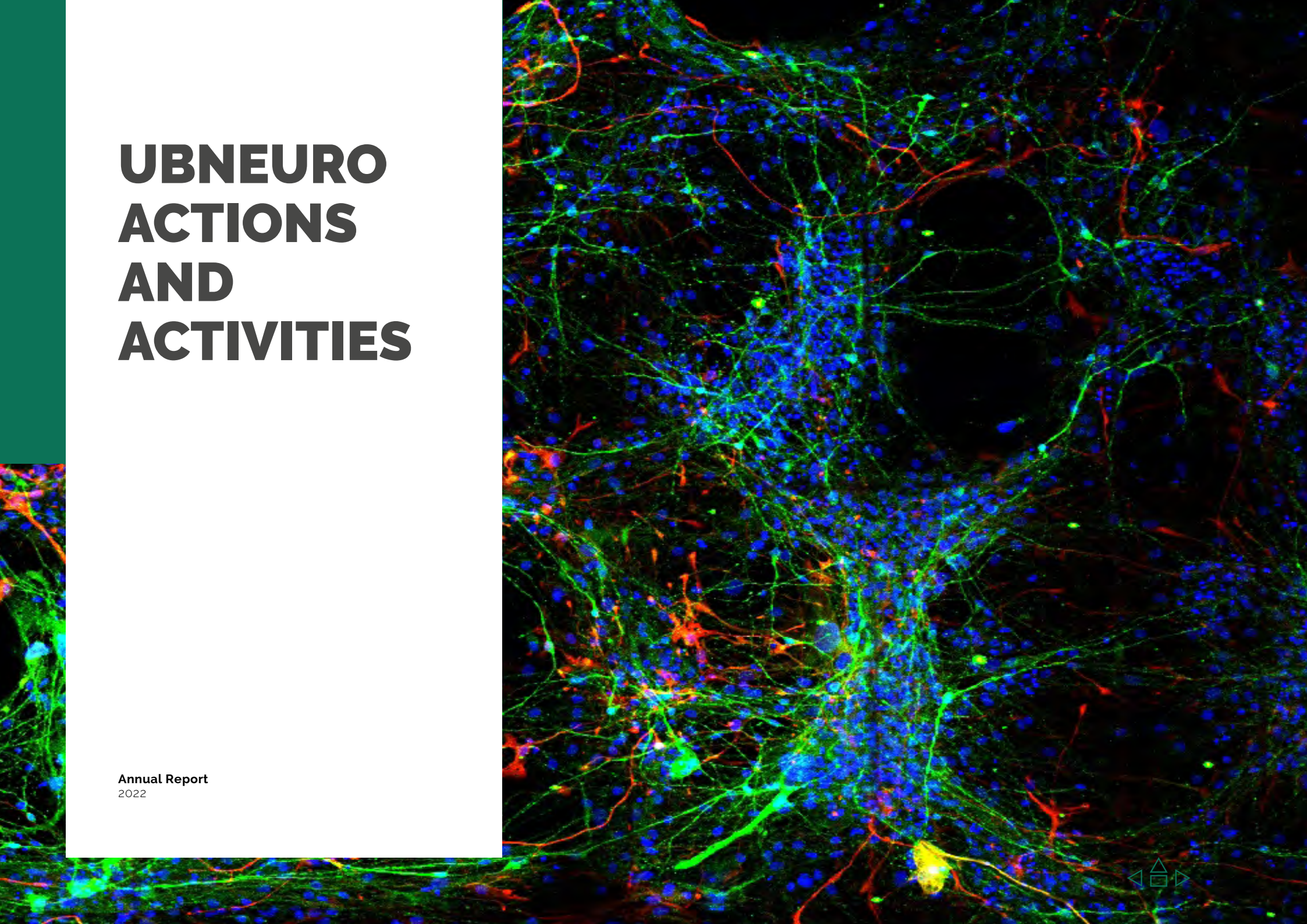
250 women | **60%**

161 men | **40%**

33	143	68	135	25	7
Group leader	**Researcher**	**PostDoc**	**PhD student**	**Technician**	**Management team**
10 women **23** men	**71** women **72** men	**43** women **25** men	**100** women **35** men	**19** women **6** men	**6** women **1** men

UBNEURO ACTIONS AND ACTIVITIES

Annual Report
2022



UBneuro actions and activities

María de Maeztu Unit of Excellence. MDM-2017-0729, CEX2021-001159_M. Ministerio de Ciencia, Innovación y Universidades. Institute of Neurosciences of the University of Barcelona.

Once again, the Institute of Neurosciences has been selected as **Maria de Maeztu Unit of Excellence** for the following 4 years. Besides the 2 M€ and the 6 PhD fellowships, this recognition guarantees that we will continue to enjoy the international prestige of the seal. We will keep promoting the scientiffic strategy that positions the Institute as world leaders in the field of neuroscience and behaviour.

The several actions perfomed during 2022 under the frame of the strategic research plan stablished since the María de Maeztu Excellence Award aim to push research at UBneuro at the frontiers of knowledge.

The main objectives of the strategic research plan of UBneuro were:

1) to **promote technological and knowledge transfer** towards improving health and well-being of our society,

2) to support **high-quality training** activities through Master and PhD Programs in Neuroscience and Cognition,

3) to support **research at the frontiers of knowledge**, which attracts highly talented personnel with a multidisciplinary approach,

4) **fostering synergies** among the different areas of brain research, moving from genetic and cellular aspects to cognition/behaviour and virtual reality, and

5) to align our research activities with the **Responsible Research and Innovation guidelines** fostered by the European Commission.

Below we briefly describe the most relevant UBneuro actions during 2022 according to these objectives.

UBneuro actions and activities

1) Technological and knowledge transfer promotion

Neuroscience has a crucial role in addressing some of the most pressing challenges we face today. One of these challenges involves bridging the gap between fundamental research and advancements in the prevention, diagnosis, and treatment of brain disorders.

At UBneuro, our primary focus is on transferring our scientific and technological knowledge to benefit society. We actively collaborate with industry partners and engage with the entrepreneurial ecosystem to establish strong connections that facilitate the exchange of knowledge. Our goal is to contribute to figuring out unresolved problems in the field of neuropsychiatric diseases.

During the year 2022, at UBneuro, we expanded our intellectual property portfolio with the addition of three new patents, for a total of 15 active patents. Furthermore, our own 6 Spin-offs have continued their successful journey.

Spin-offs

- **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

Patents

1. *Method of measuring attention.* AVCRI147. Hans Super
2. *Method for predicting the onset of extrapyramidal symptoms (EPS) induced by an antipsicotic-based treatment.* AVCRI196. Sergi Mas Herrero; Patricia Gassó Astorga; Cristina Malagelada Grau; Miquel Bernardo Arroyo; Amalia Lafuente Flo
3. *Diagnosis of a neurological disease.* AVCRI233-E. Francesc Graus; Josep Dalmau
4. *Mitochondrial markers of neurodegenerative diseases.* AVCRI247-E. Marta Barrachina Castillo; Isidre Ferrer Abizanda; Marta Blanch Lozano
5. *Motor training.* AVCRI263-E. Mavi Sánchez Vives; Mel Slater
6. *Physiological response.* AVCRI264-E. Mavi Sánchez Vives; Mel Slater; Jorge Arroyo Palacios
7. *Phenoxycyclohexylurea derivatives for use in reducing accumulation of amyloid plaques and/or hyperphosphorylation of tau protein.* UBTT0307a. Codony Gisbert, Sandra; Griñan Ferre, Cristian Gaspar; Leiva Martínez, Rosana; Pallàs Lliberia, Mercè; Vázquez Cruz, Santiago
8. *Compounds as soluble epoxide hydrolase inhibidors.* UBTT0307d. Codony Gisbert, Sandra; Griñán Ferré, Cristian Gaspar; Pallàs Lliberia, Mercè; Vázquez Cruz, Santiago
9. *Synthetic I2 imidazoline receptor ligands for prevention or treatment of human brain disorders .* UBTT0327. María Carmen Escolano Mirón; Mercè Pallàs Lliberia; Christian Gaspar Griñán Ferre; Sònia Abás Prades; Luis-Felipe Callado Hernando; Jesús A. García Sevilla
10. *Methods and pharmaceutical composition for the treatment of neurodegerative disease.* UBTT0329-E. Jean-Antoine Girault; Albert Giralt; Verónica Inés Brito; Silvia Ginés
11. *Methods and systems for gradual exposure to a fear.* UBTT0345. Slater, Melvyn
12. *Measuring and improving attention.* UBTT0410. Supèr, Hendrik Anne
13. *Combinación nutracéutica y su uso para el tratamiento de trastornos neurológicos.* UBTT0421-E. García Cazorla, Ángeles; De Oyarzábal Sanz, Alfonso Luis; Altafaj Tardio, Xavier
14. *Secreted splicing variant of klotho for treating bone disorders.* UBTT0426-E. Roig Soriano, Joan; Chillón Rodríguez, Miguel; Bosch Merino, Assumpció; Pallàs Lliberia, Mercè; Griñán Ferré, Christian Gaspar
15. *Bicelas encapsuladas en liposomas y su aplicación en sistemas diluidos.* ES2643496 T3. Maza, Alfons de la; López Serrano, Olga; Rodríguez Delgado, Gelen; Rubio, Laia; Barbosa-Barros, Lucyana; Soria, Guadalupe; Planas, Anna M.; Cocera Núñez, Mercedes

UBneuro actions and activities

Transfer Day

We are thrilled to share that our symposium, known as the "**Transfer Day**", was successfully held on April 28th. This event aimed to bring researchers closer to the practical aspects of knowledge transfer, drawing from the experiences of researchers who have founded spin-off companies. A total of 53 researchers attended this enlightening symposium, where they had the opportunity to learn from and interact with those who have embarked on the entrepreneurial path.

We believe that fostering a culture of knowledge transfer is crucial for turning research outcomes into real-world applications and impact. Through initiatives like the "Transfer Day," we aim to inspire researchers and provide them with valuable insights and resources for successful knowledge transfer.

In the last session, chaired by Katia Verger, five UBneuro spin-off were presented:

- Neurekalab, Josep M. Serra-Grabulosa & Sergi Grau-Carrión (Co-founders)
- AIGecko Technologies, Eric Verdaguer (CEO), Petia Radeva (PI)
- Braingaze, Laszlo Bax (CEO), Hans Supèr (PI)
- Mind & Identity, Montse Sánchez Povedano (CEO), Guillem Feixas (PI)
- Virtual Bodyworks, Charlie Pearmund (CEO), Mel Slater (PI)

UBneuro actions and activities

Technological platforms

We developed a program to potentiate advanced technical and scientific platforms. The eight specialized platforms were created in 2019 and have been at full throttle 2022:

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

These technological platforms contribute to positioning the Institute at the forefront of knowledge advancement, actively participating in cutting-edge research and development.

Infrastructure

We invested in cutting-edge appliances and mechanical equipment in order to promote the established technical and scientific platforms. This past year we have acquired the following implements:

- CPUs and screens for studies.
- Specialized EEG recording equipment.
  - actiCAP slim 32-channel electrode set.
  - 8-button response keypad.
- Eye Tracker for eye movement detection.
  - Machine learning-powered eye tracking glasses.
- Refrigerator for studies.
  - Laboratory Refrigerator/Freezer Combo.
- Digitalization equipment for EEG channel localization.
  - Polhemus FASTRAK Digitizer System without Sensor 1 and Source.
- Optics for organoid studies and extraction hood.
  - Optical head.
  - Biological Safety Cabinet.
- Digitizer
  - Axon Patch Clamp equipment and PClamp Software.

2) High-quality training activities

The research groups within the Institute of Neurosciences warmly welcome students enrolled in our programs to join their laboratories. Students will experience a stimulating international scientific environment, have access to cutting-edge experimental facilities, and gain valuable knowledge and skills to become research professionals.

Master students

Master students could apply to **6 Master Degrees**:

1. Master's degree Neurosciences
2. Master course of Research in Behaviour and Cognition,
3. Master's degree in General Health Psychology
4. Master's degree in Artificial Intelligence
5. Master's degree in Introduction to Mental Health Research
6. Master's degree in Cognitive Science and Language

Additionally, in 2022, we implemented a Master PhD bridge program aimed at providing opportunities for talented Master's students to transition into competitive fellowship positions. Through this program, we had the privilege of hiring 9 highly skilled Master's students. We are pleased to announce that 6 of these students successfully obtained competitive fellowships, further recognizing their exceptional abilities and potential.

This program serves as a valuable pathway for motivated individuals to continue their academic and research journey at the doctoral level. By supporting their transition from Master's studies to PhD positions, we aim to nurture and develop the next generation of exceptional researchers in our field.

UBneuro actions and activities

PhD students

PhD students can join **4 Doctoral Programs of the UB** and **MSCA-ITN programs**

1. PhD in Biomedicine,coordinated by Esther Pérez Navarro
2. PhD in Brain, Cognition and Behaviour, coordinated by Joan Lopez Moliner
3. PhD in Clinical Health Psychology, coordinated by José Gutierrez Maldonado
4. PhD in Medicine and Translational Research, coordinated by Julià González Martín
5. ASCTN-Training consoritum, coordinated by Josep M Canals

Furthermore, we awarded a prestigious María de Maeztu PhD fellowship in the area of Cognitive Neuroscience, providing a remarkable opportunity for a promising researcher to pursue their doctoral studies in this field.

Researchers

Our aim is to provide comprehensive support that equips researchers with the necessary skills, knowledge, and guidance to thrive in their careers and achieve success.

We recognize the importance of providing targeted training and support to our researchers, considering the interdisciplinary nature of our Institute. To address their specific needs, we offer **training grants** for acquiring specialized techniques and skills. In 2022, a total of 8 training grants were awarded to researchers.

In addition, we provide **personalized mentoring** to all researchers. Our dedicated UBneuro members offer one-on-one guidance and support, assistint other researchers with their career paths and various applications. Mentoring sessions have covered prestigious programs like MSCA, INPhINIT, Junior Leader calls, and Caixa Health, fostering collaboration and synergy among researchers. This mentoring program has been further strengthened and consolidated this year, and you can find more details on our website.

3) Support research at the frontiers of knowledge

UBneuro had participated in the preparation and application of different Next generation EU funds, for the time being no clear results are shown and we expect to get some results in 2023, we are still working on different opportunities. In this last year of the Maria de Maeztu 2017 call several actions have been implemented, together with Contracte Programa funds.

Neuroscience Conference Series

Since June 2022, our Neuroscience Conference Series has been honored to host and feature 13 distinguished speakers who are key experts in their respective fields. These renowned speakers have shared their expertise, insights, and research findings, enriching the conference experience for attendees and fostering knowledge exchange in the neuroscience community. We are proud to bring together such esteemed experts to contribute to the advancement of neuroscience through our conference series.

Coordination of excitatory and inhibitory synapses within dendrites
21/04/2022
Corette Wierenga, PhD
Utrech University

Brain mechanisms in physiological and pathological cognitive processes
27/04/2022
Arnau Busquets Garcia, PhD
Institut Hospital del Mar d'Investigacions Mèdiques

Identifying and overcoming resistance to melanoma therapies
19/05/2022
Rizwan Haq, MD, PhD
Dana-Farber Cancer Institute

Neuroengineering solutions for restoring neuronal communication
31/05/2022
Michaela Chiappalone, PhD
Bioengineering University of Genova

Dance and Musical Groove in the Human Brain
07/06/2022
Virginia B. Penhune, PhD
Concordia University

Hemispheric specialization for speech and music: acoustical cues for two human communication systems
13/06/2022
Robert Zatorre, PhD
McGill University

Reduced mitochondrial priming drives global resistance to leukemia therapy
16/06/2022
Shruti Bhatt, PhD
National University of Singapore

The mith of aesthetic experience
27/06/2022
Martin Skov, PhD
Copenhagen University Hospital Hvidovre

UBneuro actions and activities

The right hemisphere and calculation
29/06/2022
Carlo Semenza, PhD
Università degli Studi di Padova

A partnership between sensation and longevity
01/07/2022
Hernán López-Schier, PhD
Helmholtz Zentrum München

Mecanismos del condicionamiento inmunológico en la infiltración tumoral del Glioblastoma multiforme
21/07/2022
Salvador Martínez Pérez, PhD
Universidad Miguel Hernández de Elche

Adult hippocampal neurogenesis in health and disease
14/09/2022
María Llorens-Martín, PhD
Universidad Autónoma de Madrid

Proprioceptive circuitry in Friedreich's ataxia (FRDA)
15/12/2022
Jordi Magrané, PhD
Weill Cornell Medicine

Symposium on Brain Neuroimaging Topics in Neurodegenerative disorders
19/09/2022

The contribution of Molecular imaging and newly Developed Radiotracers in Parkinson's Disease and Parkinsonisms
Antonio Strafella, PhD
University of Toronto

Carme Uribe, PhD
University of Barcelona

Anastasia Mena, MsC
University of Toronto

Sharing Brain imaging data in the Open Science era. How and Why?
Thilo van Eimeren, PhD
University of Cologne

Nanopore-derived epigenetic landscapes and reference free analysis of microbial evolution
23/09/2022
Jordi Abante Llenas, PhD
Standford University

Predictive attenuation of self-generated touch in human somatosensory cortex and cerebellum
29/09/2022
Konstantina Kilteni
Karolinska Institute

Routine outcome monitoring of psychotherapeutic change as a strategy for generating practice-based evidence
18/10/2022
Clara Paz, PhD
Universidad de Las Américas

Cognitive deficits and recovery for patients with brain tumours
21/10/2022
John Suckling, PhD
University of Cambridge

The Minds of Medieval Murderers: Reconstructing motivations and emotions involved in 14th century London homicides
24/11/2022
Manuel P. Eisner, PhD
University of Cambridge

UBneuro actions and activities

Congress and Mobility Grants

The Mobility Grants call was extended until the end of December 2022, allowing 12 researchers to benefit from this program and pay a visit to 8 diferent countries all-together (United States, United Kingdom, Belgium, Germany, Spain, Italy, France and Chile). These grants aim to support researchers in their mobility endeavors, facilitating collaborations, knowledge exchange, and the exploration of new research opportunities.

In addition, we are proud to have awarded 42 Congress Fellowships to researchers, enabling them to attend and participate in various prestigious congresses such as FENS, EACD, ICON, APPE-SEPEX, OHBM, INS, ECNP, and many more. These fellowships provide financial support for registration fees, travel, and accommodation, allowing researchers to present their work, engage with peers, and stay updated on the latest advancements in their respective fields.

These initiatives are a reflect of our commitment to fostering mobility and providing opportunities for researchers to showcase their research, build networks, and contribute to the broader scientific community.

4) Fostering synergies

International Multi-Brain Barcelona Congress

Understanding the biological bases of brain function, limiting the impact of neurodegenerative diseases and exploring the options now offered by new technologies are some of the challenges in biomedicine and public health in the 21st century that the Institute of Neurosciences of the UB (UBneuro) is tackling.

In 2022, the UBneuro successfully organized the **International Multi-Brain Barcelona Congress** with the aim of addressing the frontiers of research and scientific knowledge to decipher the complexity of human brain function from an integrative viewpoint. The congress had a dual format, with both face-to-face and online components. It took place at the Faculty of Medicine and Health Sciences of the UB on the 9th and 10th of November 2022, and the event gathered more than 250 on-site attendees while also attracting over 350 online participants. The congress was also streamed worldwide, allowing audiences from all corners of the globe to tune in.

The plenary session titled "Translation of neuroscience beyond academia" was led by the expert Michael Valenzuela, from the University of New South Wales (Australia). Among the attendants at the conference were experts such as Míriam Pérez Cruz, from the Sant Joan de Déu Research Institute, who presented on "Neurosonography and brain electrophysiology in fetal neurodevelopment." Nicolai Franzmeier, from the Ludwig Maximilian University of Munich, delivered a presentation on

"Using multimodal neuroimaging to understand Alzheimer's disease progression." Jesús Rodrigo, representing the Spanish Alzheimer's Confederation, explored the topic of "Pathological brain. Is it only about aging?" Christoph Guger, the director of G.tec. Medical Engineering, discussed "Current and future applications of brain-computer interfaces," and Xavier Boix, from the Massachusetts Institute of Technology, presented on "The Neuroscience of learning Machines."

There were also round tables, talks and poster sessions where our researchers could show their research. Furthermore, 62 posters and 9 flash talks were presented, all with a great effort and teams behind them, with a high quality of research work.

The winners in this edition were:

- **Flash talk award winner:** Natàlia Gorina-Careta, Brainlab group, UBneuro, UB, Sant Joan de Déu Research Institute, Spain, "Effects of a bilingual fetal acoustic environment on the neural sound encoding of newborns".
- **Poster award winner:** (37) Esther García-García for her work: "Lack of corticostriatal VPS13A induces hyperlocomotion and neuronal plasticity defects in a chorea acanthocytosis mouse model".

UBneuro actions and activities

In addition, two accessit prizes were awarded to the best poster:

- (33) Siham Ijjou-Kadiri for her poster on "Unraveling the anatomical basis of the neonatal frequency-following response: a combined MRI-EEG study"
- (23) Stefanie Sturm for her poster on "Neural signatures of memory gain through active exploration in an oculomotor-auditory learning task"

We had the participation of NeuroTech companies that explained the applications of the research on neuroscience from bench to bed.

We could also count with the participation of patient's advocacy representatives.

This meeting was supported by Sociedad Española de Neurociencias (SENC), CIBERNED, Ajuntament de Barcelona, Bionic, Intelimed Iberica, GTec, InBrain, Neuroelectrics, Minoryx, Tobii and Biogen.

The inaugural edition of this groundbreaking scientific summit brought together neuroscientists from around the world. It was a pioneering initiative in the realm of brain research, orchestrated by a committee from the Institute of Neurosciences of the UB (UBneuro). The committee was led by distinguished experts, including Sílvia Ginés, Jordi Alberch, and David Bartrés-Faz from the Faculty of Medicine and Health Sciences of the UB, as well as Mercè Pallàs from the Faculty of Pharmacy and Food Sciences, Petia Radeva from the Faculty of Mathematics and Computer Science, and Mel Slater from the Faculty of Psychology.

Further information (https://www.ub.edu/UBneuroCongress2022/) .

UBneuro actions and activities

SOMMa membership

The Managers Meeting of the SOMMa took place in Granada in July 2022, bringing together the Head team of Severo Ochoa and Maria de Maeztu of the Agencia Estatal de Investigación (AEI). During the meeting, crucial discussions surrounding funding management were held, addressing various challenges such as the difficulties in hiring personnel under the new law, limitations on accommodation expenses in major cities, and the need to ensure competitive fellowship salaries. These issues were of particular importance considering the Agencia's emphasis on internationalization and fostering synergies among researchers.

In November, the General Assembly of the SOMMa gathered in Barcelona, with the participation of all the Severo Ochoa and Maria de Maeztu Units. This assembly served as a platform for collective discussions and decision-making, facilitating collaboration and coordination among the participating units.

Support Scientific Activities

XII Simposio de Neurobiología 2022

The **XII Neurobiology Symposium: Towards traslational Medicine**, co-organized by Analía Bortolozzi (IIBB, CSIC-IDIBAPS), Francisco Ciruela (Institut de Neurociències, IDIBELL, Universitat de Barcelona), Joaquim Egea (Institut de Recerca Biomèdica, Universitat de Lleida), Silvia Ginés (Institut de Neurociències, Universitat de Barcelona, IDIBAPS), Josep Saura (Universitat de Barcelona, IDIBAPS) and Carles Saura (Institut de Neurociències, Universitat Autònoma de Barcelona), was the most important biennal Neuroscience research event in Catalunya with 220 participants, 50 oral presentations, 75 posters and 4 keynote speakers A

FRR Workshop

After a worldwide hiatus of in-person conferences and workshops due to the COVID-19 pandemic, we seized the opportunity to help hosting the fourth edition of the **Frequency-Following Response (FFR)** Workshop from June 8th to 10th at the University of Barcelona in Catalonia, Spain. The primary objective was to convene the FFR community and engage in discussions about the various facets that define this intriguing evoked potential. The workshop featured a diverse program, encompassing oral presentations, three plenary talks, poster sessions, and a concluding roundtable discussion. Furthermore, several researchers and experts delivered presentations, delving into both classical and novel aspects of this rapidly evolving research domain. These discussions questioned the origins and interpretations of the FFR response, and also explored emerging recording and analysis techniques.

The best poster award was given to Siham Ijjou Kadiri by her contribution entitled *Anatomical underpinning of the neonatal frequency-following response: a combined MRI-EEG study.*

Physics in Biology and Medicine 2022

We contributed to the organization of the **XXXVII Trobades Científiques de la Mediterrània** – Josep Miquel Vidal event, particularly the Physics in Biology & Medicine 2022 workshop. This workshop served as a platform for experienced experts and emerging researchers in related fields to gather and exchange views on recent advancements in areas including biophysical tools and analysis, physical biology, systems biology, medical diagnosis and treatment, as well as the role of physics in public Health. The event provided a platform for in-depth discussions on these topics

5) Responsible research and innovation actions

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 2022, 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. Two grants were awarded. Moreover, UBneuro had an active participation in OS working group from SOMMa.

Research staff at the University of Barcelona can publish in open access in journals of those publishers with a transformative agreement reached individually or through the CRUE-CSIC alliance.

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Gender actions

The Institute of Neuroscience is an institute committed to diversity, gender equality, and including the gender perspective in our research. As an institute, we aim to promote equal opportunities and a positive work environment where our researchers can find an ideal work-life balance and thrive as individuals.

Nowadays, the institute is made up of 59% women researchers. However, as is common in science, the "scissor effect" also happens and there are more group leaders mant han women. The aim is to reverse the situation and make the institute more equal at all stages of the research career.
With this purpose in mind, the Institute's objectives are the following:

1. Implement measures oriented at reaffirming women in their role as leaders: the aim is to be as gender equal as possible in all steps of the research career.
2. Correct gender bias in research: training regarding how gender bias is present in the neuroscience research field.
3. Carry through training regarding leadership from a gender-equal perspective: improve the culture at the Institute and make it more diverse and inclusive.

The aim is to implement measures and training sessions to continue this growing tendency and ensure gender equality at all levels. As for past actions, the Institute has taken active account in gender balance in decision making processes, in the gender

UBneuro actions and activities

dimension in Research and Innovation (R&I) content and gender balance in Project teams at all levels. We have worked 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 Equality Plan from the UB and guaranteeing gender balance in the decision-making network.

The Institute of Neuroscience is part of the University of Barcelona, meaning it is included in the III Equality Plan and can implement the Protocol of the University of Barcelona for preventing, detecting and taking action on situations of sexual harassment or harassment on the grounds of sex, gender identity or sexual orientation, or any other sexist or anti LBTQIA+ conduct. These documents and procedures are implemented from the Vice-rectorate for equality and gender, which delegates on the Faculty's Equality Commission. Aiming to be as involved as possible in the equality actions carried out by the University, the Institute has several representees in these commissions helping develop gender actions and represent the Institute's best interests.

While being part of these comissions, the Institute members have participated in the following activities:

1. Adaptation of toilets to facilitate the use of the menstrual cup: modification of toilets with a shower connected to the cistern in order to be able to clean the glass in the faculties.
2. Trans visibility day at the faculty of Psychology: On the occasion of the day of trans visibility, the Xenia project organized, at the Faculty of Psychology, the viewing and subsequent debate around the film "Paris is Burning. A walk through the Ballroom culture".
3. International Women's Day: in several faculties and from both the commissions and the equality vice-rectorate activities such as the viewing of different documentaries or meetings where women could come together and share their views on equality in their fields.
4. International Day of Women and Girls in Science: like the 8M, several faculties, like pharmacy, hosted activities such as a theater play with a debate or hosting the visit of teenage girls in the laboratories.

Furthermore, one of the main gender actions done in 2022 is the hiring of a gender and equality officer, meaning some specific actions can be designed and implemented in the future. In conclusion, the institute is growing towards an equal in all research career sateges tendency and its members are participating in different actions and activities that make our Institute and University a more equal and diverse space.

Outreach

NeuroArt

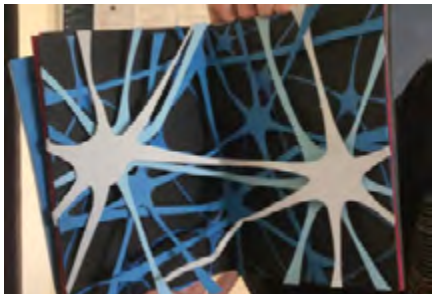
The NeuroArt 21-22 edition garnered tremendous interest and participation, with over 1,400 students registered from 23 different educational centers. This overwhelming response highlights the enthusiasm and engagement of students in exploring the intersection of neuroscience and art.

The "NeuroArt" Gala was event held in March 2022 at CCCB, with over a 100 attendees from 10 schools.

We are proud to have provided a platform for students to showcase their artistic talents and express their unique perspectives on the fascinating world of neuroscience. The NeuroArt Gala serves as an inspiring celebration of creativity, scientific curiosity, and the vibrant fusion of art and science. of Barcelona, Museum of Contemporary Art of Barcelona, CosmoCaixa, Fundació la Caixa, Pasqual Maragall Foundation, Edinburgh University and Facebook VR, and we are in the process of establishing new collaborations with other institutions such as Novartis.

The awarded works of art were:

Most Popular | Qui Sóc?
Escola Canigó represented dissociative disorder, which occurs in those people who have more than one personality. They did this through the case of Billy Milligan, who was studied and they observed that he adopted up to 24 different personalities.



Most Creative | Déjà-vu!
Col·legi Sant Josep portrayed Déjà vu, also known as paramnesia, wich makes the subject feel like they are experiencing something familiar but, at the same time, it feels strange to them. In general, despite people's beliefs, the supposed previous experience is attributed to dreamlike creations.

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Best Oral Presentation | La percepció emocional de la vida
Collegi Jesús Maria Claudina depicted an scenario where we find a mask behind the curtain, surrounded by images of emotional states of life as seen through its eyes. Handmade flowers are the color of feelings, and candies represent the neurotransmitters involved. The colorful roulette and lanterns represent the nerve impulses stimulated by these neurotransmitters. As the roulette spins, the eyes of the mask display the color of a specific mood associated with each neurotransmitter. It's because life is always colored by how we perceive it.

Best Scientific Concept | El túnel de les identitats!
Escola Pia Granollers aims to exemplify Dissociative Identity Disorder (DID). In the play, the dominant color is black because DID originates from traumatic experiences. The brain-shaped lantern illuminates five drawings that represent the different identities of the person.

Besides que presentations, the schools also participated in a Cine-forum debate. This activity consisted in visualizing short films provided by the Brain Film Festival on themes about mental health, afterwards they did an opened discussion with researchers from our Institute where the students could talk about their doubts and concerns. The discussion was guided by Alba Ortega, José Valenzuela and Esther Pérez

You can check all the videos of the artworks of this year in our Youtube channel.

We want to thank all the volunteers that helped in the organisation of this event. We also want to thank the CCCB, the Pascual Maragall Fundation, La Caixa Foundation and the Brain Film Fest for sponsoring the NeuroArt Gala of this year.

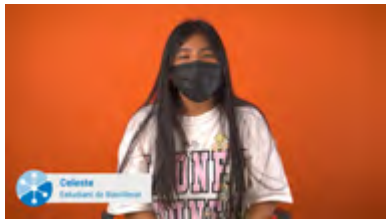
UBneuro actions and activities

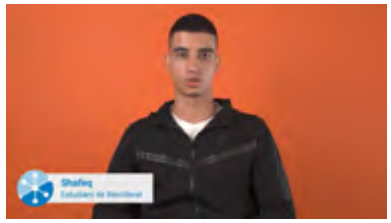
Tres Pilars de la Recerca al Cervell

The **"3 Pilars del Cervell"** offers an informative and accessible platform to learn about the Institute's researchers and their valuable scientific endeavors, through short videos focused on answering speciffic qüestions provided by students from around Catalonia.

These vídeos are available for free at ou YouTube channel @ UBneuroscience, and got almost 2000 views.

Playlist:
https://www.youtube.com/playlist?list=PLk30SkIhJt5IknFt512ZOWFpqiZas6lV1

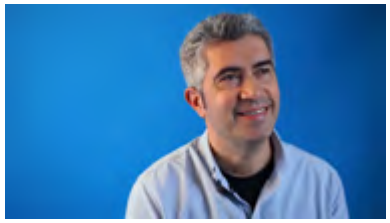




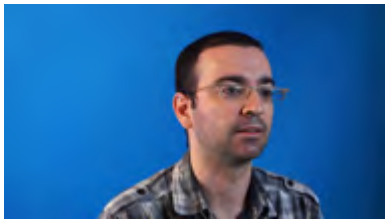
Meet the Brains

"Meet the Brains" is a captivating series of videos presented by the Institute of Neurosciences. This series introduces viewers to the talented researchers of the institute and provides a glimpse into their impactful research and its relevance to society. Through engaging storytelling, each video highlights the researchers' work, shedding light on their contributions to the field of neuroscience.

Maria Mataró, Healthy aging and cerebrovascular disease



David Bartrés, Brain health and Neuromodulation



Daniel del Toro, In vivo reprogramming during cortex development

Silvia Gines, Neuron and glia crosstalk in Huntington's disease

Playlist:
https://www.youtube.com/playlist?list=PLk30SkIhJt5Kv8c7Yuzqh0r78hBr2mAaL

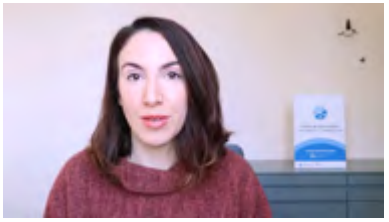
UBneuro actions and activities

Cerebrotes and Mentes Covalentes

During 2022, we obtained a grant from Ajuntament de Barcelona to develop an outreach program consisting in the sponsorship of 5 YouTube videos in the channel called **Cerebrotes** from Clara Garcia Gorro and 5 podcasts in the Mentes Covalentes broadcast podcast. According to the podcast download demographics for 2022 the **Mentes Covalentes** had more 16,000 downloads in all the world.

In the videos Clara explained, citing scientific articles published by our researchers, diferent Neuroscience concepts as Alzheimer's disease, Neurotechnology, Musical vs food pleasure, bipolar disorders and the amygdala.The podcasts were from citing articles and commenting on the research done by our institute. Clara also interviewed three of our researchers: Christian Griñán, David Bartrés and Lluis Fuentemilla.

Playlist:
https://www.youtube.com/@Cerebrotes



Mentes Covalentes

100tífiques

In the 2022 edition of the **100tifiques** program, we are proud to highlight the participation of nine of our esteemed researchers. The 100tifiques program recognizes and celebrates the contributions of scientists from various disciplines. Their involvement in the program is a testament to their dedication and expertise in their respective fields. We congratulate these researchers for their outstanding achievements and for being recognized as influential contributors to the scientific community through the 100tifiques program.

UBneuro actions and activities

Cajalidades

"Cajalidades" is a delightful addition to the "Cerebro(s)" exhibition at CCCB (Centre de Cultura Contemporània de Barcelona) during the 12th and 26th of November 2022. It's an enriching experience for both young minds and adults alike. Esteemed organizers Esther Gratacós from the Institute of Neuroscience (UBneuro) and Sandra Rossi Ferrer have curated this show and workshop that introduces us to the life of Santiago Ramón y Cajal, the father of modern neuroscience, allowing us to explore his human, scientific, and artistic legacy. It's a workshop focused on Cajal's discoveries and how to create neuron-like shapes using natural dyes.

Media presence

In 2022 we reached more than 30,500 visits to our **website**. Our website is visited from all over the world, with 81% of views from Europe, 11% from America, 7,5% from Asia, and 0,5% from the rest of the world, which shows the international impact of our communications. In addition.

Moreover, we achieved the sum of 3,340 followers on **Twitter** (opened in May 2018). We have 330 subscribers to our **Youtube** channel (created in April 2020) and we count with more than 72,614 visualizations. From mid-year 2022 the **LinkedIn** channel has been reinforced with more publications of our activities and available vacancies, there was an increase of more than 200 followers since the beginning of actions reaching the 833 followers at the end of the year.

http://www.neurociencies.ub.edu/

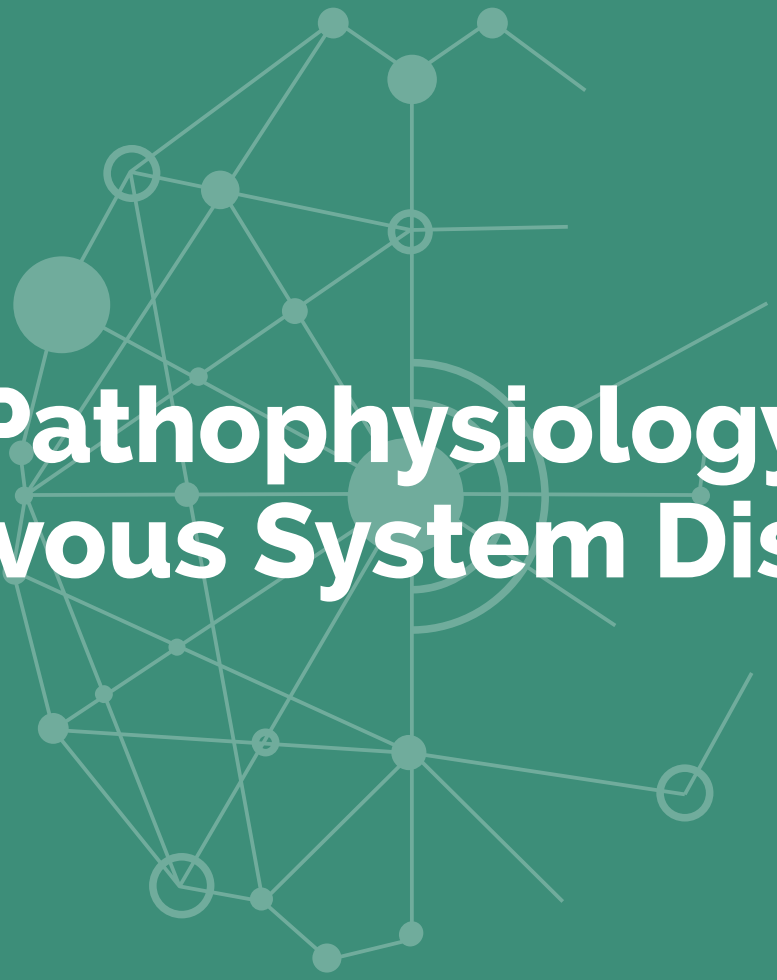
Institute of Neurosciences of the University of Barcelona

UBneuroscience

Institute of Neurosciences UB

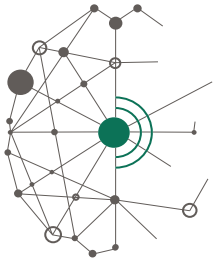
RESEARCH

Annual Report
2022



Pathophysiology of Nervous System Diseases

Annual Report
2022



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.

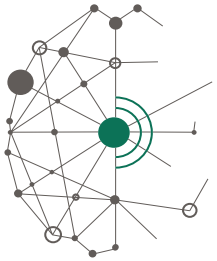
Neurological and psychiatric disorders can disrupt molecular pathways, synapses, neuronal andglial subpopulations, and local circuits in specific brain regions, as well as higher-order neural networks. Therefore, research must range from the study of large-scale brain network alterations to the microscopic 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.

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

Irene Sanchez, Raquel Larramona Arcas, Guillem Rique Pujol, Paula Tena Morraja.

Highlighted projects

- **Modulació de la senyalització retrògrada mitocondrial com a tractament de la síndrome de Leigh.** Fundació La Marató de TV3. 415/C/2020. Francesc X. Soriano
- **Vesícules de centro denso en neuronas y astrocitos: mecanismos de exocitosis y su potencial uso como biomarcadores de neurodegeneración.** Ministerio de Ciencia, Innovación y Universidades. PID2019-107738RB-I00. Fernando Aguado
- **Estudio del papel de Mfn2 en la regulación de programas transcriptionales inducidos por la actividad sináptica.** Ministerio de Ciencia, Innovación y Universidades. PID2020-119322GB-I00. Francesc X. Soriano
- **ER-mitochondria contacts in neurodegeneration. Looking for a novel therapeutic approach.** Ministerio de Ciencia, Velux Stiftung. Project number 1262. Francesc X. Soriano

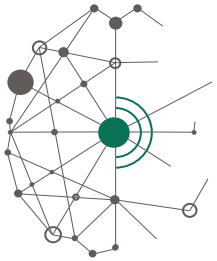
Selected publications

- Antón-Galindo, E., Dalla Vecchia, E., Orlandi, J. G., Castro, G., Gualda, E. J., Young, A. M. J., Guasch-Piqueras, M., Arenas, C., Herrera-Úbeda, C., Garcia-Fernàndez, J., Aguado, F., Loza-Alvarez, P., Cormand, B., Norton, W. H. J., & Fernàndez-Castillo, N. (2022). Deficiency of the ywhaz gene, involved in neurodevelopmental disorders, alters brain activity and behaviour in zebrafish. Molecular Psychiatry, 27(9), 3739–3748. https://doi.org/10.1038/s41380-022-01577-9
- Lennol, M. P., Sánchez-Domínguez, I., Cuchillo-Ibañez, I., Camporesi, E., Brinkmalm, G., Alcolea, D., Fortea, J., Lleó, A., Soria, G., Aguado, F., Zetterberg, H., Blennow, K., & Sáez-Valero, J. (2022). Apolipoprotein E imbalance in the cerebrospinal fluid of Alzheimer's disease patients. Alzheimer's Research & Therapy, 14(1), 161. https://doi.org/10.1186/s13195-022-01108-2
- Torres-Cano, A., Portella-Fortuny, R., Müller-Sánchez, C., Porras-Marfil, S., Ramiro-Pareta, M., Chau, Y.-Y., Reina, M., Soriano, F. X., & Martínez-Estrada, O. M. (2022). Deletion of Wt1 during early gonadogenesis leads to differences of sex development in male and female adult mice. PLOS Genetics, 18(6), e1010240. https://doi.org/10.1371/journal.pgen.1010240

Thesis

- **Secretory and synaptic proteins in brain and cerebrospinal fluid in normal and alzheimer's disease animal models.** Irene Sánchez Domínguez. Supervisor: Fernando Aguado Tomas.

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

Mireia Borrajo, Alberto Maroto, Aida Palou, Xavier Vallve.

Highlighted projects

- **Bases Cel·lulars i Moleculars dels Trastorns Sensorials.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR00368
- **A patient centered research: awareness of patients needs, clinical phenotyping and molecular parthenogenesis in Neurofibromatosis type 2.** Fundació La Marató de TV3. 126/C/2020
- **Adaptación de la retina a la luz e identificación de dianas terapéuticas para las cegueras hereditarias: IMPDH1 y metabolismo energético.** Ministerio de Ciencia e Innovación (MICINN). PID2020-115431RB-I00
- **Nuevos mecanismos moleculares en el daño vestibular crónico.** Ministerio de Ciencia e Innovación (MICINN). PID2021-124678OB-I00
- 1 confidential agreement

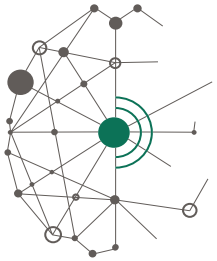
Selected publications

- Barrallo-Gimeno, A., & Llorens, J. (2022). Hair cell toxicology: With the help of a little fish. Frontiers in Cell and Developmental Biology, 10. https://doi.org/10.3389/fcell.2022.1085225

Thesis

- **Evaluación funcional y daño progressivo en el sistema vestibular.** Alberto Maroto Ferrer. Supervisor: Jordi Llorens Baucells.

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, Antoni Parcerisas, Fausto Alexander Ulloa, Jesus Mariano Ureña, Yasmina Manso, Lluis Pujadas, Oriol Ros, Tiziana Cortrufo, Katherine Herrera, Alba Elias i Tersa.

Highlighted projects

- **Enfermedades neurodegenerativas.** Ministerio de Sanidad y Consumo. CB06/05/0098. Eduardo Soriano.

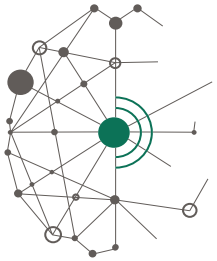
Selected publications

- Dávila-Bouziguet, E., Casòliba-Melich, A., Targa-Fabra, G., Galera-López, L., Ozaita, A., Maldonado, R., Ávila, J., Delgado-García, J. M., Gruart, A., Soriano, E., & Pascual, M. (2022). Functional protection in J20/VLW mice: a model of non-demented with Alzheimer's disease neuropathology. Brain, 145(2), 729–743. https://doi.org/10.1093/brain/awab319
- Gavaldà-Navarro, A., Mirra, S., Manso, Y., Sánchez-Infantes, D., Giralt, M., Soriano, E., & Villarroya, F. (2022c). The armadillo-repeat containing X-linked protein 3, ARMCX3, is a negative regulator of the browning of adipose tissue associated with obesity. International Journal of Obesity, 46(9), 1652–1661. https://doi.org/10.1038/s41366-022-01169-1
- 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., Marques-Bonet, T., Casals, F., & Soriano, E. (2022). Somatic Mutations Detected in Parkinson Disease Could Affect Genes With a Role in Synaptic and Neuronal Processes. Frontiers in Aging, 3. https://doi.org/10.3389/fragi.2022.851039
- Ortega-Gascó, A., Parcerisas, A., Hino, K., Herranz-Pérez, V., Ulloa, F., Elias-Tersa, A., Bosch, M., García-Verdugo, J. M., Simó, S., Pujadas, L., & Soriano, E. (n.d.). Regulation of adult neurogenesis and neuronal differentiation by Neural Cell Adhesion Molecule 2 (NCAM2). https://doi.org/10.1101/2022.02.03.478938
- Vílchez-Acosta, A., Manso, Y., Cárdenas, A., Elias-Tersa, A., Martínez-Losa, M., Pascual, M., Álvarez-Dolado, M., Nairn, A. C., Borrell, V., & Soriano, E. (2022). Specific contribution of Reelin expressed by Cajal–Retzius cells or GABAergic interneurons to cortical lamination. Proceedings of the National Academy of Sciences, 119(37). https://doi.org/10.1073/pnas.2120079119

Thesis

- **Characterization of a new animal model of Alzheimer's disease: relevance of Tau phosphorylation in hippocampal interneurons.** Eva Dávila Bouziguet. Supervisor: Marta Pascual Sánchez.

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

JONATAN DORCA-ARÉVALO:
Neurobiologia Cel·lular i Molecular

BEATRICE TERNI:
Neurobiologia Cel·lular i Molecular

Members

Pablo Martinez San-Segundo, Marta Casas, Celia Velasco, Francisco José López Murcia.

Highlighted projects

- **Neurobiologia Cel·Lular i Molecular.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR01075. Artur Llobet
- **La toxina épsilon de Clostridium pefringens: Mecanismo de acción y su relación con un efecto desmielinizante mediante la formación de vesículas extracelulares.** Ministerio de Ciencia, Innovación y Universidades. PID2021-126677NB-I00. Juan Blasi
- **Identificación de nuevos mecanismos presinápticos usados para aumentar la fuerza sináptica y compensar disfunciones del sistema nervioso.** Ministerio de Ciencia, Innovación y Universidades. PID2021-124536NB-I00. Artur Llobet

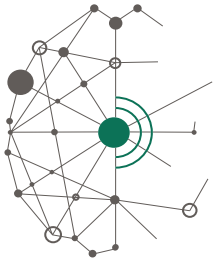
Selected publications

- Dorca-Arévalo, J., Gómez de Aranda, I., & Blasi, J. (2022). New Mutants of Epsilon Toxin from Clostridium perfringens with an Altered Receptor-Binding Site and Cell-Type Specificity. Toxins, 14(4), 288. https://doi.org/10.3390/toxins14040288
- Gao, L., Meiring, J. C. M., Varady, A., Ruider, I. E., Heise, C., Wranik, M., Velasco, C. D., Taylor, J. A., Terni, B., Weinert, T., Standfuss, J., Cabernard, C. C., Llobet, A., Steinmetz, M. O., Bausch, A. R., Distel, M., Thorn-Seshold, J., Akhmanova, A., & Thorn-Seshold, O. (2022). In Vivo Photocontrol of Microtubule Dynamics and Integrity, Migration and Mitosis, by the Potent GFP-Imaging-Compatible Photoswitchable Reagents SBTubA4P and SBTub2M. Journal of the American Chemical Society, 144(12), 5614–5628. https://doi.org/10.1021/jacs.2c01020

Thesis

- **Synaptic transmission in autaptic circuits: presynaptic homeostatic plasticity and microtubule Dynamics.** Cecilia Velasco Domínguez. Supervisor: Artur Llobet Berenguer.

Molecular and cellular neurobiotechnology



Pathophysiology of Nervous System Diseases

Principal investigators

JOSE ANTONIO DEL RIO
Molecular and cellular neurobiotechnology

Members

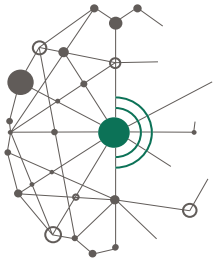
Rosalina Gavin, Vanesa Gil, Arnau Hervera, Sara Martinez, Ana Lopez-Mengual, Francina Mesquida, Julia Sala, Karen Wells, Miriam Segura.

Highlighted projects

- **Modulation of Tau seeding and pathology in tauopathies by BBB-nanocarriers, epitope selective vaccination and ectoPrP Tau receptor bodies (STOPTauPATHOL).** Fundació Caixa de Pensions 'La Caixa': HR18-00452. Jose Antonio del Rio
- **Deciphering the roles of the cellular prion protein (PrPC) and GPR133 in neural development and neurodegeneration (tauopathies) (PRPCDEVTAU).** Ministerio de Ciencia e Innovación (MICINN). PID2021-123714OB-I00. Jose Antonio del Rio
- **Molecular and cellular neurotechnology.** Ministerio de Sanidad y Consumo . CB06/05/1115. Jose Antonio del Rio
- **Gamma-péptidos basados en cis-4-amino L-prolina como terapia farmacológica en la enfermedad de Alzheimer (ALZHEPEP).** Ministerio de Ciencia e Innovación. PDC2022-133268-I00. Jose Antonio del Rio
- **Métodos in vitro alternativos humanos para el estudio de enfermedades neurodegenerativas (AlterNED).** Ministerio de Ciencia e Innovación. PLEC2022-009401. Jose Antonio del Rio
- 1 confidential agreement

Selected publications

- Andrés-Benito, P., Carmona, M., Jordán, M., Fernández-Irigoyen, J., Santamaría, E., del Rio, J. A., & Ferrer, I. (2022). Host Tau Genotype Specifically Designs and Regulates Tau Seeding and Spreading and Host Tau Transformation Following Intrahippocampal Injection of Identical Tau AD Inoculum. International Journal of Molecular Sciences, 23(2), 718. https://doi.org/10.3390/ijms23020718
- Ferrer, I., Andrés-Benito, P., Ausín, K., Cartas-Cejudo, P., Lachén-Montes, M., del Rio, J. A., Fernández-Irigoyen, J., & Santamaría, E. (2022a). Dysregulated Brain Protein Phosphorylation Linked to Increased Human Tau Expression in the hTau Transgenic Mouse Model. International Journal of Molecular Sciences, 23(12), 6427. https://doi.org/10.3390/ijms23126427
- Ferrer, I., Andrés-Benito, P., Ausín, K., Cartas-Cejudo, P., Lachén-Montes, M., del Rio, J. A., Fernández-Irigoyen, J., & Santamaría, E. (2022b). Dysregulated Protein Phosphorylation in a Mouse Model of FTLD-Tau. Journal of Neuropathology & Experimental Neurology, 81(9), 696–706. https://doi.org/10.1093/jnen/nlac062
- Ferrer, I., Andrés-Benito, P., Carmona, M., & del Rio, J. A. (2022). Common and Specific Marks of Different Tau Strains Following Intra-Hippocampal Injection of AD, PiD, and GGT Inoculum in hTau Transgenic Mice. International Journal of Molecular Sciences, 23(24), 15940. https://doi.org/10.3390/ijms232415940
- Ferrer, I., Andrés-Benito, P., Garcia-Esparcia, P., López-Gonzalez, I., Valiente, D., Jordán-Pirla, M., Carmona, M., Sala-Jarque, J., Gil, V., & del Rio, J. A. (2022). Differences in Tau Seeding in Newborn and Adult Wild-Type Mice. International Journal of Molecular Sciences, 23(9), 4789. https://doi.org/10.3390/ijms23094789
- Hutson, T. H., & Hervera, A. (2022). Editorial: Biochemical and genetic tools to investigate the underlying mechanisms and treatment of sensorimotor pathologies. Frontiers in Molecular Neuroscience, 15. https://doi.org/10.3389/fnmol.2022.1041458



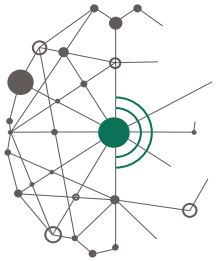
Pathophysiology of Nervous System Diseases

- López-Mengual, A., Segura-Feliu, M., Sunyer, R., Sanz-Fraile, H., Otero, J., Mesquida-Veny, F., Gil, V., Hervera, A., Ferrer, I., Soriano, J., Trepat, X., Farré, R., Navajas, D., & del Río, J. A. (2022). Involvement of Mechanical Cues in the Migration of Cajal-Retzius Cells in the Marginal Zone During Neocortical Development. Frontiers in Cell and Developmental Biology, 10. https://doi.org/10.3389/fcell.2022.886110
- Matamoros-Angles, A., Hervera, A., Soriano, J., Martí, E., Carulla, P., Llorens, F., Nuvolone, M., Aguzzi, A., Ferrer, I., Gruart, A., Delgado-García, J. M., & Del Río, J. A. (2022). Analysis of co-isogenic prion protein deficient mice reveals behavioral deficits, learning impairment, and enhanced hippocampal excitability. BMC Biology, 20(1), 17. https://doi.org/10.1186/s12915-021-01203-0
- Mesquida-Veny, F., Martínez-Torres, S., Del Río, J. A., & Hervera, A. (2022). Genetic control of neuronal activity enhances axonal growth only on permissive substrates. Molecular Medicine, 28(1), 97. https://doi.org/10.1186/s10020-022-00524-2
- Mesquida-Veny, F., Martínez-Torres, S., Del Rio, J. A., & Hervera, A. (2022). Nociception-Dependent CCL21 Induces Dorsal Root Ganglia Axonal Growth via CCR7-ERK Activation. Frontiers in Immunology, 13. https://doi.org/10.3389/fimmu.2022.880647
- Pellegrini, P., Hervera, A., Varea, O., Brewer, M. K., López-Soldado, I., Guitart, A., Aguilera, M., Prats, N., del Río, J. A., Guinovart, J. J., & Duran, J. (2022). Lack of p62 Impairs Glycogen Aggregation and Exacerbates Pathology in a Mouse Model of Myoclonic Epilepsy of Lafora. Molecular Neurobiology, 59(2), 1214–1229. https://doi.org/10.1007/s12035-021-02682-6
- Sala-Jarque, J., García-Lara, E., Carreras-Domínguez, P., Zhou, C., Rabaneda-Lombarte, N., Solà, C., M Vidal-Taboada, J., Feiler, A., Abrahamsson, N., N Kozlova, E., & Saura, J. (2022). Mesoporous silica particles are phagocytosed by microglia and induce a mild inflammatory response in vitro. Nanomedicine, 17(15), 1077–1094. https://doi.org/10.2217/nnm-2022-0026
- Wells-Cembrano, K., Sala-Jarque, J., & del Rio, J. A. (2022). Development of a simple and versatile in vitro method for production, stimulation, and analysis of bioengineered muscle. PLOS ONE, 17(8), e0272610. https://doi.org/10.1371/journal.pone.0272610

Thesis

- **Factores físicos y moleculares implicados en la migración celular y en el desarrollo de la corteza cerebral.** Ana López-Mengual. Supervisor: Jose Antonio del Rio
- **Activity-dependent mechanisms of axonal growth.** Francina Mesquida Veny Supervisor: Jose Antonio del Rio

Molecular bases of rare brain diseases and channelopathies



Pathophysiology of Nervous System Diseases

Principal investigators

RAUL ESTEVEZ
Molecular bases of rare brain diseases and channelopathies

Members

Hector Gaitan, Marta Alonso, Laura Ferigle, Adria Pla, Efren Xicoy.

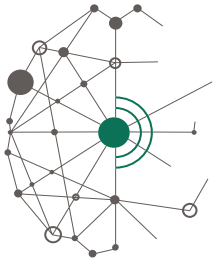
Highlighted projects

- **Conocimientos estructurales y moleculares de las proteínas de MLC que regulan canales de cloruro astrocitarios: Búsqueda de terapias para MLC y epilèpsia.** Ministerio de Ciencia, Innovación y Universidades. PID2021-126246NB-I00. Raul Estevez
- 1 Confidential agreement

Selected publications

- Formaggio, F., Fazzina, M., Estévez, R., Caprini, M., & Ferroni, S. (2022). Dynamic expression of homeostatic ion channels in differentiated cortical astrocytes in vitro. Pflügers Archiv - European Journal of Physiology, 474(2), 243–260. https://doi.org/10.1007/s00424-021-02627-x
- Pla-Casillanis, A., Ferigle, L., Alonso-Gardón, M., Xicoy-Espaulella, E., Errasti-Murugarren, E., Marazziti, D., & Estévez, R. (2022). GPR37 Receptors and Megalencephalic Leukoencephalopathy with Subcortical Cysts. International Journal of Molecular Sciences, 23(10), 5528. https://doi.org/10.3390/ijms23105528
- Wang, B. B., Xu, H., Isenmann, S., Huang, C., Elorza-Vidal, X., Rychkov, G. Y., Estévez, R., Schittenhelm, R. B., Lukacs, G. L., & Apaja, P. M. (2022). Ubr1-induced selective endophagy/autophagy protects against the endosomal and Ca2+-induced proteostasis disease stress. Cellular and Molecular Life Sciences, 79(3), 167. https://doi.org/10.1007/s00018-022-04191-8

Neurodevelopmental disorders



Pathophysiology of Nervous System Diseases

Principal investigators

SANDRA ACOSTA
Functional neurogenomics

SOLEDAD ALCANTARA
Biomimetic strategies for driving neural development and regeneration

ALBERTO ORTEGA
Human modeling of neurological disorders

Members

Andrea Marti, Jose Pablo Soriano, Isabel Turpin, Gisele Aguiar, Laura Garcia-Gonzalez.

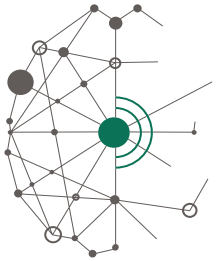
Highlighted projects

- **Descifrando la patogénesis del Síndrome de Dravet: del genoma a la función neuronal mediante el uso de organoides cerebrales.** Ministerio de Ciencia, Innovación y Universidades. PID2021-128208NB-I00. Sandra Acosta
- **Neurodegeneration triggered by SARS-CoV-2: brain organoids as an analytical and predictive model (NeuroCOVID).** Fundació La Marató de TV3. 772/U/2021. Sandra Acosta
- **Caracterización proteomica de los microambientes de la corteza cerebral humana durante el desarrollo: implicaciones evolutivas y clínicas.** Ministerio de Ciencia e Innovación (MICINN). PID2020-114407RA-I00. Alberto Ortega
- **Modelado del control ambiental de la diferenciación de los progenitores neurales: un punto de encuentro entre los trastornos del desarrollo y la regeneración neural.** Ministerio de Ciencia e Innovación (MICINN). PID2020-115748RB-I00. Soledad Alcantara
- **Defining the spinal cord matrisome to design more effective ALS models and treatments.** Association Française contre les Myopathies (AFM). #23648. Alberto Ortega
- **Boosting personalized medicine in neurological disorders with patient-derived brain organoids and artificial intelligence (CI20-00002) (CAIXAIMPULSE VALIDATE).** Fundació Caixa de Pensions 'La Caixa'. CI20-00002. Sandra Acosta
- **Molecular analysis of the non-cell autonomous effects in Down syndrome cortex using mouse ESC-derived brain organoids.** Fondation Jerome Lejeune. 1917. Sandra Acosta
- **Defining the ALS spinal cord matrisome to develop more translational ALS in vitro models and treatments.** IDIBELL. Neurobell Program. Alberto Ortega
- **Ajut per a la intensificació de les activitats de transferència per al curs 2022-23. Modalitat A.** Universitat de Barcelona . Sandra Acosta
- **Fisiologia i patologia de la relació funcional glia-neurona.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR00344. Soledad Alcantara

Selected publications

- Gleixner, A. M., Verdone, B. M., Otte, C. G., Anderson, E. N., Ramesh, N., Shapiro, O. R., Gale, J. R., Mauna, J. C., Mann, J. R., Copley, K. E., Daley, E. L., Ortega, J. A., Cicardi, M. E., Kiskinis, E., Kofler, J., Pandey, U. B., Trotti, D., & Donnelly, C. J. (2022). NUP62 localizes to ALS/FTLD pathological assemblies and contributes to TDP-43 insolubility. Nature Communications, 13(1), 3380. https://doi.org/10.1038/s41467-022-31098-6

Neuropharmacology, neuroepigenetics, neurodegeneration and ageing



Pathophysiology of Nervous System Diseases

Principal investigators

JAUME DEL VALLE
Neuroinmune interactions at CNS interfaces

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

GEMMA NAVARRO
Neuropharmacology in drug addiction and neurodegeneration

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

ANA GUERRERO
Cellular senescence in ageing and Alzheimer´s Disease

Members

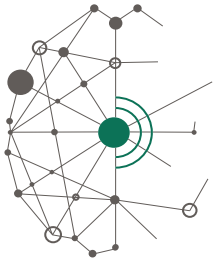
Anna Maria Canudas, Aina Bellver. Julia Jarne-Ferrer, Jaume Lillo, Alejandro Lillo, Catalina Perez, Iu Raïch, Marta Riba, Rafael Rivas, Clara Romera, Irene Reyes-Resinas, Joan Biel Rebassa, Raquel Alsina, Teresa Taboada, Alba Irisarri.

Highlighted projects

- **Grup UABUB de recerca en Medicina traslacional (GRUABUB21).** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR00304. Gemma Navarro
- **Optimització d'una família d'inhibidors selectius de G9a per al tractament de la malaltia d'Alzheimer. 2021 LLAV 00086.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021 LLAV 00086. Christian Griñan-Ferre
- **Modulación de la epóxido hidrolasa soluble (sEH)en cerebro y tejidos perifèricos: papel del eje intestino-cerebro en la neurodegeneración.** Ministerio de Ciencia, Innovación y Universidades. PID2019-106285RB-C21. Merce Pallas
- **Examinando los cuerpos amiláceos del cerebro humano.** Ministerio de Ciencia, Innovación y Universidades. PID2020-115475GB-I00. Carme Pelegri
- **Mecanismos de acción de los cannabinoides sobre la propagación de agentes patogénicos en amiloidopatías y sinucleinopatías.** Ministerio de Ciencia e Innovación (MICINN). PID2020-113430RB-I00. Gemma Navarro
- **Validación de un candidato first in class inhibidor de la epóxido hidrolasa soluble para el tratamiento de la enfermedad de Alzheimer. Tratamiento y evaluación cognitiva .** Ministerio de Ciencia e Innovación (MICINN). PDC2021-121096-C21. Merce Pallas
- 5 Confidential agreements

Selected publications

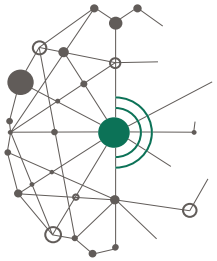
- Codony, S., Pont, C., Griñán-Ferré, C., Di Pede-Mattatelli, A., Calvó-Tusell, C., Feixas, F., Osuna, S., Jarné-Ferrer, J., Naldi, M., Bartolini, M., Loza, M. I., Brea, J., Pérez, B., Bartra, C., Sanfeliu, C., Juárez-Jiménez, J., Morisseau, C., Hammock, B. D., Pallàs, M., … Muñoz-Torrero, D. (2022). Discovery and In Vivo Proof of Concept of a Highly Potent Dual Inhibitor of Soluble Epoxide Hydrolase and Acetylcholinesterase for the Treatment of Alzheimer's Disease. Journal of Medicinal Chemistry, 65(6), 4909–4925. https://doi.org/10.1021/acs.jmedchem.1c02150
- Companys-Alemany, J., Turcu, A. L., Schneider, M., Müller, C. E., Vázquez, S., Griñán-Ferré, C., & Pallàs, M. (2022).



Pathophysiology of Nervous System Diseases

NMDA receptor antagonists reduce amyloid- deposition by modulating calpain-1 signaling and autophagy, rescuing cognitive impairment in 5XFAD mice. Cellular and Molecular Life Sciences, 79(8), 408. https://doi.org/10.1007/s00018-022-04438-4

- Companys-Alemany, J., Turcu, A. L., Vázquez, S., Pallàs, M., & Griñán-Ferré, C. (2022). Glial cell reactivity and oxidative stress prevention in Alzheimer's disease mice model by an optimized NMDA receptor antagonist. Scientific Reports, 12(1), 17908. https://doi.org/10.1038/s41598-022-22963-x
- Du Preez, A., Lefèvre-Arbogast, S., González-Domínguez, R., Houghton, V., de Lucia, C., Low, D. Y., Helmer, C., Féart, C., Delcourt, C., Proust-Lima, C., Pallàs, M., Sánchez-Pla, A., Urpi-Sardà, M., Ruigrok, S. R., Altendorfer, B., Aigner, L., Lucassen, P. J., Korosi, A., Manach, C., … Thuret, S. (2022). Impaired hippocampal neurogenesis in vitro is modulated by dietary-related endogenous factors and associated with depression in a longitudinal ageing cohort study. Molecular Psychiatry, 27(8), 3425–3440. https://doi.org/10.1038/s41380-022-01644-1
- Guerrero, A., Innes, A. J., Roux, P.-F., Buisman, S. C., Jung, J., Ortet, L., Moiseeva, V., Wagner, V., Robinson, L., Ausema, A., Potapova, A., Perdiguero, E., Weersing, E., Aarts, M., Martin, N., Wuestefeld, T., Muñoz-Cánoves, P., de Haan, G., Bischof, O., & Gil, J. (2022). 3-Deazaadenosine alleviates senescence to promote cellular fitness and cell therapy efficiency in mice. Nature Aging, 2(9), 851–866. https://doi.org/10.1038/s43587-022-00279-9
- Jarne-Ferrer, J., Griñán-Ferré, C., Bellver-Sanchis, A., Vázquez, S., Muñoz-Torrero, D., & Pallàs, M. (2022). A Combined Chronic Low-Dose Soluble Epoxide Hydrolase and Acetylcholinesterase Pharmacological Inhibition Promotes Memory Reinstatement in Alzheimer's Disease Mice Models. Pharmaceuticals, 15(8), 908. https://doi.org/10.3390/ph15080908
- Lillo, A., Marin, S., Serrano-Marín, J., Binetti, N., Navarro, G., Cascante, M., Sánchez-Navés, J., & Franco, R. (2022). Targeted Metabolomics Shows That the Level of Glutamine, Kynurenine, Acyl-Carnitines and Lysophosphatidylcholines Is Significantly Increased in the Aqueous Humor of Glaucoma Patients. Frontiers in Medicine, 9. https://doi.org/10.3389/fmed.2022.935084
- Lillo, J., Raïch, I., Silva, L., Zafra, D. A., Lillo, A., Ferreiro-Vera, C., Sánchez de Medina, V., Martínez-Orgado, J., Franco, R., & Navarro, G. (2022). Regulation of Expression of Cannabinoid CB2 and Serotonin 5HT1A Receptor Complexes by Cannabinoids in Animal Models of Hypoxia and in Oxygen/Glucose-Deprived Neurons. International Journal of Molecular Sciences, 23(17), 9695. https://doi.org/10.3390/ijms23179695
- Navarro, G., Rea, W., Quiroz, C., Moreno, E., Gomez, D., Wenthur, C. J., Casadó, V., Leggio, L., Hearing, M. C., & Ferré, S. (2022). Complexes of Ghrelin GHS-R1a, GHS-R1b, and Dopamine D 1 Receptors Localized in the Ventral Tegmental Area as Main Mediators of the Dopaminergic Effects of Ghrelin. The Journal of Neuroscience, 42(6), 940–953. https://doi.org/10.1523/JNEUROSCI.1151-21.2021
- Riba, M., Campo-Sabariz, J., Tena, I., Molina-Porcel, L., Ximelis, T., Calvo, M., Ferrer, R., Martín-Venegas, R., del Valle, J., Vilaplana, J., & Pelegrí, C. (2022). Wasteosomes (corpora amylacea) of human brain can be phagocytosed and digested by macrophages. Cell & Bioscience, 12(1), 177. https://doi.org/10.1186/s13578-022-00915-2
- Riba, M., del Valle, J., Molina-Porcel, L., Pelegrí, C., & Vilaplana, J. (2022). Wasteosomes (corpora amylacea) as a hallmark of chronic glymphatic insufficiency. Proceedings of the National Academy of Sciences, 119(48). https://doi.org/10.1073/pnas.2211326119
- RoigSoriano, J., GriñánFerré, C., EspinosaParrilla, J. F., Abraham, C. R., Bosch, A., Pallàs, M., & Chillón, M. (2022). AAVmediated expression of secreted and transmembrane Klotho isoforms



Pathophysiology of Nervous System Diseases

rescues relevant aging hallmarks in senescent SAMP8 mice. Aging Cell, 21(4). https://doi.org/10.1111/acel.13581

- Vasilopoulou, F., Bellver-Sanchis, A., Companys-Alemany, J., Jarne-Ferrer, J., Irisarri, A., Palomera-Ávalos, V., Gonzalez-Castillo, C., Ortuño-Sahagún, D., Sanfeliu, C., Pallàs, M., & Griñán-Ferré, C. (2022). Cognitive Decline and BPSD Are Concomitant with Autophagic and Synaptic Deficits Associated with G9a Alterations in Aged SAMP8 Mice. Cells, 11(16), 2603. https://doi.org/10.3390/cells11162603

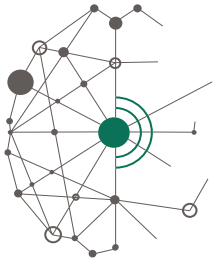
Knowledge and transfer innovation

- Phenoxycyclohexylurea derivatives for use in reducing accumulation of amyloid plaques and/or hyperphosphorylation of tau protein. UBTT0307a
- Secreted splicing variant of klotho for treating bone disorders. UBTT0426-E
- Synthetic I2 imidazoline receptor ligands for prevention or treatment of human brain disorders. UBTT0327

Thesis

- **From corpora amylacea to wasteosomes.** Marta Riba Baques. Supervisor: Carme Pelegrí Gabaldà & Jordi Vilaplana Hortensi
- **Nous antagonistes del receptor NMDA pel tractament de la malaltia d'Alzheimer: Caracterització farmacològica 'in vivo'.** Júlia Companys Alemany. Supervisor: Christian Griñán Ferré & Mercè Pallàs Lliberia

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

MERCÉ IZQUIERDO-SERRA
Synaptic function in channelophathies

Members

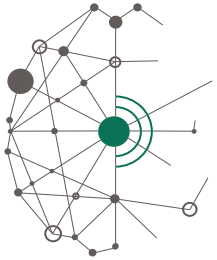
Arcadi Gual, Roberto Garcia, Silvia Locubiche, Anna Pujol, Sara Abello, Anna Priscilla Perez, Aida Castellanos, Irene Pallas.

Highlighted projects

- **Laboratori de Neurofisiologia.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR00292
- **FISIOLOGÍA DE INTERACTORES DE RECEPTORES AMPA (TARPs y CPT1C) EN NEURONAS Y GLÍA.** Ministerio de Ciencia, Innovación y Universidades. PID2020-119932GB-I00
- **Comprehensive delineation and personalised medicine of GRIN-related disorders, a rare paediatric encephalopathy.** Ministerio de Ciencia, Innovación y Universidades. PI19/00348
- **Neuronas sensoriales no peptidérgicas en la percepción de modalidades somatosensoriales específicas: mecanismos del dolor por el frío y el picor ocular.** Ministerio de Ciencia e Innovación (MICINN). PID2020-119305RB-I00
- **Papel de la microglia en la disfunción sináptica y neuronal en la enfermedad de Alzheimer.** Ministerio de Ciencia e Innovación (MICINN). PID2021-125785OA-I00
- **Descifrando el papel de la N-glicosilación en la fisiología y patofisiología de la sinapsis cerebelar.** Ministerio de Ciencia e Innovación (MICINN). PID2021-127724OA-I003 confidential agreements

Selected publications

- Dundee, J. M., Puigdellívol, M., Butler, R., Cockram, T. O. J., & Brown, G. C. (2023). <scp> P2Y 6 </scp> receptordependent microglial phagocytosis of synapses mediates synaptic and memory loss in aging. Aging Cell, 22(2). https://doi.org/10.1111/acel.13761
- Gual-Sala, A. (2022). Gobernabilidad de la evaluación del desarrollo profesional y la recertificación. ¿Cuándo llegará el consenso político? Revista de La Fundación Educación Médica, 25(1), 1. https://doi.org/10.33588/fem.251.1170
- Joubert, B., PetitPedrol, M., Planagumà, J., Mannara, F., Radosevic, M., Marsal, M., Maudes, E., GarcíaSerra, A., Aguilar, E., AndrésBilbé, A., Gasull, X., LozaAlvarez, P., Sabater, L., Rosenfeld, M. R., & Dalmau, J. (2022). Human CASPR2 Antibodies Reversibly Alter Memory and the CASPR2 Protein Complex. Annals of Neurology, 91(6), 801–813. https://doi.org/10.1002/ana.26345



Pathophysiology of Nervous System Diseases

- La Escuela de la Profesión Médica, Santander 2022. (2022). Revista de La Fundación Educación Médica, 25(4), 159. https://doi.org/10.33588/fem.254.1217
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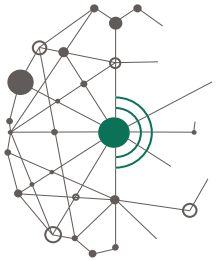
Knowledge and transfer innovation

- Combinación nutracéutica y su uso para el tratamiento de trastornos neurológicos. UBTT0421-E.

Pharmacological strategies for neuroprotection



Pathophysiology of Nervous System Diseases

Principal investigators

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

CARME AULADELL
Prevention of neuronal death by apoptosis in neurodegenerative processes

Members

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

Highlighted projects

- **Grup de Recerca en Envelliment i Neurodegeneració.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR00288
- **Estrategias terapéuticas para mejorar la resiliencia cognitiva en enfermedades neurodegenerativas.** Ministerio de Ciencia e Innovación (MICINN). PID2021-123462OB-I00
- **Enfermedades neurodegenerativas.** Ministerio de Sanidad y Consumo . CB06/05/0024
- **Enfermedades neurodegenerativas.** Ministerio de Sanidad y Consumo. PI2021/03
- **Enfermedades neurodegenerativas.** MCNN - Ministerio de Ciencia e Innovación (MICINN). PID2021-122473OA-100

Selected publications

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- Busquets, O., Carrasco, M., Espinosa-Jiménez, T., Ettcheto, M., Verdaguer, E., Auladell, C., Bullò, M., Camins, A., Pinent, M., Rodríguez-Gallego, E., & Folch, J. (2022). GSPE pre-treatment protects against long-term cafeteria diet-induced mitochondrial and inflammatory affectations in the hippocampus of rats. Nutritional Neuroscience, 25(12), 2627–2637. https://doi.org/10.1080/1028415X.2021.1995118
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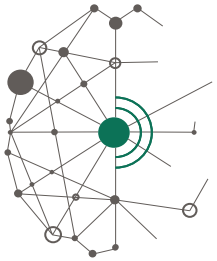
- Espinosa-Jiménez, T., Busquets, O., Cano, A., Sánchez-López, E., Verdaguer, E., Parcerisas, A., Olloquequi, J., Auladell, C., Folch, J., Wahli, W., Vázquez-Carrera, M., Camins, A., & Ettcheto, M. (2022). Peroxisomal Proliferator-Activated Receptor / Deficiency Induces Cognitive Alterations. Frontiers in Pharmacology, 13. https://doi.org/10.3389/fphar.2022.902047

Research



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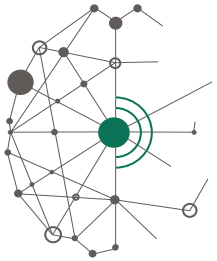
Neuropharmacology and pain



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, Kristoffer Sahlholm, Josep Argerich, Laura Gomez-Acero, Nuria Sanchez, Laura Isabel Sarasola, Salut Sanchez, Africa Flores, Paula Alvarez-Montoya, Gloria Salort, Alejandro Martin-Belmonte, Marc Lopez-Cano, Montse Flores-García.

Highlighted projects

- **Música en el tratamiento del dolor crónico para reducir el potencial de abuso de fármacos opioides.** Ministerio de Sanidad. 2021I068. Victor Fernandez-Dueñas
- **Neurofarmacologia i Dolor.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR00698. Francisco Ciruela
- **Dinámica de los agregados macromoleculares de heteroreceptores de dopamina-adenosina en esquizofrenia y trastornos neurodegenerativos.** Ministerio de Ciencia e Innovación (MICINN). PID2020-118511RB-I00. Francisco Ciruela
- **Ecto-GPR37: a potential biomarker for Parkinson's disease.** Michael J. Fox Foundation for Parkinson's Research. MJFF-001051. Francisco Ciruela
- **Vulnerabilidad a los efectos psicóticos del THC durante la adolescencia: implicación de la interacción entre los receptores CB1, A2A y D2.** Ministerio de Sanidad, Servicios Sociales e Igualdad. 2020I041. Ester Aso

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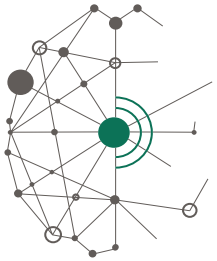
- Ferré, S., Belcher, A. M., Bonaventura, J., Quiroz, C., Sánchez-Soto, M., Casadó-Anguera, V., Cai, N.-S., Moreno, E., Boateng, C. A., Keck, T. M., Florán, B., Earley, C. J., Ciruela, F., Casadó, V., Rubinstein, M., & Volkow, N. D. (2022). Functional and pharmacological role of the dopamine D4 receptor and its polymorphic variants. Frontiers in Endocrinology, 13. https://doi.org/10.3389/fendo.2022.1014678



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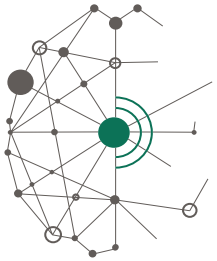
Stem cells and neurodevelopment



Pathophysiology of Nervous System Diseases

Principal investigators

JOSEP M. CANALS
Stem cells and regenerative medicine

DANIEL TORNERO
Neural stem cells and brain damage

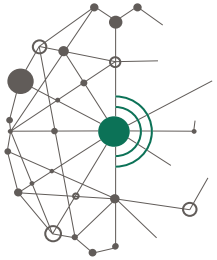
DANIEL DEL TORO
In vivo reprogramming during cortex development

Members

Phil Sanders, Georgina Bombau, Mireia Galofre, Anna Lopez, Silvia Artigas, Unai Perpiña, Felipe Chiappe, Cristina Herranz, Irene Porcar, Cristina Salado, Veronica Monforte, Cleila Introna, Francisco J. Molina, Cristina Vila, Claudia Peregrina, Sofia Zaballa, Cinta Gomis, Ainoa Arcas, Anna-Christina Haeb.

Highlighted projects

- **In vivo reprogramming to rescue alterations in Huntingtons disease.** Fundació Caixa de Pensions 'La Caixa'. HR21-00622. Josep M. Canals
- **4-Deep Brain Reconstruction.** Unió Europea. SEP-210741608. Josep M. Canals
- **Training for Advanced Stem Cell Technologies in Neurology (ASCTN-Training).** Unió Europea. 813851. Josep M. Canals
- **Métodos in vitro alternativos humanos para el estudio de enfermedades neurodegenerativas.** Ministerio de Ciencia e Innovación. PLEC2022-009401. Josep M. Canals
- **Aproximación terapeutica para la enfermedad de Huntington basada en el trasplante de progenitores neuronales.** Ministerio de Ciencia e Innovación (MICINN). PID2021-126961OB-I00. Josep M. Canals
- **Mejora de la integración funcional de progenitores neurales derivados de hiPSC trasplantados tras ictus cerebral.** Ministerio de Ciencia e Innovación (MICINN). PID2020-118120RB-I00. Daniel Tornero
- **Redes de Investigación Cooperativa Orientadas a Resultados en Salud 2021: RICORS TERAV.** Instituto de Salud Carlos III. RD21/0017/0020. Josep M. Canals
- **Validación de aproximaciones de terapia celular para enfermedades neurodegenerativas.** Ministerio de Ciencia e Innovación. PDC2022-133783-I00. Josep M. Canals
- **Impacto del plegamiento cortical en habilidades cognitivas mediante reprogramación in vivo.** Ministerio de Ciencia e Innovación (MICINN). PID2021-124852OB-I00. Daniel del Toro
- **Nou protoCOL d'aïllament de MONÒcits per aplicacions terapèutiques al costat del pacient (MONOCOL). INNOTEC. ACE034/21/000039.** ACCIÓ. Agència de Suport a l'Empresa Catalana. ACE034/21/000039. Josep M. Canals
- **Doctorat industrial 'Investigació de tècniques per l'obtenció i activació de cèl·lules mononucleades de sang perifèrica i el seu ús terapèutic en patologies musculoesquelétiques'. Empresa: Tecnologia Regenerativa QREM.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021DI119. Josep M. Canals
- **Modelización de enfermedades neurodegenerativas..** Ministerio de Ciencia e Innovación (MICINN). EIN2020-112381. Josep M. Canals
- **Ajut per a la intensificació de les activitats de transferència per al curs 2022-23.** Modalitat A. Universitat de Barcelona. Josep M. Canals
- **Centre per a la producció i validació de teràpies avançades - UB .** ACCIÓ. Agència de Suport a l'Empresa Catalana . CREATIO. Josep M. Canals
- 13 confidential agreements



Pathophysiology of Nervous System Diseases

Selected publications

- Akkermans, O., Delloye-Bourgeois, C., Peregrina, C., Carrasquero-Ordaz, M., Kokolaki, M., Berbeira-Santana, M., Chavent, M., Reynaud, F., Raj, R., Agirre, J., Aksu, M., White, E. S., Lowe, E., Ben Amar, D., Zaballa, S., Huo, J., Pakos, I., McCubbin, P. T. N., Comoletti, D., … Seiradake, E. (2022). GPC3-Unc5 receptor complex structure and role in cell migration. Cell, 185(21), 3931-3949.e26. https://doi.org/10.1016/j.cell.2022.09.025
- Canals, J., Navarro, A., Vila, C., Canals, J. M., Díaz, T., Acosta-Plasencia, M., Cros-Font, C., Han, B., He, Y., & Monzó, M. (2022). Human embryonic mesenchymal lung-conditioned medium promotes differentiation to myofibroblast and loss of stemness phenotype in lung adenocarcinoma cell lines. Journal of Experimental & Clinical Cancer Research, 41(1), 37. https://doi.org/10.1186/s13046-021-02206-z
- Crespo, I., Pignatelli, J., Kinare, V., Méndez-Gómez, H. R., Esgleas, M., Román, M. J., Canals, J. M., Tole, S., & Vicario, C. (2022). Tbr1 Misexpression Alters Neuronal Development in the Cerebral Cortex. Molecular Neurobiology, 59(9), 5750–5765. https://doi.org/10.1007/s12035-022-02936-x
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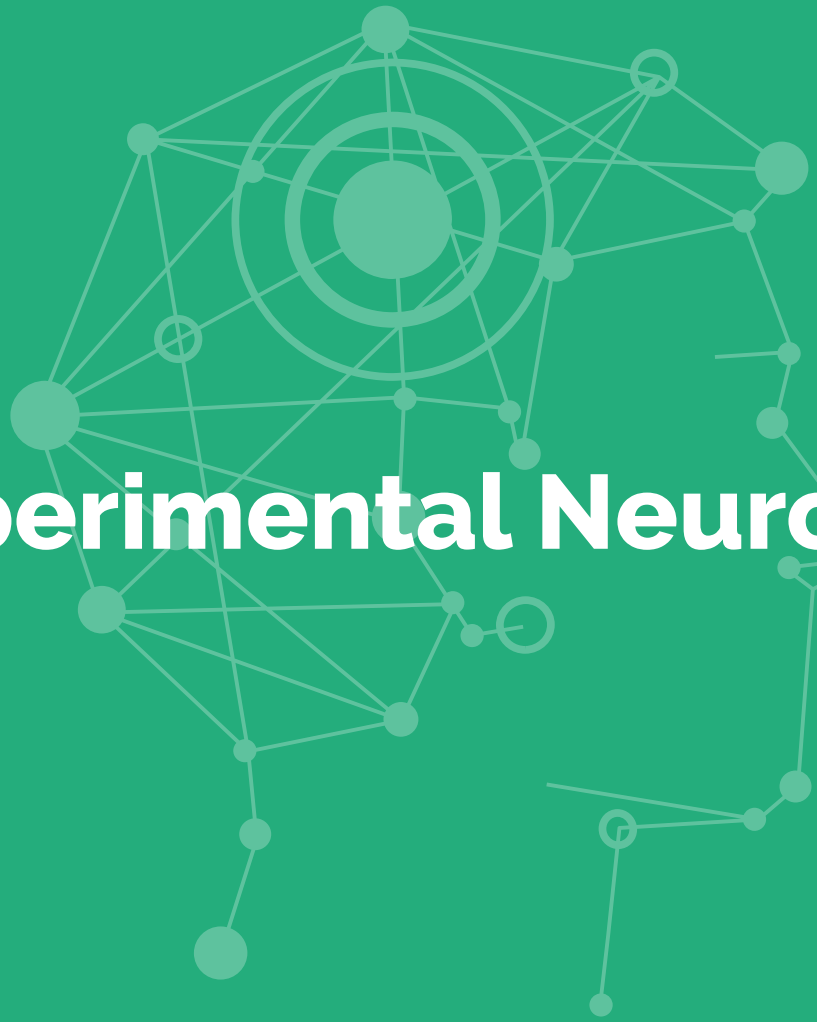
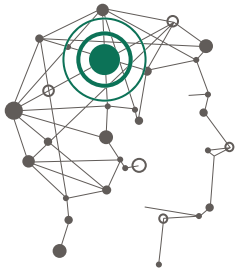


Experimental Neurology

Annual Report
2022

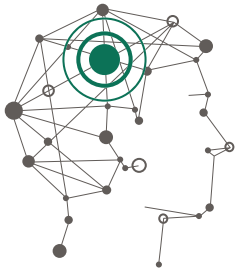


Experimental Neurology

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.



Experimental Neurology

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

Principal investigators

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

Members

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

Highlighted projects

- **PSP REGISTRY: CLINICAL COHORT STUDY WITH BIOMARKERS STUDY OF PREDIAGNOSTIC CASES AND HEALTH EDUCATION PROGRAM IN ESTABLISHED DISEASE.** Fundació La Marató de TV3. 202009-10
- **Plataforma Traslacional para la AMS: Descubriendo mecanismos patológicos y nuevas dianas terapéuticas: PTra-ADPT.** Instituto de Salud Carlos III. AC21_2/00018
- 2 confidential agreements

Selected publications

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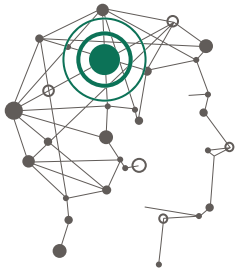
Research



Experimental Neurology

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- Sánchez-Gómez, A., Camargo, P., Cámara, A., Roldán, P., Rumià, J., Compta, Y., Carbayo, Á., Martí, M. J., Muñoz, E., & Valldeoriola, F. (2022). Utility of Postoperative Imaging Software for Deep Brain Stimulation Targeting in Patients with Movement Disorders. World Neurosurgery, 166, e163–e176. https://doi.org/10.1016/j.wneu.2022.06.132
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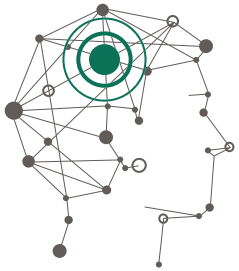
Clinical research in Alzheimer's disease and other cognitive disorders



Experimental Neurology

Principal investigators

RAQUEL SANCHEZ-VALLE
Clinical research in Alzheimer's disease and other cognitive disorders

Members

Anna Antonell, Beatriz Bosch, Lorena Rami, Sergi Borrego, Jose Miguel Contador, Neus Falgàs, Agnes Perez, Oscar Ramos, Adria Tort, Magda Castellví, Guadalupe Fernandez, Nuria Montagut, Anna Abad, María Ángeles Botí, Laura Fort, Yolanda Gonzalez, Núria Guillén, Jordi Juncà, Laura Molina, Jordi Sarto, Miguel Vergara, Diana Esteller, Roger Puey, Alba Gómez, Andrea del Val, Albert Llado, Mircea Balasa.

Highlighted projects

- **Understanding sleep-wake alterations in Alzheimer's Disease.** Alzheimer's Association. GBHIALZUK-21-723831. Raquel Sanchez-Valle
- **Genetic counseling in European universities: The case of neurodegenerative diseases.** Education, Audiovisual and Culture Executive Agency (EACEA) . KA220-HED-F1522753. Raquel Sanchez-Valle
- **Demencias genéticas (enfermedad de Alzheimer, demencia frontotemporal y enfermedades priónicas genéticas): cambios longitudinales y diferencias en expresión y epigenéticas con formas esporádicas.** Instituto de Salud Carlos III. PI20/00448. Raquel Sanchez-Valle
- **Diagnóstico precoz de la enfermedad de Alzheimer mediante el perfil de linfocitos citotóxicos y caracterización de alteraciones del sueño.** Instituto de Salud Carlos III. AC21_2/00007. Raquel Sanchez-Valle
- **Characterisation of neuronal endogenous retrovirus in dementia.** Ministerio de Ciencia e Innovación (MICINN). PCI2021-122086-2B. Raquel Sanchez-Valle
- **Dominantly Inherited Alzheimer Network (DIAN).** National Institutes of Health (NIH). UF1 AG032438. Raquel Sanchez-Valle
- **DIAN-TU: NEXT GENERATION PREVENTION TRIAL.** National Institutes of Health (NIH). 5R01AG053267-02. Raquel Sanchez-Valle
- **DIAN-TU PRIMARY PREVENTION TRIAL.** National Institutes of Health (NIH). 1U01AG059798-01. Raquel Sanchez-Valle
- **"Impacto diferencial de las diferentes proteinopatías cerebrales en la presentación fenotípica y evolución longitudinal del deterioro cognitivo".** Instituto de Salud Carlos III. PI2200343. Mircea Balasa
- **Progresión clínica y biomarcadores pronósticos en la Enfermedad de Alzheimer.** Instituto de Salud Carlos III. PI1900449. Albert Llado
- 19 confidential agreements

Selected publications

- Boza-Serrano, A., Vrillon, A., Minta, K., Paulus, A., Camprubí-Ferrer, L., Garcia, M., Andreasson, U., Antonell, A., Wennström, M., Gouras, G., Dumurgier, J., Cognat, E., Molina-Porcel, L., Balasa, M., Vitorica, J., Sánchez-Valle, R., Paquet, C., Venero, J. L., Blennow, K., & Deierborg, T. (2022). Galectin-3 is elevated in CSF and is associated with A deposits and tau aggregates in brain tissue in Alzheimer's disease. Acta Neuropathologica, 144(5), 843–859. https://doi.org/10.1007/s00401-022-02469-6
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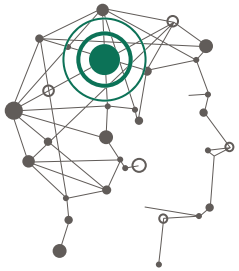

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- Illán-Gala, I., Montal, V., Borrego-Écija, S., Mandelli, M. L., Falgàs, N., Welch, A. E., Pegueroles, J., Santos-Santos, M., Bejanin, A., Alcolea, D., Dols-Icardo, O., Belbin, O., Sánchez-Saudinós, M. B., Bargalló, N., González-Ortiz, S., Lladó, A., Blesa, R., Dickerson, B. C., Rosen, H. J., … Fortea, J. (2022). Cortical microstructure in primary progressive aphasia: a multicenter study. Alzheimer's Research & Therapy, 14(1), 27. https://doi.org/10.1186/s13195-022-00974-0
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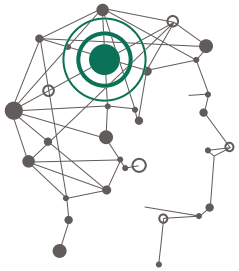

Experimental Neurology

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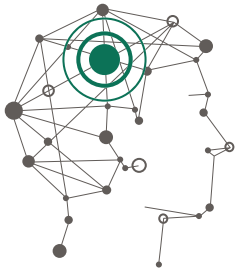


Experimental Neurology

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

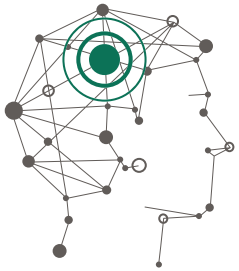
ESTHER PEREZ NAVARRO
Kinases and Phosphatases in neuronal function and dysfunction

Members

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

Highlighted projects

- **Mecanismes Moleculars i aproximacions terapèutiques en patologies cerebrals.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR01086. Esther Perez Navarro
- **Multi-Brain BCN Congress.** Ajuntament de Barcelona. 22S01062-001. Silvia Gines
- **Contribution of tRNA fragments in the ETiopathogenesis of Huntington's Disease (tR-GET HD).** Unió Europea 101066416. Eulalia Marti
- **Gliotransmissors i receptors de cannabinoides en l'origen dels dèficits cognitius i de plasticitat sinàptica en la malaltia de Huntington.** Fundació La Marató de TV3. 30/C/2020. Silvia Gines
- **La enfermedad de Huntington como una laminopatía: interacción entre el cerebro y la perifèria.** Ministerio de Ciencia, Innovación y Universidades. PID2019-106447RB-I00. Esther Perez Navarro
- **Descifrando el papel de la metilación m6A del ARN como un nuevo nivel de regulación de la expresión génica en la patología de la enfermedad de Huntington.** Ministerio de Ciencia e Innovación (MICINN). PID2020-116474RB-I00. Veronica Brito
- **Estudio de la función transneuronal de la proteína RTP801/ REDD1 en la neuroinflamación en la enfermedad de Alzheimer.** Ministerio de Ciencia e Innovación (MICINN). PID2020-119236RB-I00. Cristina Malagelada
- **Fragmentos de los tRNAs como mediadores de los procesos neurodegenerativos: implicaciones en la enfermedad de Huntington.** Ministerio de Ciencia e Innovación (MICINN). PID2020-113953RB-I00. Eulalia Marti
- **Selectiva vulnerabilidad estriatal en la enfermedad de Huntington: ¿Un problema en la mitofagia transcelular?.** Ministerio de Ciencia e Innovación (MICINN). PID2021-123732OB-I00 Silvia Gines
- **Phospho-proteome analysis of PBMCs in LRRK2 mutation carriers: expansion and validation of findings of the Barcelona LRRK2 Biorepository.** Michael J. Fox Foundation for Parkinson's Research. MJFF-000858. Cristina Malagelada
- **Epidemiología y Salud Pública.** Ministerio de Sanidad y Consumo. CB06/02/0058. Eulalia Marti
- **Ajut per a la intensificació de les activitats de transferència per al curs 2022-23.** Modalitat A. Universitat de Barcelona. Eulalia Marti
- 3 confidential agreements



Experimental Neurology

Selected publications

- Brito, V., Montalban, E., Sancho-Balsells, A., Pupak, A., Flotta, F., Masana, M., Ginés, S., Alberch, J., Martin, C., Girault, J.-A., & Giralt, A. (2022). Hippocampal Egr1 -Dependent Neuronal Ensembles Negatively Regulate Motor Learning. The Journal of Neuroscience, 42(27), 5346–5360. https://doi.org/10.1523/JNEUROSCI.2258-21.2022
- Garrido, A., PérezSisqués, L., Simonet, C., CampoyCampos, G., SolanaBalaguer, J., MartínFlores, N., Fernández, M., Soto, M., Obiang, D., Cámara, A., Valldeoriola, F., Muñoz, E., Compta, Y., PérezNavarro, E., Alberch, J., Tolosa, E., Martí, M., Ezquerra, M., Malagelada, C., & FernándezSantiago, R. (2022). Increased <scp>PhosphoAKT</scp> in Blood Cells from <scp> LRRK2 G2019S </scp> Mutation Carriers. Annals of Neurology, 92(5), 888–894. https://doi.org/10.1002/ana.26469
- Garrido, A., Santamaría, E., FernándezIrigoyen, J., Soto, M., Simonet, C., Fernández, M., Obiang, D., Tolosa, E., Martí, M., Padmanabhan, S., Malagelada, C., Ezquerra, M., & Fernández Santiago, R. (2022). Differential PhosphoSignatures in Blood Cells Identify <scp> LRRK2 G2019S </scp> Carriers in Parkinson's Disease. Movement Disorders, 37(5), 1004–1015. https://doi.org/10.1002/mds.28927
- López-Molina, L., Fernández-Irigoyen, J., Cifuentes-Díaz, C., Alberch, J., Girault, J.-A., Santamaría, E., Ginés, S., & Giralt, A. (2022). Pyk2 Regulates MAMs and Mitochondrial Dynamics in Hippocampal Neurons. Cells, 11(5), 842. https://doi.org/10.3390/cells11050842
- Matamoros-Angles, A., Hervera, A., Soriano, J., Martí, E., Carulla, P., Llorens, F., Nuvolone, M., Aguzzi, A., Ferrer, I., Gruart, A., Delgado-García, J. M., & Del Río, J. A. (2022). Analysis of co-isogenic prion protein deficient mice reveals behavioral deficits, learning impairment, and enhanced hippocampal excitability. BMC Biology, 20(1), 17. https://doi.org/10.1186/s12915-021-01203-0
- MatuteBlanch, C., Brito, V., Midaglia, L., Villar, L. M., GarciaDiaz Barriga, G., Guzman de la Fuente, A., Borrás, E., Fernández García, S., CalvoBarreiro, L., Miguez, A., CostaFrossard, L., Pinteac, R., Sabidó, E., Alberch, J., Fitzgerald, D. C., Montalban, X., & Comabella, M. (2022). Inflammation in multiple sclerosis induces a specific reactive astrocyte state driving noncell autonomous neuronal damage. Clinical and Translational Medicine, 12(5). https://doi.org/10.1002/ctm2.837
- Pérez-Sisqués, L., Solana-Balaguer, J., Campoy-Campos, G., Martín-Flores, N., Sancho-Balsells, A., Vives-Isern, M., Soler-Palazón, F., Garcia-Forn, M., Masana, M., Alberch, J., Pérez-Navarro, E., Giralt, A., & Malagelada, C. (2021). RTP801/REDD1 Is Involved in Neuroinflammation and Modulates Cognitive Dysfunction in Huntington's Disease. Biomolecules, 12(1), 34. https://doi.org/10.3390/biom12010034
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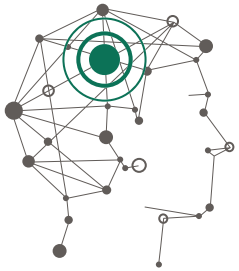


Experimental Neurology

- Schmitz, M., Villar-Piqué, A., Hermann, P., Escaramís, G., Calero, M., Chen, C., Kruse, N., Cramm, M., Golanska, E., Sikorska, B., Liberski, P. P., Pocchiari, M., Lange, P., Stehmann, C., Sarros, S., Martí, E., Baldeiras, I., Santana, I., Žáková, D., … Llorens, F. (2022). Diagnostic accuracy of cerebrospinal fluid biomarkers in genetic prion diseases. Brain, 145(2), 700–712. https://doi.org/10.1093/brain/awab350

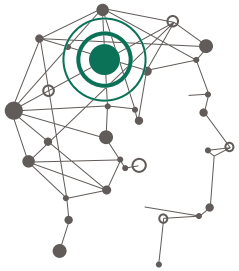
Knowledge and transfer innovation

- Method for predicting the onset of extrapyramidal symptoms (EPS) induced by an antipsicotic-based treatment. AVCRI196
- Methods and pharmaceutical composition for the treatment of neurodegerative disease. UBTT0329-E

Thesis

- **Exploration of the m6A-epitranscriptomic signature in Huntington´s disease: Implications of a new underlying molecular mechanism in HD therapeutics.** Anika Pupak. Supervisor: Silvia Gines & Veronica Brito
- **Mitochondrial dynamics and quality control mechanims in Huntington´s disease.** Laura Celina Lopez Molina. Supervisor: Silvia Gines & Albert Giralt

Neuroimaging in degenerative disorders



Experimental Neurology

Principal investigators

CARME JUNQUE
Structural connectivity and cognition in neurological and psychiatric disorders

MARINA LOPEZ-SOLA
Pain and Emotion Neuroscience

BARBARA SEGURA
Functional connectivity and cognition in neurological and psychiatric disorders

GUADALUPE SORIA
Neuroimaging in Experimental Animal Models

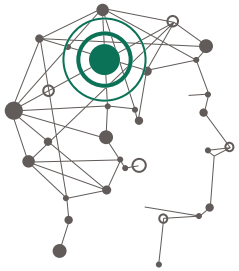
ROSER SALA-LLONCH
Statistical modeling and data analysis for neuroimaging

Members

Carme Uribe, Javier Oltra, Nuria Bargallo, Adrià Casamitjana, Agnès Pérez-Millan, Raul Tudela, Aida Niñerola, Anna Campabadal.

Highlighted projects

- **Neuropsicologia.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR00801. Carme Junque
- **Bioenginyeria multiescala en processos fisiopatològics(BIOPAT).** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR00523. Roser Sala-Llonch
- **CoviD-19 and brain: cognItion And meNtal heAlth (DIANA).** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR) . 2020PANDE00053. Carme Junque
- **Multimodal imaging in parkinsonisms: from the molecular synaptic pruning to the whole-brain connectomics (SYNPARK).** Unió Europea. 888692. Barbara Segura
- **Fenilcetonuria: de la infantesa als adults a través del connectoma cerebral, canvis cardiovasculars, característiques metabòliques i de la microbiota intestinal.** Fundació La Marató de TV3. 18/C/2020. Carme Junque
- **CogNition, emotion/behAvior, fUnctionaliTy and braIn connectivity in recovered COVID-19 patientS (NAUTILUS).** Fundació La Marató de TV3. 93/U/2021. Barbara Segura
- **Patrones cerebrales estructurales y funcionales asociados con diferentes fenotipos cognitivos y su progresion en trastornos de la conducta del sueño REM.** Ministerio de Ciencia, Innovación y Universidades. PID2020-114640GB-I00. Barbara Segura
- **Localización de cambios cerebrales el la Enfermedad de Alzheimer utilizando métodos multimodales Bayesianos para establecer predicciones individuales.** Ministerio de Ciencia e Innovación (MICINN). PID2020-118386RA-I00. Roser Sala-Llonch
- **EpigeNetic CLOck in SchizophrEnia- in Aged adults. Fundació** La Marató de TV3. 358/U/2022. Barbara Segura
- **Cambios en la conectividad cerebral funcional y estructural después de la Rehabilitación Digital en pacientes con síndrome post-COVID-19 con deterioro cognitivo.** Ministerio de Ciencia e Innovación (MICINN). TED2021-130409A-C52. Barbara Segura
- **Marcadores neurocognitivos de dolor crónico y depresión: una aproximación transdiagnóstica a la medicina de precisión.** Ministerio de Ciencia e Innovación (MICINN). PID2020-117327RB-I00. Marina Lopez-Sola
- **Identifying neural pathophysiology in juvenile fibromyalgia. National Institutes of Health (NIH). 1R01AR074795-01A1 (Subaward 310178).** Marina Lopez-Sola



Experimental Neurology

- **SPRINT: Signature for Pain Recovery IN Teens.** National Institutes of Health (NIH). 1R61NS114926-01 (Subaward 144386). Marina Lopez-Sola
- **Design and analysis of effectiveness of a brief mobile App-based intervention for Non-Suicidal Self-Injury: self-report, momentary and biological predictors of treatment outcomes.** Fundació La Marató de TV3. 300/C/2022. Marina Lopez-Sola
- **Supraspinal Processing of Sensory Aspects of Pain.** National Institutes of Health (NIH) 2R01NS039426-14 – Subward. S00000298/400200. Marina Lopez-Sola
- **Efecto de la intervención cognitiva pre y post amiloide en la conectividad estructural y funcional en un modelo de rata transgénico de Alzheimer.** Ministerio de Economia y Competitividad. PI18/00893. Guadalupe Soria

Selected publications

- C. MonteRubio, G., Segura, B., P. Strafella, A., van Eimeren, T., IbarretxeBilbao, N., DiezCirarda, M., Eggers, C., LucasJiménez, O., Ojeda, N., Peña, J., Ruppert, M. C., SalaLlonch, R., Theis, H., Uribe, C., & Junque, C. (2022). Parameters from site classification to harmonize <scp>MRI</scp> clinical studies: Application to a multisite Parkinson's disease dataset. Human Brain Mapping, 43(10), 3130–3142. https://doi.org/10.1002/hbm.25838
- Contador, J., PérezMillan, A., Guillén, N., Sarto, J., TortMerino, A., Balasa, M., Falgàs, N., Castellví, M., BorregoÉcija, S., Juncà Parella, J., Bosch, B., FernándezVillullas, G., RamosCampoy, O., Antonell, A., Bargalló, N., SanchezValle, R., SalaLlonch, R., & Lladó, A. (2022). Sex differences in earlyonset Alzheimer's disease. European Journal of Neurology, 29(12), 3623–3632. https://doi.org/10.1111/ene.15531
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- López-Solà, M., Pujol, J., Monfort, J., Deus, J., Blanco-Hinojo, L., Harrison, B. J., & Wager, T. D. (2022). The neurologic pain signature responds to nonsteroidal anti-inflammatory treatment vs placebo in knee osteoarthritis. PAIN Reports, 7(2), e986. https://doi.org/10.1097/PR9.0000000000000986
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- Muñoz-Moreno, E., Simões, R. V., Tudela, R., López-Gil, X., & Soria, G. (2022). Spatio-temporal metabolic rewiring in the brain of TgF344-AD rat model of Alzheimer's disease. Scientific Reports, 12(1). https://doi.org/10.1038/s41598-022-20962-6
- Oltra, J., Segura, B., Uribe, C., Monté-Rubio, G. C., Campabadal, A., Inguanzo, A., Pardo, J., Marti, M. J., Compta, Y., Valldeoriola, F., Iranzo, A., & Junque, C. (2022a). Sex differences in brain atrophy and cognitive impairment in Parkinson's disease patients with and without probable rapid eye movement sleep behavior disorder. Journal of Neurology, 269(3), 1591–1599. https://doi.org/10.1007/s00415-021-10728-x
- Oltra, J., Segura, B., Uribe, C., Monté-Rubio, G. C., Campabadal, A., Inguanzo, A., Pardo, J., Marti, M. J., Compta, Y., Valldeoriola, F., Iranzo, A., & Junque, C. (2022b). Sex differences in brain atrophy and cognitive impairment in Parkinson's disease patients with and without probable rapid eye movement sleep behavior disorder. Journal of Neurology, 269(3), 1591–1599. https://doi.org/10.1007/s00415-021-10728-x
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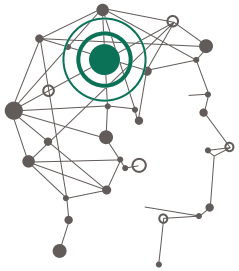

Experimental Neurology

- Oltra, J., Uribe, C., Segura, B., Campabadal, A., Inguanzo, A., Monté-Rubio, G. C., Pardo, J., Marti, M. J., Compta, Y., Valldeoriola, F., Junque, C., & Iranzo, A. (2022). Brain atrophy pattern in de novo Parkinson's disease with probable RBD associated with cognitive impairment. Npj Parkinson's Disease, 8(1), 60. https://doi.org/10.1038/s41531-022-00326-7
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- Uribe, C., Escrichs, A., de Filippi, E., SanzPerl, Y., Junque, C., GomezGil, E., Kringelbach, M. L., Guillamon, A., & Deco, G. (2022). Wholebrain dynamics differentiate among cisgender and transgender individuals. Human Brain Mapping, 43(13), 4103–4115. https://doi.org/10.1002/hbm.25905

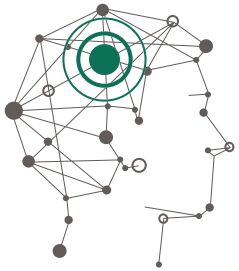
Knowledge and transfer innovation

- Bicelas encapsuladas en liposomas y su aplicación en sistemas diluidos. ES2643496 T3

Thesis

- **Brain Mechanisms of Pain Processing in Healthy Female Adolescents and Female Adolescents with Juvenile Fibromyalgia.** Han Tong. Supervisor: Marina López Solà
- **Resonance imaging, cognition and sex differences in Parkinson's disease with RBD.** Javier Oltra González. Supervisor: Carme Junqué & Bàrbara Segura
- **Resonancia Magnética craneal estructural de 3 Tesla como biomarcador de neurodegeneración y pronóstico en la enfermedad de Alzheimer de inicio precoz.** José Contador . Supervisor: Albert Lladó & Roser Sala-Llonch

Neuronal network dysfunction in neurological and psychiatric disorders



Experimental Neurology

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

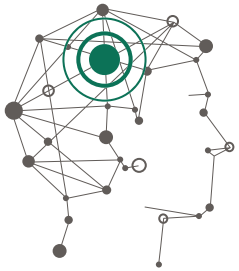
Ivan Ballasch, Sara Conde, Esther Garcia, Laura Lopez, Ened Rodriguez, Anna Sancho, Carmen Andrade, Albert Coll, Laia Sitja.

Highlighted projects

- **Els 3 Pilars de la Recerca del Cervell.** Ajuntament de Barcelona. 22S01063-001. Jordi Alberch
- **Non-invasive dynamic neural control by laser-based technology (NEUROPA).** Unió Europea. 863214. Merce Masana
- **Un puente volador entre el sistema immune y nervioso en la esquizofrènia.** Ministerio de Ciencia e Innovación (MICINN). EIN2020-112425. Albert Giralt
- **Identificar los mecanismos convergentes activados por la huntingtina mutada y la falta de VPS13A responsables de la neurodegeneraciónselectiva de las neuronas estriatales par.** Ministerio de Ciencia e Innovación (MICINN). PID2020-119386RB-I00. Jordi Alberch
- **¿Puede la integración de la percepción visual en el colículo superior promover la resiliencia a los síntomas motores en enfermedades neurodegenerativas?** Ministerio de Ciencia e Innovación (MICINN). PID2021-124896OA-I00. Merce Masana
- **Estudio sobre el papel de la familia de ikaros en la regulacion de las alteraciones neuroinmunológicas en la esquizofrènia.** Ministerio de Ciencia e Innovación (MICINN). PID2021-122258OB-I00. Albert Giralt
- **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
- **Enfermedades neurodegenerativas.** Ministerio de Sanidad y Consumo. CB06/05/0054. Jordi Alberch
- 5 confidential agreements

Selected publications

- Brito, V., Montalban, E., Sancho-Balsells, A., Pupak, A., Flotta, F., Masana, M., Ginés, S., Alberch, J., Martin, C., Girault, J.-A., & Giralt, A. (2022). Hippocampal Egr1 -Dependent Neuronal Ensembles Negatively Regulate Motor Learning. The Journal of Neuroscience, 42(27), 5346–5360. https://doi.org/10.1523/JNEUROSCI.2258-21.2022
- Garrido, A., PérezSisqués, L., Simonet, C., CampoyCampos, G., SolanaBalaguer, J., MartínFlores, N., Fernández, M., Soto, M., Obiang, D., Cámara, A., Valldeoriola, F., Muñoz, E., Compta, Y., PérezNavarro, E., Alberch, J., Tolosa, E., Martí, M., Ezquerra, M., Malagelada, C., & FernándezSantiago, R. (2022). Increased <scp>PhosphoAKT</scp> in Blood Cells from <scp> LRRK2 G2019S </scp> Mutation Carriers. Annals of Neurology, 92(5), 888–894. https://doi.org/10.1002/ana.26469
- López-Molina, L., Fernández-Irigoyen, J., Cifuentes-Díaz, C., Alberch, J., Girault, J.-A., Santamaría, E., Ginés, S., & Giralt, A.



Experimental Neurology

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- Pupak, A., Singh, A., Sancho-Balsells, A., Alcalá-Vida, R., Espina, M., Giralt, A., Martí, E., Ørom, U. A. V., Ginés, S., & Brito, V. (2022). Altered m6A RNA methylation contributes to hippocampal memory deficits in Huntington's disease mice. Cellular and Molecular Life Sciences, 79(8), 416. https://doi.org/10.1007/s00018-022-04444-6
- Rodríguez-Urgellés, E., Rodríguez-Navarro, I., Ballasch, I., del Toro, D., del Castillo, I., Brito, V., Alberch, J., & Giralt, A. (2022). Postnatal Foxp2 regulates early psychiatric-like phenotypes and associated molecular alterations in the R6/1 transgenic mouse model of Huntington's disease. Neurobiology of Disease, 173, 105854. https://doi.org/10.1016/j.nbd.2022.105854
- Rodríguez-Urgellés, E., Sancho-Balsells, A., Chen, W., López-Molina, L., Ballasch, I., Castillo, I. del, Avila, C., Alberch, J., & Giralt, A. (2022). Meridianins Rescue Cognitive Deficits, Spine Density and Neuroinflammation in the 5xFAD Model of Alzheimer's Disease. Frontiers in Pharmacology, 13. https://doi.org/10.3389/fphar.2022.791666
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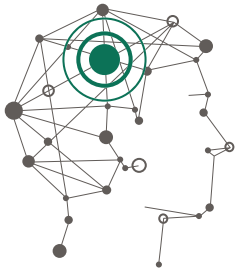


Experimental Neurology

… RomeroGómez, M. (2022). Early predictors of corticosteroid response in acute severe autoimmune hepatitis: a nationwide multicenter study. Alimentary Pharmacology & Therapeutics, 56(1), 131–143. https://doi.org/10.1111/apt.16926

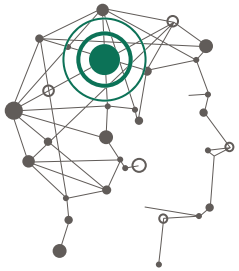
Knowledge and transfer innovation

- Cytes Biotechnologies. Spin off. Jordi Alberch.

Thesis

- **Involvement of Foxp2 in the alterations of the basal ganglia circuitry in Huntington's Disease.** Ened Rodriguez Urgellés. Supervisor: Albert Giralt & Jordi Alberch
- **Mitochondrial dynamics and quality control mechanisms in Huntignton's Disease.** Laura López Molina. Supervisor: Albert Giralt & Sílvia Ginés

Pathogenesis of immune-mediated neuronal disorders



Experimental Neurology

Principal investigators

JOSEP DALMAU
Syndromes and mechanisms of paraneoplastic and autoimmune encephalitis

ALBERT SAIZ
Neuroimmunology and Multiple Sclerosis

Members

Thais Armangue, Eugenia Maria Martinez, Jesus Planaguma, Marija Radosevic, Jon Landa, Estibaliz Maudes, Gemma Olive, Paula Peixoto, Ester Aguilar, Mercedes Alba, Eva Maria Caballero, Maria Rodes, Myrna Rosenfeld, Lidia Sabater.

Highlighted projects

- **Subclinical activity in anti-LGI1 encephalitis: diagnostic test and prognostic implications.** Autoimmune Encephalitis Alliance. AEA_CSG_20_01. Josep Dalmau
- **Eficàcia i efectes adversos neurològics de la vacunació contra la COVID-19 en pacients immunodeprimits per l'esclerosi múltiple.** Fundació La Marató de TV3. 202132-30. Albert Saiz
- **Antibody-mediated NMDA receptor encephalitis: symptoms, biomarkers, and mechanisms of the prolonged recovery stage.** Fundació Caixa de Pensions 'La Caixa'. HR22-00221. Josep Dalmau
- **Investigaciones en la encefalitis anti-NMDAR: nuevo test diagnóstico, papel de la inflamación en un modelo animal, y modulación alostérica de NMDAR como estrategia terapèutica.** Instituto de Salud Carlos III. PI20/00197. Josep Dalmau
- **Impacto social y psicológico a largo plazo de la encefalitis anti receptores NMDA.** Instituto de Salud Carlos III. AC21_2/00053. Josep Dalmau
- **Centro de Investigación Biomédica en Red de Enfermedades Raras(CIBERER).** Ministerio de Economia y Competitividad. CB15/00010. Josep Dalmau
- 21 confidential agreements

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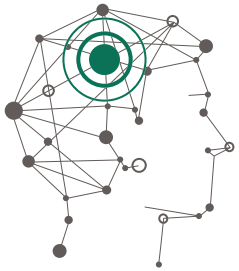

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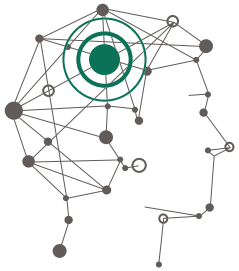

Experimental Neurology

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Knowledge and transfer innovation

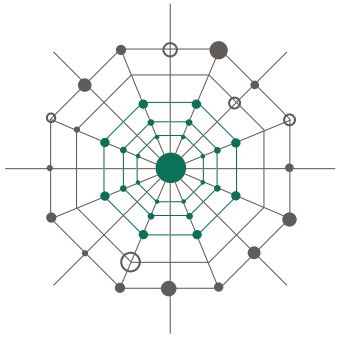
- Diagnosis of a neurological disease. AVCRI233-E.

Thesis

- **Aplicaciones de la telemedicina en el seguimiento clínico de pacientes con enfermedades autoinmunes del sistema nervioso central.** Solà-Valls, N. Supervisor: Albert Saiz & Yolanda Blanco
- **Caracterización clínica y biológica de la neuromielitis óptica, e identificación de factores pronósticos.** Maria Sepúlveda Gázquez. Supervisor: Albert Saiz & Francesc Graus
- **Investigations in animal models of antiNMDAR encephalitis.** Anna Garcia Serra. Supervisor: Josep Dalmau
- **Spatial learning in the network of hippocampal place cells: Altering memory using a mouse model of anti-NMDAR encephalitis.** AmirPasha Zamani. Supervisor: Josep Dalmau
- **Contributions of anti-NMDAR encephalitis to Neurology and Psychiatry.** Mar Guasp Verdaguer. Supervisor:Josep Dalmau

Mental Health

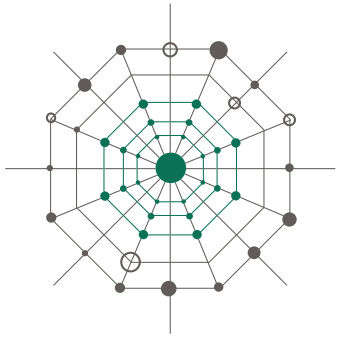
Annual Report
2022



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.



Mental Health

Bipolar disorder

Principal investigators

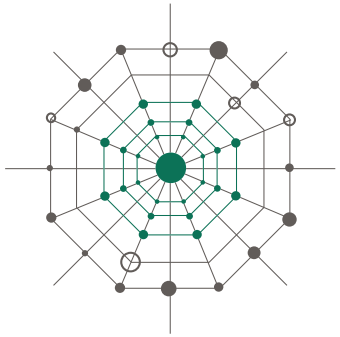
EDUARD VIETA
Bipolar disorder

Members

Antoni Benabarre, Iria Grande, Anabel Martinez-Aran, Marina Garriga, Diego Hidalgo, Ester Jimenez, Andrea Murru, Isabella Pacchiarotti, Carla Torrent, Marc Valenti, Gerard Anmella, Derek Clougher, Giovanna Fico, Anna Gimenez, Susana Gomes-da-Costa, Maria Sagué, Laura Montejo, Jose Sanchez-Moreno, Brisa Sole, Maria Serra-Navarro, Maria Florencia Forte, Natalia Roberto Herrero.

Highlighted projects

- **Optimizing response to Li treatment through personalized evaluation of individuals with bipolar I disorder: the R-LiNK initiative .** Unió Europea. 754907-1. Eduard Vieta
- **A New Intervention for Implementation of Pharmacogenetics in Psychiatry.** Unió Europea. 945151. Eduard Vieta
- **Psych-STRATA - A Stratified Treatment Algorithm in Psychiatry: A program on stratified pharmacogenomics in severe mental illness.** Unió Europea. 101057454. Eduard Vieta
- **Safety intervention for improving functioning in suicidal attempters.** Fundació Clínic per a la Recerca Biomèdica. FCRB_PB1_2022. Iria Grande Fullana
- **Enhancing Cognitive Function in Older-Age patients with Bipolar Disorder.** Fundació Clínic per a la Recerca Biomèdica. FCRB_PB2_2022. Ana Isabel Martinez Aran
- **Completed suicide as an extreme phenotype for understanding suicidal behavior: an integrative approach based on the interplay between genomics and epigenomics.** Fundació La Marató de TV3. 202203-30. Antonio Benabarre Hernandez
- **Brain and blood coexpression networks using DDR1 as a seed gene in bipolar disorder.Brain and blood coexpression networks using DDR1 as a seed gene in bipolar disorder. Identification of new biomarkers..** Fundació La Marató de TV3. 202235-33. Ana Isabel Martinez Aran
- **Disentangling cliNical, neurObiological, and geneTic correlates of fIrst-episOde maNia in Bipolar Disorder: The NOTION Project.** Fundació La Marató de TV3. 202234-30. Eduard Vieta
- **Prevención e Intervención en Suicidio (SURVIVE): estudio de cohorte y ensayos clínicos controlados anidados de programas de prevención secundaria para intentos de suicidio.** Ministerio de Ciencia, Innovación y Universidades. PI19/00954. Iria Grande Fullana
- **Biomarcadores de neuroimagen de la reserva cognitiva en pacientes con un primer episodio psicótico/maniaco (NeuroBioCoRe).** Ministerio de Ciencia, Innovación y Universidades. PI21/00787. Eduard Vieta
- **Salud Mental (CIBERSAM).** Ministerio de Sanidad y Consumo . CB07/09/0004. Eduard Vieta
- **Clinical validation study for EDIT-B test: an aid for differential diagnosis of bipolar disorder, based on RNA editing blood biomarkers.** Unió Europea. 220628. Eduard Vieta
- **Descifrando la base genética y epigenética de la conducta suicida: desde los intentos de suicidio hasta el suicidio completo.** Ministerio de Ciencia, Innovación y Universidades. PI22/01048. Antonio Benabarre Hernandez
- 5 confidential agreements



Mental Health

Selected publications

- Amoretti, S., Rabelo-da-Ponte, F. D., Garriga, M., Forte, M. F., Penadés, R., Vieta, E., Parellada, E., Ramos-Quiroga, J. A., Gama, C. S., Verdolini, N., Bitanihirwe, B., & Garcia-Rizo, C. (2022). Obstetric complications and cognition in schizophrenia: a systematic review and meta-analysis. Psychological Medicine, 52(14), 2874–2884. https://doi.org/10.1017/S0033291722002409
- Amoretti, S., Rosa, A. R., Mezquida, G., Cabrera, B., Ribeiro, M., Molina, M., Bioque, M., Lobo, A., González-Pinto, A., Fraguas, D., Corripio, I., Vieta, E., de la Serna, E., Morro, L., Garriga, M., Torrent, C., Cuesta, M. J., & Bernardo, M. (2022). The impact of cognitive reserve, cognition and clinical symptoms on psychosocial functioning in first-episode psychoses. Psychological Medicine, 52(3), 526–537. https://doi.org/10.1017/S0033291720002226
- Cearns, M., Amare, A. T., Schubert, K. O., Thalamuthu, A., Frank, J., Streit, F., Adli, M., Akula, N., Akiyama, K., Ardau, R., Arias, B., Aubry, J.-M., Backlund, L., Bhattacharjee, A. K., Bellivier, F., Benabarre, A., Bengesser, S., Biernacka, J. M., Birner, A., … Baune, B. T. (2022). Using polygenic scores and clinical data for bipolar disorder patient stratification and lithium response prediction: machine learning approach. The British Journal of Psychiatry, 220(4), 219–228. https://doi.org/10.1192/bjp.2022.28
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- Giménez-Palomo, A., Gomes-da-Costa, S., Dodd, S., Pachiarotti, I., Verdolini, N., Vieta, E., & Berk, M. (2022). Does metabolic syndrome or its component factors alter the course of bipolar disorder? A systematic review. Neuroscience & Biobehavioral Reviews, 132, 142–153. https://doi.org/10.1016/j.neubiorev.2021.11.026
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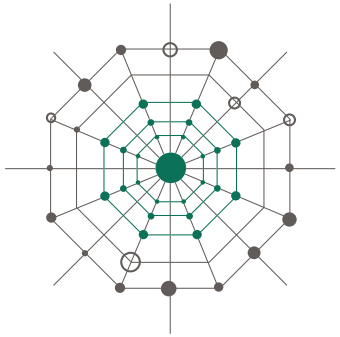
- Mullins, N., Kang, J., Campos, A. I., Coleman, J. R. I., Edwards, A. C., Galfalvy, H., Levey, D. F., Lori, A., Shabalin, A., Starnawska, A., Su, M.-H., Watson, H. J., Adams, M., Awasthi, S., Gandal, M., Hafferty, J. D., Hishimoto, A., Kim, M., Okazaki, S., … Striker, R. (2022). Dissecting the Shared Genetic Architecture of Suicide Attempt, Psychiatric Disorders, and Known Risk Factors.



Mental Health

Biological Psychiatry, 91(3), 313–327. https://doi.org/10.1016/j.biopsych.2021.05.029

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- Solmi, M., Croatto, G., Piva, G., Rosson, S., Fusar-Poli, P., Rubio, J. M., Carvalho, A. F., Vieta, E., Arango, C., DeTore, N. R., Eberlin, E. S., Mueser, K. T., & Correll, C. U. (2023). Efficacy and acceptability of psychosocial interventions in schizophrenia: systematic overview and quality appraisal of the meta-analytic evidence. Molecular Psychiatry, 28(1), 354–368. https://doi.org/10.1038/s41380-022-01727-z
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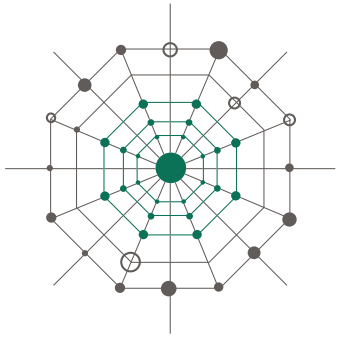
Thesis

- **Funcionamiento y discapacidad en el trastorno bipolar: estudio de variables sociodemográficas, clínicas, neurocognitivas y psicosociales.** Sánchez Moreno, Jose. Supervisor: Eduard Vieta & Jose Luís Ayuso.



Mental Health

Child and adolescent psychiatry and psychology

Principal investigators

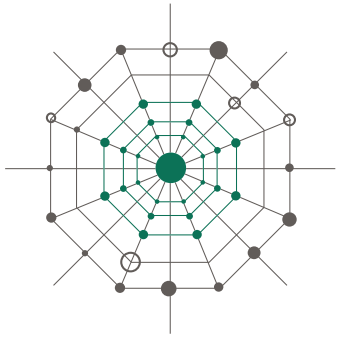
JOSEFINA CASTRO-FORNIELES
Child and adolescent psychiatry and psychology

Members

Susana Andres, Inmaculada Baeza, Rosa Calvo, Maria Luisa Lazaro, Astrid Morer, 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.

Highlighted projects

- **AUTISM INNOVATIVE MEDICINE STUDIES-2-TRIALS.** Unió Europea. 777394. Rosa Maria Calvo Escalona
- **Evolución clínica y funcional a los 12 meses en adolescentes con trastorno por estrés postraumático secundario a una agresión sexual: estudio de predicción multimodal basado en aprendizaje automático de datos clínicos y de neuroimagen.** Fundación Alicia Koplowitz. A.KOPLOWITZ22_06. Olga Puig Navarro
- **Estudio longitudinal de pacientes con trastorno psicótico de inicio temprano: cambios epigenéticos y su asociación con variables clínicas, cognitivas y de neuroimagen.** Fundación Alicia Koplowitz. A.KOPLOWITZ22_02. Inmaculada Baeza Pertegaz
- **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
- **Clinical, cognitive, neuroimaging and epigenetic characteristics of the child and adolescent offspring of patients diagnosed with schizophrenia or bipolar disorder: a predictive model of psychopathology and functioning at ten-year follow-up.** Fundació La Marató de TV3. 202222-10. Josefina Castro-Fornieles
- **Prospective study of biomarkers and clinical predictors of longterm outcome and response to treatment in obsessive-compulsive disorder: the Barcelona OCD COHORT.** Fundació La Marató de TV3. 202201-32. Maria Luisa Lazaro Garcia
- **Influencia de las vacunas, biomarcadores infecciosos e inmunológicos y análisis de las redes transcriptoma-interactoma en el curso de los trastornos de tics: un estudio longitudinal (COURSE-CAT).** Instituto de Salud Carlos III. PI20/01056. Maria Astrid Morer Liñan
- **Fenomenología y vias neuroinmunes de los comportamientos repetitivos y restrictives.** Ministerio de Ciencia, Innovación y Universidades. PI19/01122. Maria Luisa Lazaro Garcia
- **Interacción genética y ambiente en hijos de pacientes con esquizofrenia o trastorno bipolar.** Ministerio de Ciencia, Innovación y Universidades. PI21/00519. Josefina Castro-Fornieles
- **Estudio multicéntrico longitudinal sobre marcaadores de predicción de la transición a psicosis en niños y adolescentes con riesgo de psicosis: El papel del estrés intrauterino.** Ministerio de Ciencia, Innovación y Universidades. PI21/00391. Inmaculada Baeza Pertegaz
- **Salud Mental (CIBERSAM).** Ministerio de Sanidad y Consumo . CB07/09/0005. Inmaculada Baeza Pertegaz
- **1/7-Collaborative Genomics Studies of Tourette Disorder.** National Institutes of Health (NIH). 671128. Maria Astrid Morer Liñan
- 4 confidential agreements



Mental Health

Selected publications

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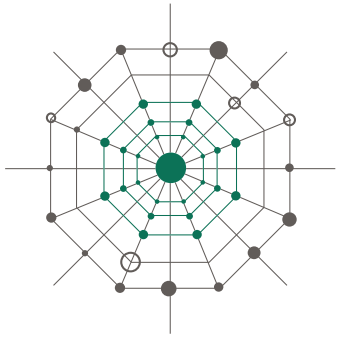
Research



Mental Health

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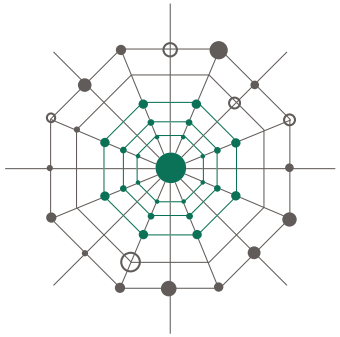
Thesis

- **La reserva cognitiva en niños y adolescentes con primer episodio psicótico y en hijos de pacientes con esquizofrenia o trastorno bipolar.** Patricia Camprodon Boadas. Supervisor: Josefina Castro-Fornieles & Elena de la Serna.



Mental Health

Epidemiology of mental health disorders and ageing

Principal investigators

JOSEP M. HARO
Epidemiology of mental health disorders and ageing

Highlighted projects

- **EDHEN: European Health Data and Evidence Network.** European Health Data & Evidence Network. (EHDEN) PFE00082. Josep M. Haro
- **SYNCHROS: SYNergies for Cohorts in Health: integrating the Role of all Stakeholders.** Unió Europea. 825884. Josep M. Haro
- **Improving the Preparedness of Health Systems to Reduce Mental Health and Psychosocial Concerns resulting from the COVID-19 Pandemic (RESPOND).** Unió Europea. 101016127. Josep M. Haro
- **EDIT-B: The RNA blood test for bipolar disorder.** Unió Europea. 220628. Josep M. Haro
- **MIO: Migration Impact On Health.** Fundació Caixa de Pensions 'La Caixa'. SR21-00779. Josep M. Haro
- **Factores sociales, de estilo de vida, comorbilidad física y factores genéticos como causas de depresión en una población envejecida.** Ministerio de Ciencia, Innovación y Universidades. PI19/00088. Josep M. Haro
- **Xarxa d'Innovació de Noves Tecnologies en Salut Mental – TECSAM.** Departament d'Empresa i Coneixement.Generalitat de Catalunya. 2018 XARDI 000102 confidential agreements. Josep M. Haro

Selected publications

- Cristóbal-Narváez, P., Haro, J. M., & Koyanagi, A. (2022). Longitudinal association between perceived stress and depression among community-dwelling older adults: Findings from the Irish Longitudinal Study on Ageing. Journal of Affective Disorders, 299, 457–462. https://doi.org/10.1016/j.jad.2021.12.041
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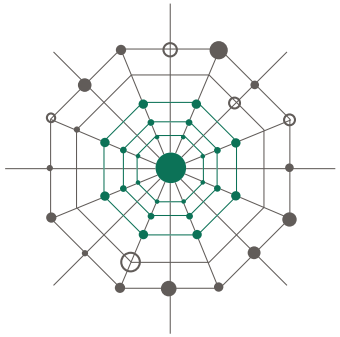


Mental Health

Gerontology: Health and ageing

Principal investigators

FELICIANO VILLAR
Active aging

Members

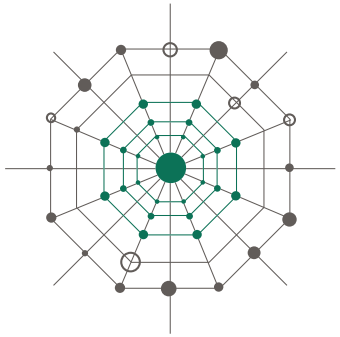
Montserrat Celdran, Vanesa Viñas, Rodrigo Serrat, Josep Fabà.

Highlighted projects

- **Grup d'Investigació en Gerontologia (GIG).** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR00250. Feliciano Villar
- **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
- **Envejecer en los márgenes: hacia una visión más inclusiva del envejecimiento activo.** Ministerio de Ciencia, Innovación y Universidades. PID2020-116117GB-I00. Feliciano Villar

Selected publications

- Cannella, V., Villar, F., & Serrat, R. (2023). Competing at age 55 and over. Reasons why older athletes participate in sport. Educational Gerontology, 1–15. https://doi.org/10.1080/03601277.2023.2174725
- Celdrán, M., Serrat, R., Villar, F., & Montserrat, R. (2022c). Exploring the Benefits of Proactive Participation among Adults and Older People by Writing Blogs. Journal of Gerontological Social Work, 65(3), 320–336.
- Chacur, K., Serrat, R., & Villar, F. (2022). Older adults' participation in artistic activities: a scoping review. European Journal of Ageing, 19(4), 931–944. https://doi.org/10.1007/s10433-022-00708-z
- Fabà, J., Villar, F., & Westerhof, G. (2023). Perceived Caregiving Trajectories and their Relationship with Caregivers' Burdens and Gains. The Spanish Journal of Psychology, 26, e12. https://doi.org/10.1017/SJP.2023.12
- Gimenez-Serrano, S., Alcaide, M., Reyes, M., Zacarés, J. J., & Celdrán, M. (2022). Beyond Parenting Socialization Years: The Relationship between Parenting Dimensions and Grandparenting Functioning. International Journal of Environmental Research and Public Health, 19(8), 4528. https://doi.org/10.3390/ijerph19084528
- Pinazo-Hernandis, S., Zacares, J. J., Serrat, R., & Villar, F. (2023). The Role of Generativity in Later Life in the Case of Productive Activities: Does the Type of Active Aging Activity Matter? Research on Aging, 45(1), 35–46. https://doi.org/10.1177/01640275221122914
- Serrat, R., Chacur-Kiss, K., Villar, F., & Peiró-Milian, I. (2023). For the Sake of Myself, My Colleagues and My Community: Exploring the Benefits of Political Participation in Later Life. Journal of Gerontological Social Work, 1–16. https://doi.org/10.1080/01634372.2023.2191129
- Serrat, R., Villar, F., & Chacur-Kiss, K. (2023). Narrating political participation: How do lifetime activists remember their political experiences? Memory Studies, 175069802311760. https://doi.org/10.1177/17506980231176042
- Solé, C., Celdrán, M., & Cifre, I. (2022). Psychological and Behavioral Effects of Snoezelen Rooms on Dementia. Activities, Adaptation & Aging, 1–16. https://doi.org/10.1080/01924788.2022.2151805
- Villar, F., Silva-Cavero, A., Serrat, R., & Celdrán, M. (2022). Long-term care staff 's positive experiences of caring for people living with dementia: Narratives' content and lessons learned. Dementia, 21(8), 2553–2568. https://doi.org/10.1177/14713012221126298
- Villar, F., & Westerhof, G. J. (2023). A conversational, small-story approach to narrative care for people with dementia living in care institutions: Strategies and challenges. Journal of Aging Studies, 64, 101105. https://doi.org/10.1016/j.jaging.2023.101105



Mental Health

Interpersonal Violence

Principal investigators

ANTONIO ANDRES-PUEYO
Assessment and management of risk of violence

DAVID GALLARDO-PUJOL
Neural basis of personality, situational perception, and violence

ALBERTO MAYDEU-OLIVARES
Structural equation modeling and item response theory

NOEMÍ PEREDA
Child and adolescent victimisation

SANTIAGO REDONDO ILLESCAS
Evaluantion and treatment of offenders

ALVARO RODRIGUEZ-CARBALLEIRA
Psychological violence

Members

Diego A. Diaz-Faz, Omar Andres Saldaña, Carolina Andana, Emma Antelo, Marta Codina, Laura Sicilia, Jorge Escartin, Macià Buades-Rotger, David Saeteros, Guillermo Recio, Miguel Burgaleta.

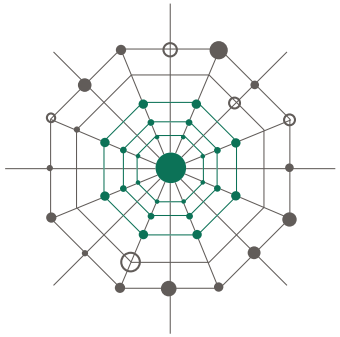
Highlighted projects

- **Violence, behaVior, Individual differences and Technology Studies group (WITS).** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR00709. David Gallardo-Pujol
- **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 (STEPS).** Unió Europea. 881749. Noemí Pereda
- **Multiplying Educational Capacities to Combat Sexual Violence Against Children (EDUCAP).** Unió Europea. 101005439. Noemí Pereda
- **Does violence beget violence? Victim-offender overlap in Spanish adolescents (SOCIAL RESEARCH 2021) (SR21-00381).** Fundació Caixa de Pensions 'La Caixa'. SR21-00381. Noemí Pereda
- **Inferencias causales en modelos de ecuaciones estructurales: modelado del comportamiento violento.** Ministerio de Ciencia, Innovación y Universidades. PID2020-119755GB-I00. David Gallardo-Pujol
- **Violencia psicológica para la dominación en contextos interpersonales y grupales.** Ministerio de Ciencia, Innovación y Universidades. PID2021-123418NB-I00. Alvaro Rodriguez-Carballeira
- **Desarrollo de un ecosistema digital de salud mental para entornos laborales.** Ministerio de Ciencia e Innovación (MICINN). CPP2021-008590. David Gallardo-Pujol
- 12 confidential agreements

Selected publications

- Codina, M., & Pereda, N. (2022). Characteristics and Prevalence of Lifetime Sexual Victimization Among a Sample of Men and Women with Intellectual Disabilities. Journal of Interpersonal Violence, 37(15–16), NP14117–NP14139. https://doi.org/10.1177/08862605211006373
- Codina, M., Pereda, N., & Guilera, G. (2022). Lifetime Victimization and Poly-Victimization in a Sample of Adults With Intellectual Disabilities. Journal of Interpersonal Violence, 37(5–6), 2062–2082. https://doi.org/10.1177/0886260520936372

Research



Mental Health

- Díaz-Faes, D. A., & Pereda, N. (2022). 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, 23(3), 938–952. https://doi.org/10.1177/1524838020979694
- Greco, A. M., González-Pío, C., Bartolomé, M., & Pereda, N. (2022). How can school help victims of violence? Evaluation of online training for European schools' staff from a multidisciplinary approach. PLOS ONE, 17(8), e0272872. https://doi.org/10.1371/journal.pone.0272872
- Ortega-Barón, J., Machimbarrena, J. M., Calvete, E., Orue, I., Pereda, N., & González-Cabrera, J. (2022). Epidemiology of online sexual solicitation and interaction of minors with adults: A longitudinal study. Child Abuse & Neglect, 131, 105759. https://doi.org/10.1016/j.chiabu.2022.105759
- Özer, G., Griep, Y., & Escartín, J. (2022). The Relationship between Organizational Environment and Perpetrators' Physical and Psychological State: A Three-Wave Longitudinal Study. International Journal of Environmental Research and Public Health, 19(6), 3699. https://doi.org/10.3390/ijerph19063699
- Pereda, N., Codina, M., Díaz-Faes, D. A., & Kanter, B. (2022a). Giving a voice to adolescents in residential care: Knowledge and perceptions of commercial sexual exploitation and runaway behavior. Children and Youth Services Review, 141, 106612. https://doi.org/10.1016/j.childyouth.2022.106612
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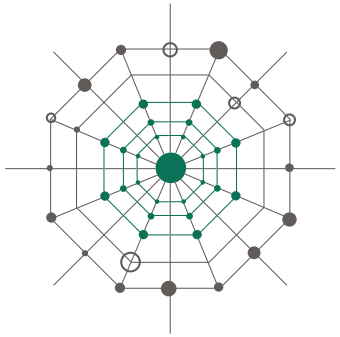
- Saldaña, O., Antelo, E., & Rodríguez-Carballeira, Á. (2022). Group psychological abuse perpetration: Development and validation of a measure using classical and modern test theory. Psychology of Violence. https://doi.org/10.1037/vio0000455
- Saldaña, O., Wu-Salmeron, O., Antelo, E., & Rodríguez-Carballeira, Á. (2022). The Negative Impact of Group Psychological Abuse on Life Satisfaction and Well-being. Journal of Interpersonal Violence, 37(19–20), NP18865–NP18887. https://doi.org/10.1177/08862605211042598
- Sánchez de Ribera, O., Trajtenberg, N., Martínez-Catena, A., & Redondo-Illescas, S. (2023). Implementation of a Treatment Program for Individuals Imprisoned for Sex Offenses in Uruguay: Achievements, Problems and Challenges. Sexual Abuse, 35(4), 503–533. https://doi.org/10.1177/10790632221127976
- Shi, D., DiStefano, C., Maydeu-Olivares, A., & Lee, T. (2022). Evaluating SEM Model Fit with Small Degrees of Freedom. Multivariate Behavioral Research, 57(2–3), 179–207. https://doi.org/10.1080/00273171.2020.1868965
- Sicilia Laura, B. M. P. N. (n.d.). The Spanish Posttraumatic Growth Inventory - Short Form in Adult Survivors of Child Sexual Abuse. Psicothema.

Thesis

- **Polivictimización y síntomas psicopatológicos en adolescentes mexicanos.** Claudia Méndez. Supervisor: Noemí Pereda
- **Psychometric approaches for designing personality inventories for large scale assessment.** Rouco, Victor. Supervisor: David Gallardo & Filip de Fruyt
- **Non-invasive brain stimulation, personalitu and cognition.** Domínguez Martín de la Torre, O. Supervisor: David Gallardo

Measurement and research designs



Mental Health

Principal investigators

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

MA. TERESA ANGUERA
Observational methodology

Members

Juan Antonio Amador, Ernesto Mijail Magallon, Angela Iannine Berrio, Estefania Daniela Guerrero, Chuenn Ann Chai, Maite Barrios.

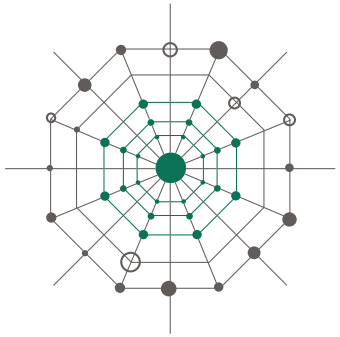
Highlighted projects

- **Grup d'Estudis d'Invar(GRID)iància de la Measura i Anàlisi del Canvi en el àmbits social i de la salut (GEIMAC).** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR01071. Georgina Guilera
- **SEEP Student Engagement en educació superior: Eines per al Professorat. Institut de Ciències de l'Educació (ICE) -** Universitat de Barcelona (UB). REDICE22-3200. Ma. Teresa Anguera
- **Hacia la recuperación en personas diagnosticadas con trastorno mental severo: Definición, evaluación e intervención.** Ministerio de Ciencia, Innovación y Universidades. PID2019-109887GB-I00. Juana Gomez-Benito
- **Impacto de la violación de los supuestos en el análisis de datos con medidas repetidas: simulación Monte Carlo y aplicacions.** Ministerio de Ciencia e Innovación. Agencia Estatal de Investigación (AEI) y Fondo Europeo de Desarrollo Regional (FEDER, UE). PID2020-113191GB-I00. Roser Bono
- **Grup de recerca e innovació en dissenys (GRID).** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR00718. Ma. Teresa Anguera
- **Integraciòn entre datos observacionales y datos procedentes de sensores externos.** Ministerio de Cultura y Deporte. EXP_74847. Ma. Teresa Anguera
- 3 confidential agreements

Selected publications

- Alarcón-Espinoza, M., Sanduvete-Chaves, S., Anguera, M. T., Samper García, P., & Chacón-Moscoso, S. (2022). Emotional Self-Regulation in Everyday Life: A Systematic Review. Frontiers in Psychology, 13. https://doi.org/10.3389/fpsyg.2022.884756
- Arias-Pujol, E., Mestres, M., Miralbell, J., Bachs, N., & Anguera, M. T. (2022). Implementation and evaluation in low intensity intervention programs from the CONNECT perspective of mixed methods: Application in a case of an autistic child. Frontiers in Psychology, 13. https://doi.org/10.3389/fpsyg.2022.998658
- Barrios, M., & Villarroya, A. (2022). What is needed to promote gender equality in the cultural sector? Responses from cultural professionals in Catalonia. European Journal of Cultural Studies, 25(4), 973–992. https://doi.org/10.1177/13675494211048903
- Berrío, Á. I., Gómez-Benito, J., & Guilera, G. (2022). Differential Item Functioning in the WHODAS 2.0 Scale in Schizophrenia: An Application of the Rasch Trees Method Based on Demographic and Clinical Covariates. Assessment, 29(8), 1858–1868. https://doi.org/10.1177/10731911211036746

Research



Mental Health

- Ferrer-Quintero, M., Fernández, D., López-Carrilero, R., Birulés, I., Barajas, A., Lorente-Rovira, E., Luengo, A., Díaz-Cutraro, L., Verdaguer, M., García-Mieres, H., Gutiérrez-Zotes, A., Grasa, E., Pousa, E., Huerta-Ramos, E., Pélaez, T., Barrigón, M. L., Gómez-Benito, J., González-Higueras, F., Ruiz-Delgado, I., … Ochoa, S. (2022). Males and females with first episode psychosis present distinct profiles of social cognition and metacognition. European Archives of Psychiatry and Clinical Neuroscience, 272(7), 1169–1181. https://doi.org/10.1007/s00406-022-01438-0
- Greco, A. M., Guilera, G., Maldonado-Murciano, L., Gómez-Benito, J., & Barrios, M. (2022). Proposing Necessary but Not Sufficient Conditions Analysis as a Complement of Traditional Effect Size Measures with an Illustrative Example. International Journal of Environmental Research and Public Health, 19(15), 9402. https://doi.org/10.3390/ijerph19159402
- Maldonado-Murciano, L., Guilera, G., Montag, C., & Pontes, H. M. (2022). Disordered gaming in esports: Comparing professional and non-professional gamers. Addictive Behaviors, 132, 107342. https://doi.org/10.1016/j.addbeh.2022.107342
- Matas, L. S., Cerrejón, M. B., & Beltrán, N. P. (2022). The Spanish Posttraumatic Growth Inventory - Short Form in Adult Survivors of Child Sexual Abuse. Psicothema, 34(3), 463–470. https://doi.org/10.7334/psicothema2021.458
- Nunes, H., Iglesias, X., Del Giacco, L., & Anguera, M. T. (2022). The Pick-and-Roll in Basketball From Deep Interviews of Elite Coaches: A Mixed Method Approach From Polar Coordinate Analysis. Frontiers in Psychology, 13. https://doi.org/10.3389/fpsyg.2022.801100
- Nuño, L., Guilera, G., Barrios, M., Gómez-Benito, J., & Abdelhamid, G. S. M. (2022). Network Analysis of the Brief ICF Core Set for Schizophrenia. Frontiers in Psychiatry, 13. https://doi.org/10.3389/fpsyt.2022.852132
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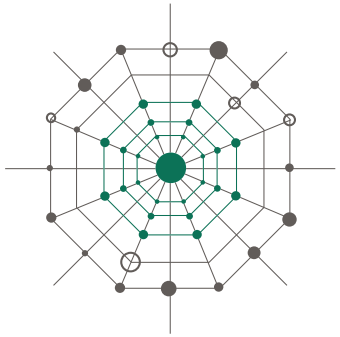
- Rosen, A. O., Holmes, A. L., Balluerka, N., Hidalgo, M. D., Gorostiaga, A., Gómez-Benito, J., & Huedo-Medina, T. B. (2022). Is Social Media a New Type of Social Support? Social Media Use in Spain during the COVID-19 Pandemic: A Mixed Methods Study. International Journal of Environmental Research and Public Health, 19(7), 3952. https://doi.org/10.3390/ijerph19073952
- Soto-Fernández, A., Camerino, O., Iglesias, X., Anguera, M. T., & Castañer, M. (2022). LINCE PLUS software for systematic observational studies in sports and health. Behavior Research Methods, 54(3), 1263–1271. https://doi.org/10.3758/s13428-021-01642-1
- Tronchoni, H., Izquierdo, C., & Anguera, M. T. (2022). A systematic review on lecturing in contemporary university teaching. Frontiers in Psychology, 13. https://doi.org/10.3389/fpsyg.2022.971617
- Urraca-Martínez, M. L., Anguera, M. T., & Sastre-Riba, S. (2022). Evaluation Using Polar Coordinate of the Representation of Movement in the Drawings of Children Aged 5 to 8 Years. International Journal of Environmental Research and Public Health, 19(5), 2844. https://doi.org/10.3390/ijerph19052844

Thesis

- **Análisis de la motivación materna y estudio de las relaciones afectivas entre madre e hijos en la lactancia materna prolongada.** Gemma López Fernández. Supervisor: Maria Teresa Barrios & Juana Gómez Benito
- **Funcionamiento Diferencial del Ítem: un abordaje desde la perspectiva bibliométrica, experimental y empírica.** Ángela Berrío Beltrán. Supervisor: Juana Gómez Benito



Mental Health

Schizophrenia

Principal investigators

MIQUEL BERNARDO

Members

Miquel Bioque, Rosa Catalan, Clemente Carlos Garcia, Gisela Mezquida, Eduardo Parellada, Rafael Penades, Maria Mercedes Torra, Silvia Amoretti.

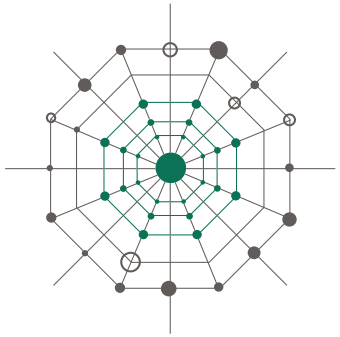
Highlighted projects

- **Cellular, molecular, genetic and cognitive-behavioural 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
- **The retinal structure as a potential biomarker in schizophrenia spectrum disorders.** Fundació La Marató de TV3. 202205-10. Miquel Bernardo
- **Deep brain stimulation for patients with treatment-resistant schizophrenia: a multicentre prospective study.** Fundació La Marató de TV3. 202206-30. Miquel Bioque
- **Testing the accelerated aging hypothesis in schizophrenia: an epigenetic clock analysis in chronic and elderly patients: the ENCLOSE-Age Study (EpigeNetic CLOck in SchizophrEnia - in Aged adults).** Fundació La Marató de TV3. 202225-30. Rafael Penades
- **El efecto de los eventos perinatales en los primeros episodios psicóticos.** Instituto de Salud Carlos III. PI20/00661. Clemente Carlos Garcia
- **Biomarcadores de pérdida sináptica, daño neuronal e inflamación en líquido cefalorraquídeo y sangre periférica en pacientes con un primer episodio psicótico.** Instituto de Salud Carlos III. PI20/01066. Miquel Bioque
- **Marcadores glutamatérgicos y respuesta antipsicótica inicial en pacientes con primer episodio psicótico (PEP) y en un modelo animal de esquizofrenia.** Ministerio de Ciencia, Innovación y Universidades. PI21/00552. Eduardo Parellada
- 16 confidential agreements

Selected publications

- Amoretti, S., Rosa, A. R., Mezquida, G., Cabrera, B., Ribeiro, M., Molina, M., Bioque, M., Lobo, A., González-Pinto, A., Fraguas, D., Corripio, I., Vieta, E., de la Serna, E., Morro, L., Garriga, M., Torrent, C., Cuesta, M. J., & Bernardo, M. (2022). The impact of cognitive reserve, cognition and clinical symptoms on psychosocial functioning in first-episode psychoses. Psychological Medicine, 52(3), 526–537. https://doi.org/10.1017/S0033291720002226
- Amoretti, S., Verdolini, N., Varo, C., Mezquida, G., Sánchez-Torres, A. M., Vieta, E., Garcia-Rizo, C., Lobo, A., González-Pinto, A., Abregú-Crespo, R., Corripio, I., Serra, M., de la Serna, E., Mané, A., Ramos-Quiroga, J. A., Ribases, M., Cuesta, M. J., & Bernardo, M. (2022). Is the effect of cognitive reserve in longitudinal outcomes in first-episode psychoses dependent on the use of cannabis? Journal of Affective Disorders, 302, 83–93. https://doi.org/10.1016/j.jad.2022.01.077
- Bernardo, M., Anmella, G., Verdolini, N., Saiz-Masvidal, C., Casals, S., Contreras, F., Garrido, I., Pérez, F., Safont, G., Mas, S., Rodriguez, N., Meseguer, A., Pons-Cabrera, M. T., Vieta, E., & Amoretti, S. (2022). Assessing cognitive reserve outcomes and biomarkers in first episode of psychosis: Rationale, objectives, protocol and preliminary results of the CRASH Project. Revista de Psiquiatría y Salud Mental. https://doi.org/10.1016/j.rpsm.2022.03.001

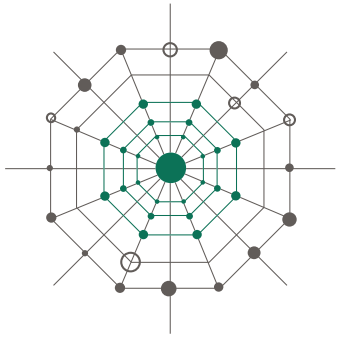
Research



Mental Health

- Bernardo, M., Mezquida, G., Ferré, P., Cabrera, B., Torra, M., Lizana, A. M., & Brunet, M. (2022). Dried Blood Spot (DBS) as a useful tool to improve clozapine, aripiprazole and paliperidone treatment: From adherence to efficiency. Revista de Psiquiatría y Salud Mental (English Edition), 15(4), 230–237. https://doi.org/10.1016/j.rpsmen.2022.04.002
- Garcia-Rizo, C., Cabrera, B., Bioque, M., Mezquida, G., Lobo, A., Gonzalez-Pinto, A., Diaz-Caneja, C. M., Corripio, I., Vieta, E., Baeza, I., Garcia-Portilla, M. P., Gutierrez-Fraile, M., Rodriguez-Jimenez, R., Garriga, M., Fernandez-Egea, E., & Bernardo, M. (2022). The effect of early life events on glucose levels in first-episode psychosis. Frontiers in Endocrinology, 13. https://doi.org/10.3389/fendo.2022.983792
- Gonzalez-Diaz, J. M., Radua, J., Sanchez-Dalmau, B., Camos-Carreras, A., Zamora, D. C., & Bernardo, M. (2022). Mapping Retinal Abnormalities in Psychosis: Meta-analytical Evidence for Focal Peripapillary and Macular Reductions. Schizophrenia Bulletin, 48(6), 1194–1205. https://doi.org/10.1093/schbul/sbac085
- Guasp, M., Martín-Aguilar, L., Sabater, L., Bioque, M., Armangué, T., Martínez-Hernández, E., Landa, J., Maudes, E., Borràs, R., Muñoz-Lopetegi, A., Saiz, A., Castro-Fornieles, J., Graus, F., Parellada, E., Querol, L., & Dalmau, J. (2022). Neurofilament Light Chain Levels in Anti-NMDAR Encephalitis and Primary Psychiatric Psychosis. Neurology, 98(14), e1489–e1498. https://doi.org/10.1212/WNL.0000000000200021
- Henquet, C., van Os, J., Pries, L. K., Rauschenberg, C., 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. S., Kaymak, S. U., … Gülöksüz, S. (2022). A replication study of JTC bias, genetic liability for psychosis and delusional ideation. Psychological Medicine, 52(9), 1777–1783. https://doi.org/10.1017/S0033291720003578
- Hidalgo-Figueroa, M., Salazar, A., Romero-López-Alberca, C., MacDowell, K. S., García-Bueno, B., Bioque, M., Bernardo, M., Parellada, M., González-Pinto, A., García Portilla, M. P., Lobo, A., Rodriguez-Jimenez, R., Berrocoso, E., & Leza, J. C. (2022). The Influence of Oxytocin and Prolactin During a First Episode of Psychosis: The Implication of Sex Differences, Clinical Features, and Cognitive Performance. International Journal of Neuropsychopharmacology, 25(8), 666–677. https://doi.org/10.1093/ijnp/pyac023
- Martínez-Pinteño, A., Mezquida, G., Bioque, M., López-Ilundain, J. M., Andreu-Bernabeu, Á., Zorrilla, I., Mané, A., Rodríguez-Jiménez, R., Corripio, I., Sarró, S., Ibáñez, Á., Usall, J., Rivero, O., Gassó, P., Leza, J. C., Cuesta, M. J., Parellada, M., González-Pinto, A., Berrocoso, E., … Sáiz, P. (2022). The role of BDNF and NGF plasma levels in first-episode schizophrenia: A longitudinal study. European Neuropsychopharmacology, 57, 105–117. https://doi.org/10.1016/j.euroneuro.2022.02.003
- Pignon, B., Peyre, H., Ayrolles, A., Kirkbride, J. B., Jamain, S., Ferchiou, A., Richard, J. R., Baudin, G., Tosato, S., Jongsma, H., de Haan, L., Tarricone, I., Bernardo, M., Velthorst, E., Braca, M., Arango, C., Arrojo, M., Bobes, J., Del-Ben, C. M., … Schürhoff, F. (2022). Genetic and psychosocial stressors have independent effects on the level of subclinical psychosis: findings from the multinational EU-GEI study. Epidemiology and Psychiatric Sciences, 31, e68. https://doi.org/10.1017/S2045796022000464
- Pujol, N., Bergé, D., Mané, A., Bioque, M., Mezquida, G., Amoretti, S., Baeza, I., González-Pinto, A., Lobo, A., Cuesta, M. J., Ribeiro, M., Sánchez-Tomico, G., Pérez-Solà, V., Verdolini, N., Vieta, E., Parellada, M., Roldán, A., & Bernardo, M. (2022). The influence of modifiable cardiovascular risk factors on cognition, functioning, and inflammatory markers in first-episode psychosis: Results from a 2-year follow-up study. Psychiatry Research, 316, 114760. https://doi.org/10.1016/j.psychres.2022.114760

Research



Mental Health

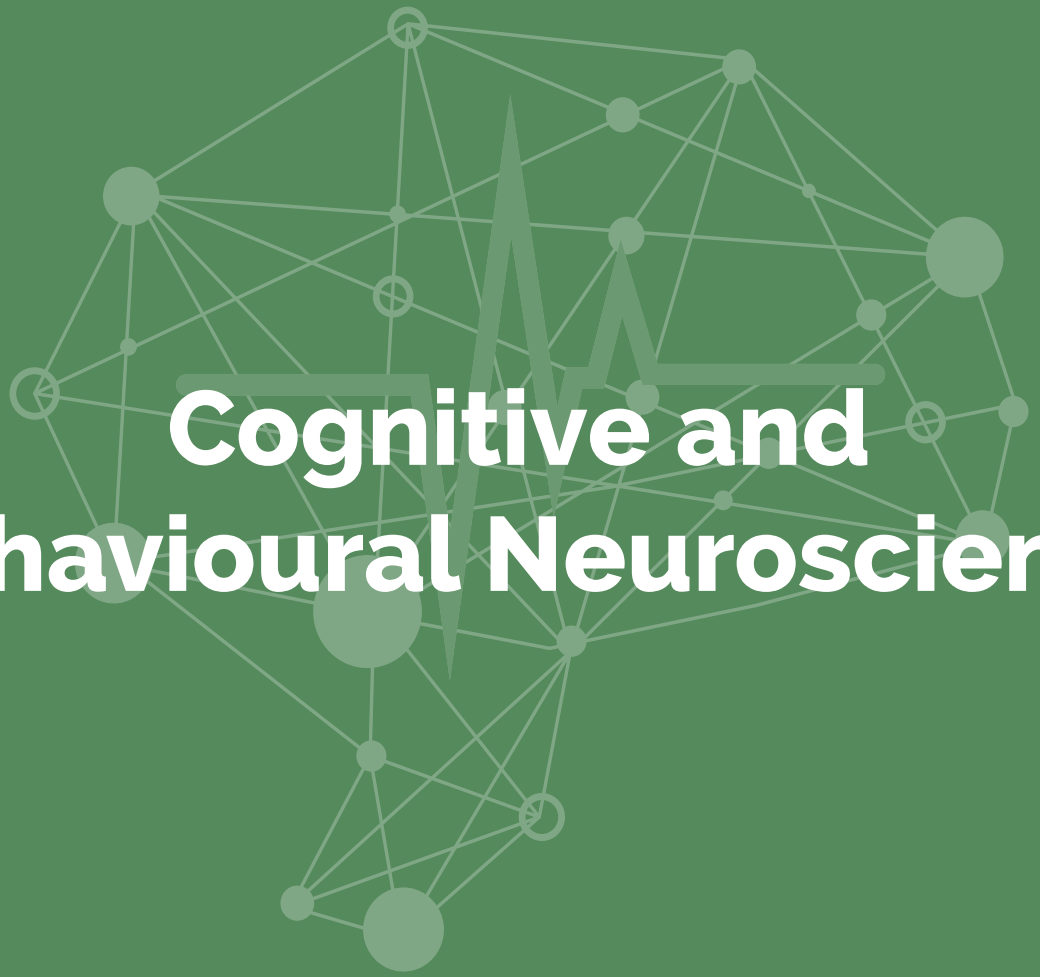
- Segura, A. G., Mezquida, G., Martínez-Pinteño, A., Gassó, P., Rodriguez, N., Moreno-Izco, L., Amoretti, S., Bioque, M., Lobo, A., González-Pinto, A., García-Alcon, A., Roldán-Bejarano, A., Vieta, E., de la Serna, E., Toll, A., Cuesta, M. J., Mas, S., & Bernardo, M. (2022). Link between cognitive polygenic risk scores and clinical progression after a first-psychotic episode. Psychological Medicine, 1–14. https://doi.org/10.1017/S0033291722001544
- Termorshuizen, F., van der Ven, E., Tarricone, I., Jongsma, H. E., Gayer-Anderson, C., Lasalvia, A., Tosato, S., Quattrone, D., La Cascia, C., Szöke, A., Berardi, D., Llorca, P.-M., de Haan, L., Velthorst, E., Bernardo, M., Sanjuán, J., Arrojo, M., Murray, R. M., Rutten, B. P., … Selten, J.-P. (2022). The incidence of psychotic disorders among migrants and minority ethnic groups in Europe: findings from the multinational EU-GEI study. Psychological Medicine, 52(7), 1376–1385. https://doi.org/10.1017/S0033291720003219

Knowledge and transfer innovation

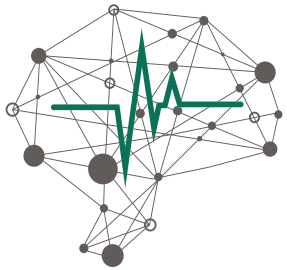
- Method for predicting the onset of extrapyramidal symptoms (EPS) induced by an antipsicotic-based treatment. AVCRI196.

Thesis

- **Interindividual variability of brain activity in schizophrenia**. Aniol Santo Anglès. Supervisor: Miguel Bernardo Arroyo & Edith Pomarol-Clotet.



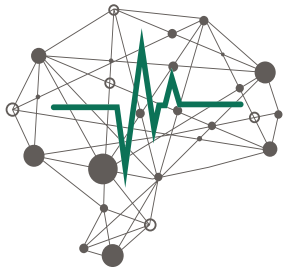
Cognitive and Behavioural Neuroscience



Cognitive and behaivoural 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, a 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.



Cognitive
and Behavioural
Neuroscience

Brain Plasticity and connectivity: Language, memory and reward

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
Neural and cognitive processes of human memory

MIREIA HERNANDEZ
Neurolinguistics, Multilingualism and Cognition

JOSEP MARCO-PALLARES
Brain mechanisms of learning and reward

FERRAN PONS
Language acquisition and cognitive development

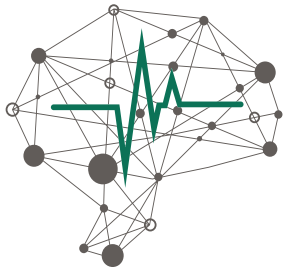
ANTONIO RODRIGUEZ-FORNELLS
Learning and Brain Plasticity

Members

Marta Ramon, Ernest Mas, Marc Ballestero, Barbara Braida, Josue Garcia, Alba Gomez, Paula López, Marta Marques. Berta Nicolás, Joan Tarrida, David Cucurell, Jessica Sánchez-Galán, Emma Segura, Joan Rodríguez, Joanna Sierpowska, Brian Quintero, Clara Soberats.

Highlighted projects

- **Brain Dynamics and Structure of Human Cognition (BraCo).** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR00352. Ruth de Diego-Balaguer
- **Grup de Cognició i Plasticitat Cerebral.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR01099. Antonio Rodriguez-Fornells
- **The Adapting Brain: Preparing for Parenthood.** Fundaçao BIAL. 184/20. Lluís Fuentemilla
- **Brain Correlates of Socially Interactive Language Learning (BraSILL).** Unió Europea. 101062671. Antonio Rodriguez-Fornells
- **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 (ICREA). Josep Marco-Pallares
- **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 (ICREA). Lluís Fuentemilla
- **Cognición estructurada en eventos.** Ministerio de Ciencia, Innovación y Universidades. PID2019-111199GB-I00. Lluís Fuentemilla
- **Predicciones temporales en el sistema motor y su relación con el aprendizaje del lenguaje.** Ministerio de Ciencia, Innovación y Universidades. PID2021-127146NB-I00. Ruth de Diego-Balaguer
- **La lengua extranjera como factor de distancia psicològica.** Ministerio de Ciencia, Innovación y Universidades. PID2021-127053NB-I00. Mireia Hernandez
- **El papel de la incertidumbre en las propiedades reforzadoras de la información.** Ministerio de Ciencia, Innovación y Universidades. PID2021-126477NB-I00. Josep Marco-Pallares



Cognitive and Behavioural Neuroscience

- **Indexical representation and lexical learning in audiovisual contexts: A challenge or an advantage for typically developing infants and clinical populations?.** Ministerio de Ciencia, Innovación y Universidades. PID2021-128159NB-I00. Ferran Pons
- **Investigación neurofisiológica de la interacción de la recompensa y la función inhibitoria en la formación de hábitos alimentarios no saludables en humanos adultos.** Ministerio de Ciencia e Innovación (MICINN). PID2021-127743OB-I00. Toni Cunillera
- **NEURAL EVIDENCE ON THE INVOLVEMENT OF SELF-MONITORING AND INTRINSIC VALUE IN INFORMATION SEEKING AND AVOIDANCE.** Ministerio de Ciencia e Innovación (MICINN). PID2021-127130NB-I00. Antonio Rodriguez-Fornells
- **Ajut per a estada Salvador Madariaga.** Ministerio de Educación . PRX21/00420. Josep Marco-Pallares
- 5 confidential agreements

Selected publications

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- Garcia-Arch, J., Barberia, I., Rodríguez-Ferreiro, J., & Fuentemilla, L. (2022a). Authority Brings Responsibility: Feedback from Experts Promotes an Overweighting of Health-Related Pseudoscientific Beliefs. International Journal of Environmental Research and Public Health, 19(22), 15154. https://doi.org/10.3390/ijerph192215154
- Garcia-Arch, J., Barberia, I., Rodríguez-Ferreiro, J., & Fuentemilla, L. (2022b). Authority Brings Responsibility: Feedback from Experts Promotes an Overweighting of Health-Related Pseudoscientific Beliefs. International Journal of Environmental Research and Public Health, 19(22), 15154. https://doi.org/10.3390/ijerph192215154
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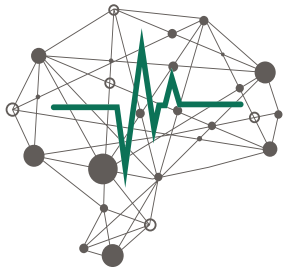

Cognitive
and Behavioural
Neuroscience

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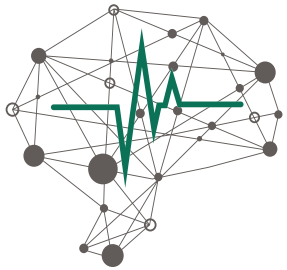
Thesis

- **Once and for all: post-encoding neural mechanisms promoting rapid episodic memory formation in humans.** Wu, X. Supervisor: Lluís Fuentemilla,
- **Neurophysiological correlates underlying social behavioural adjustment of conformity.** Unai Vicente Guirado. Supervisors: Josep Marco Pallarés & María Palación Lois
- **Decision Making in Complex Scenarios: a Reinforcement Learning Approach.** Jeison Parra Tijaro. Supervisors: Josep Marco-Pallarés

Neuropsychology



Cognitive
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Neuroscience

Principal investigators

ANA ADAN
Addiction and dual disorders

DAVID BARTRES-FAZ
Brain health and neuromodulation

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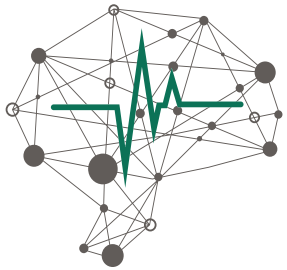
JOSEP M SERRA-GRABULOSA
Neural basis of learning difficulties

Members

Xavier Caldu, Isabel Garcia, Julia Ballester-Plane, Julia Miralbell, Juan Jose Soriano, Cristina Sanchez, Lidia Vaque, Adria Bermudo, Montse Blasco, Maria del Rocio Cabello, Maria Garcia-Galant, Juan Pablo Martin, Lidia Mulet, Ruben Perellon, Anna Prunell, Francesca Roig, Olga Laporta-Hoyos.

Highlighted projects

- **Multiple-level predictors of resilience during the COVID-19 pandemic. Lessons towards a precision preventive medicine.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2020PANDE00043
- **Healthy minds from 0-100 years: Optimising the use of European brain imaging cohorts (Lifebrain).** Unió Europea. 732592
- **Evaluation of Autism SpEctrum Disorder in children with Cerebral Palsy (EASED-CP).** Unió Europea. 101066954
- **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 (ICREA)
- **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 (ICREA)
- **Characterization and modulation of brain networks to promote brain resilience for the COVID-19 pandemic.** Fundació La Marató de TV3. 592/U/2021
- **Home-based non-invasive brain stimulation for treatment-resistant depression: feasibility, efficacy and biomarker of treatment response.** Fundació La Marató de TV3. 202211-31
- **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
- **CARACTERIZACIÓN DE LA ADICCIÓN Y LA PATOLOGÍA DUAL. EFICACIA DE LA CRONOTERAPIA COADYUVANTE EN PACIENTES CON RESPUESTA PARCIAL.** Ministerio de Ciencia, Innovación y Universidades. PID2020-117767GB-I00



Cognitive
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Neuroscience

- **Guías basadas en la evidencia y consensuadas para la evaluación neuropsicológica de las personas con parálisis cerebral grave y parálisis cerebral discinética.** Ministerio de Ciencia e Innovación (MICINN). PID2020-117163RB-I00
- **Ajut per a estada Salvador Madariaga.** Ministerio de Educación, Cultura y Deporte. PRX21/00690
- **Collaboratory on Research Definitions for Cognitive Reserve and Resilience.** National Institutes of Health (NIH). 9(GG013391-01)
- 4 confidential agreements

Selected publications

- Abellaneda-Pérez, K., Martin-Trias, P., Cassé-Perrot, C., Vaqué-Alcázar, L., Lanteaume, L., Solana, E., Babiloni, C., Lizio, R., Junqué, C., Bargalló, N., Rossini, P. M., Micallef, J., Truillet, R., Charles, E., Jouve, E., Bordet, R., Santamaria, J., Rossi, S., Pascual-Leone, A., … Bartrés-Faz, D. (2022). BDNF Val66Met gene polymorphism modulates brain activity following rTMS-induced memory impairment. Scientific Reports, 12(1), 176. https://doi.org/10.1038/s41598-021-04175-x
- Adan, A., & Navarro, J. F. (2022). Protocol for Characterization of Addiction and Dual Disorders: Effectiveness of Coadjuvant Chronotherapy in Patients with Partial Response. Journal of Clinical Medicine, 11(7), 1846. https://doi.org/10.3390/jcm11071846
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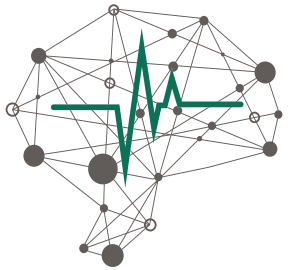

Cognitive
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Neuroscience

- Dacosta-Aguayo, R., Lamonja-Vicente, N., Chacón, C., Carrasco-Ribelles, L. A., Montero-Alia, P., Costa-Garrido, A., García-Sierra, R., López-Lifante, V. M., Moreno-Gabriel, E., Massanella, M., Puig, J., Muñoz-Moreno, J. A., Mateu, L., Prats, A., Rodríguez, C., Mataró, M., Prado, J. G., Martínez-Cáceres, E., Violán, C., & Torán-Monserrat, P. (2022). Neurocognitive Profile of the Post-COVID Condition in Adults in Catalonia—A Mixed Method Prospective Cohort and Nested Case–Control Study: Study Protocol. Vaccines, 10(6), 849. https://doi.org/10.3390/vaccines10060849
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- Marquez-Arrico, J. E., Gonzalez-Sanchez, A., Navarro, J. F., Penadés, R., & Adan, A. (2022). Patients with Schizophrenia Showed Worse Cognitive Performance than Bipolar and Major Depressive Disorder in a Sample with Comorbid Substance Use Disorders. Journal of Clinical Medicine, 11(22), 6648. https://doi.org/10.3390/jcm11226648
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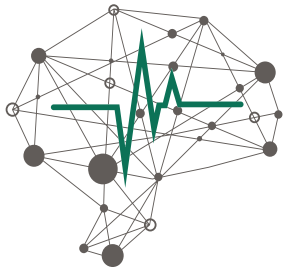
- Sommerer, Y., Dobricic, V., Schilling, M., Ohlei, O., Bartrés-Faz, D., Cattaneo, G., Demuth, I., Düzel, S., Franzenburg, S., Fuß, J., Lindenberger, U., Pascual-Leone, Á., Sabet, S. S., Solé-Padullés, C., Tormos, J. M., Vetter, V. M., Wesse, T., Franke, A., Lill, C. M., & Bertram, L. (2022). Epigenome-Wide Association Study in Peripheral Tissues Highlights DNA Methylation Profiles Associated with Episodic Memory Performance in Humans. Biomedicines, 10(11), 2798. https://doi.org/10.3390/biomedicines10112798
- Walhovd, K. B., Fjell, A. M., Wang, Y., Amlien, I. K., Mowinckel, A. M., Lindenberger, U., Düzel, S., Bartrés-Faz, D., Ebmeier, K. P., Drevon, C. A., Baaré, W. F. C., Ghisletta, P., Johansen, L. B., Kievit, R. A., Henson, R. N., Madsen, K. S., Nyberg, L., R Harris, J., Solé-Padullés, C., … Brandmaier, A. M. (2022). Education and Income Show Heterogeneous Relationships to Lifespan Brain and Cognitive Differences Across European and US Cohorts. Cerebral Cortex, 32(4), 839–854. https://doi.org/10.1093/cercor/bhab248
- Walhovd, K. B., Nyberg, L., Lindenberger, U., Amlien, I. K., Sørensen, Ø., Wang, Y., Mowinckel, A. M., Kievit, R. A., Ebmeier, K. P., Bartrés-Faz, D., Kühn, S., Boraxbekk, C.-J., Ghisletta, P., Madsen, K. S., Baaré, W. F. C., Zsoldos, E., Magnussen, F., Vidal-Piñeiro, D., Penninx, B., & Fjell, A. M. (2022). Brain aging differs with cognitive ability regardless of education. Scientific Reports, 12(1), 13886. https://doi.org/10.1038/s41598-022-17727-6

Knowledge and transfer innovation

- Neurekelab. UB spin-off. Josep Maria Serra-Grabulosa.

Quantitative psychology



Cognitive
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Neuroscience

Principal investigators

JOAN GUARDIA-OLMOS
Quantitative Neuroscience

Members

Maribel Peró-Cebollero, Vicente Quera, Francesc Salvador, Antonio Solanas, Laia Farras, David Leiva, Rumen Rumenov, Maria De Les Salines Carbo, Ruth Dolado, Cristina Cañete, Marc Montala, Montserrat Colell Mimo.

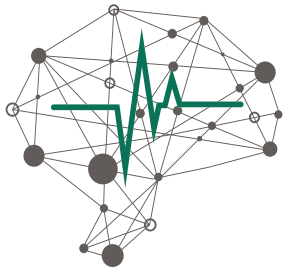
Highlighted projects

- **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
- **Doctorats industrials 2019. Empresa: Consorci Sant Gregori.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2019DI69. Joan Guardia-Olmos
- **Qualitat de Vida Familiar (QdVF) de l'estudiantat universitari: relació amb el rendiment acadèmic.** Institut de Ciències de l'Educació (ICE) - Universitat de Barcelona (UB). REDICE22-3362. Maria De Les Salines Carbo
- **Psicologia Quantitativa.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR00366. Joan Guardia-Olmos
- 4 confidential agreements

Selected publications

- Calvo, F., Nafría, C., Solanas, A., González, M., Tresserras, C., & Ferrer, X. (2022). ¿Qué variables facilitan el alta terapéutica en servicios residenciales de tratamiento de las drogodependencias? Estudio en dos comunidades terapéuticas en Cataluña. Revista Española de Drogodependencias, 47(2). https://doi.org/10.54108/10018
- Cañete-Massé, C., Carbó-Carreté, M., Peró-Cebollero, M., Cui, S.-X., Yan, C.-G., & Guàrdia-Olmos, J. (2022). Altered spontaneous brain activity in Down syndrome and its relation with cognitive outcome. Scientific Reports, 12(1), 15410. https://doi.org/10.1038/s41598-022-19627-1
- Cañete-Massé, C., Carbó-Carreté, M., Peró-Cebollero, M., Cui, S.-X., Yan, C.-G., & Guàrdia-Olmos, J. (2023). Abnormal degree centrality and functional connectivity in Down syndrome: A resting-state fMRI study. International Journal of Clinical and Health Psychology, 23(1), 100341. https://doi.org/10.1016/j.ijchp.2022.100341
- Cosío-Guirado, R., Soriano-Mas, C., del Cerro, I., Urretavizcaya, M., Menchón, J. M., Soria, V., Cañete-Massé, C., Peró-Cebollero, M., & Guàrdia-Olmos, J. (2022). Diagnosis of late-life depression using structural equation modeling and dynamic effective connectivity during resting fMRI. Journal of Affective Disorders, 318, 246–254. https://doi.org/10.1016/j.jad.2022.09.010
- Guàrdia-Olmos, J., Soriano-Mas, C., Tormo-Rodríguez, L., Cañete-Massé, C., Cerro, I. del, Urretavizcaya, M., Menchón, J. M., Soria, V., & Peró-Cebollero, M. (2022). Abnormalities in the default mode network in late-life depression: A study of resting-state fMRI. International Journal of Clinical and Health Psychology, 22(3), 100317. https://doi.org/10.1016/j.ijchp.2022.100317

Research



Cognitive
and Behavioural
Neuroscience

- Gudayol-Ferré, E., Duarte-Rosas, P., Peró-Cebollero, M., & Guàrdia-Olmos, J. (2022). The effect of second-generation antidepressant treatment on the attention and mental processing speed of patients with major depressive disorder: A meta-analysis study with structural equation models. Psychiatry Research, 314, 114662. https://doi.org/10.1016/j.psychres.2022.114662
- Manolov, R., & Onghena, P. (2022). Defining and assessing immediacy in singlecase experimental designs. Journal of the Experimental Analysis of Behavior, 118(3), 462–492. https://doi.org/10.1002/jeab.799
- Manolov, R., Onghena, P., & Van den Noortgate, W. (2022). Meta-analysis of single-case experimental designs: How can alternating treatments and changing criterion designs be included? Evidence-Based Communication Assessment and Intervention, 1–28. https://doi.org/10.1080/17489539.2022.2040164
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- Oviedo, G. R., Carbó-Carreté, M., Guerra-Balic, M., Tamulevicius, N., Esquius, L., Guàrdia-Olmos, J., & Javierre, C. (2022). Hemodynamic and cardiorespiratory responses to submaximal and maximal exercise in adults with Down syndrome. Frontiers in Physiology, 13. https://doi.org/10.3389/fphys.2022.905795
- Pérez-González, A., Benítez-Borrego, S., Garcia-Sicard, J., Cuartero, A., Ruiz-Torras, S., & Guàrdia-Olmos, J. (2022). Characterization and Evolution of Mental Health Problems Attended to in a Telephone Helpline During the Lockdown and De-Escalation by COVID-19. International Journal of Public Health, 67. https://doi.org/10.3389/ijph.2022.1604561
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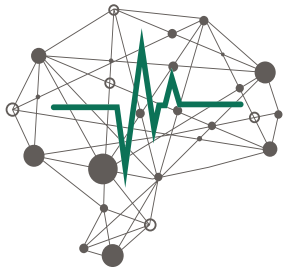
- Vilaseca, R., Rivero, M., Leiva, D., & Ferrer, F. (2023). Mothers' and Fathers' Parenting and Other Family Context Variables Linked to Developmental Outcomes in Young Children With Intellectual Disability: A Two-wave Longitudinal Study. Journal of Developmental and Physical Disabilities, 35(3), 387–416. https://doi.org/10.1007/s10882-022-09856-7

The auditory, motor, emotional and numerical brain



Cognitive and Behavioural Neuroscience

Principal investigators

CARLES ESCERA
Neural mechanisms of speech encoding and auditory perception.

JUDITH DOMÍNGUEZ-BORRÀS
Emotion interactions with perception and attention: amygdala function

MARÍA ISABEL NUÑEZ-PEÑA
Numerical cognition and math anxiety

IRIA SANMIGUEL
Motor-sensory interactions and predictive processing

MARC VIA
Cognitive neurogenetics

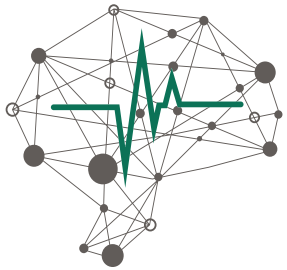
JORDI COSTA-FAIDELLA
Cerebelar Cognition

Members

Concepcion Clemente, Maria Jose Corral, Raquel Aparicio, Sonia Arenillas, Trisia Cinca, Marta Font, Samantha Lopez, Giannina Puddu-Gallardo, Marta Puertollano, Stefanie Sturm, Jose Valenzuela, Siham Ijjou-Kaadiri, Daniela Zanetti, Nadia Paraskevoudi.

Highlighted projects

- **Brainlab - Cognitive Neuroscience Research Group.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR00356. Carles Escera
- **Eina predictiva del neurodesenvolupament a dos anys en nadons nascuts amb baix pes mitjançant intel·ligència artificial aplicada a registres d EEG.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021 LLAV 00079. Carles Escera
- **Trastornos del espectro alcohólico fetal (TEAF): Identificación precoz y biomarcadores de riesgo para alteraciones neurocognitivas mediante el potencial de seguimiento de frecuencia (PSF).** Fundación Alicia Koplowitz. Carles Escera
- **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 (ICREA). Carles Escera
- **Amenaça d'estereotips de gènere, motivació i ansietat matemàtica: impacte sobre el rendiment acadèmic de les dones en educació superior.** Institut de Ciències de l'Educació (ICE) - Universitat de Barcelona (UB). REDICE22-3222. María Isabel Nuñez-Peña
- **Estudio de la vía subcortical humana para el procesamiento de amenaza auditiva.** Ministerio de Ciencia, Innovación y Universidades. PID2020-116311GA-I00.
- **Control ejecutivo en personas con ansiedad a las matemáticas: Inhibición, flexibilidad cognitiva y respuesta al error.** Ministerio de Ciencia, Innovación y Universidades. PID2020-117140GB-I00. María Isabel Nuñez-Peña
- **Participación del cerebelo en la percepción y producción de sonidos afinados.** Ministerio de Ciencia, Innovación y Universidades. PID2021-128624NA-I00. Jordi Costa-Faidella
- **Valor predictivo de la respuesta de seguimiento de frecuencia (RSF) neonatal para el desarrollo neurocognitivo a la edad de dos años: Factores genéticos y ambientales.** Ministerio de Ciencia, Innovación y Universidades. PID2021-122255NB-I00. Carles Escera



Cognitive
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Neuroscience

- **El sistema noradrenérgico del locus-coeruleus en la interfaz entre los procesos motores y auditives.** Ministerio de Ciencia, Innovación y Universidades. PID2021-128790NB-I00. Iria SanMiguel
- **Predicción del retraso en el neurodesarrollo en recién nacidos con bajo peso mediante inteligencia artificial aplicada a registros eeg ante sonidos del lenguaje.** Ministerio de Ciencia e Innovación. PDC2022-133044-I00. Carles Escera
- 1 confidential agreement

Selected publications

- CaArenillasAlcón, S., RibasPrats, T., Puertollano, M., Mondéjar Segovia, A., GómezRoig, M. D., CostaFaidella, J., & Escera, C. (2023). Prenatal daily musical exposure is associated with enhanced neural representation of speech fundamental frequency: Evidence from neonatal frequencyfollowing responses. Developmental Science. https://doi.org/10.1111/desc.13362
- Bermudo-Gallaguet, A., Ariza, M., Dacosta-Aguayo, R., Agudelo, D., Camins-Vila, N., Boldó, M., Carrera, Ò., Vidal, S., Ferrer-Uris, B., Busquets, A., Via, M., Pera, G., Cáceres, C., Gomis, M., García-Molina, A., Tormos, J. M., Arrabé, A., Diez, G., Durà Mata, M. J., … Mataró, M. (2022). Effects and mechanisms of mindfulness training and physical exercise on cognition, emotional wellbeing, and brain outcomes in chronic stroke patients: Study protocol of the MindFit project randomized controlled trial. Frontiers in Aging Neuroscience, 14. https://doi.org/10.3389/fnagi.2022.936077
- Calderon, C., Lorenzo-Seva, U., Ferrando, P. J., Sorribes, E., Rodríguez-González, A., Obispo, B. M., Mihic-Góngora, L., Corral, M. J., Rogado, J., Cruz-Castellanos, P., & Jiménez-Fonseca, P. (2022). Measurement properties of the Spanish version of the brief resilient coping scale (BRCS) in cancer patients. International Journal of Clinical and Health Psychology, 22(3), 100313. https://doi.org/10.1016/j.ijchp.2022.100313
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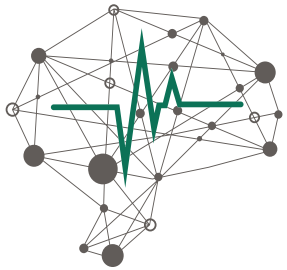
- Colomé, À., Núñez-Peña, M. I., & González-Gómez, B. (2022). Proactive control of attention in math-anxious individuals. Psychological Research. https://doi.org/10.1007/s00426-022-01750-3
- Gorina-Careta, N., Ribas-Prats, T., Arenillas-Alcón, S., Puertollano, M., Gómez-Roig, M. D., & Escera, C. (2022). Neonatal Frequency-Following Responses: A Methodological Framework for Clinical Applications. Seminars in Hearing, 43(03), 162–176. https://doi.org/10.1055/s-0042-1756162
- Heurteloup, C., Merchie, A., Roux, S., Bonnet-Brilhault, F., Escera, C., & Gomot, M. (2022). Neural repetition suppression to vocal and non-vocal sounds. Cortex, 148, 1–13. https://doi.org/10.1016/j.cortex.2021.11.020
- López-Mochales, S., Jiménez-Pasalodos, R., Valenzuela, J., Gutiérrez-Cajaraville, C., Díaz-Andreu, M., & Escera, C. (2022). Experimental Enhancement of Feelings of Transcendence, Tenderness, and Expressiveness by Music in Christian Liturgical Spaces. Frontiers in Psychology, 13. https://doi.org/10.3389/fpsyg.2022.844029
- Mihic-Gongora, L., Jiménez-Fonseca, P., Hernandez, R., Gil-Raga, M., Pacheco-Barcia, V., Manzano-Fernández, A., Hernando-Polo, S., Antoñanzas-Basa, M., Corral, M. J., Valero-Arbizu, M., & Calderon, C. (2022a). Psychological distress and



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resilience in patients with advanced cancer during the Covid-19 pandemic: the mediating role of spirituality. BMC Palliative Care, 21(1). https://doi.org/10.1186/s12904-022-01034-y

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- Paraskevoudi, N., & SanMiguel, I. (2023). Sensory suppression and increased neuromodulation during actions disrupt memory encoding of unpredictable selfinitiated stimuli. Psychophysiology, 60(1). https://doi.org/10.1111/psyp.14156
- Velasco-Durantez, V., Jimenez-Fonseca, P., Martín Abreu, C. M., Ghanem, I., González Moya, M., Asensio, E., Corral, M. J., Rodriguez-Gonzalez, A., Gil-Raga, M., Carmona-Bayonas, A., & Calderon, C. (2022). Resilience, Social Support, and Anxious Preoccupation in Patients with Advanced Cancer during COVID-19 Pandemic. Cancer Investigation, 40(6), 475–482. https://doi.org/10.1080/07357907.2022.2067864

Thesis

- **Auditory processing around actions: Evidence from psychophysics, electroencephalography, and pupillometry.** Nadia Paraskevoudi. Supervisors: Iria Sanmiguel & Immaculada Clemente.
- **Factores implicados en el envejecimiento cognitivo.** Noemí Lamonja. Supervisors: Maria Mataró & Marc Via

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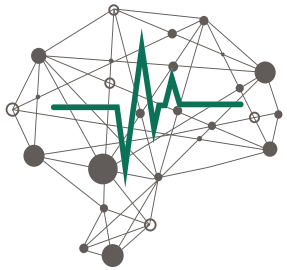
Virtual reality



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, Alejandro Beacco, Jaime Gallego, Ramon Oliva, Maria Belen Aguirre, Tania Jonhston, Sergio Macho, Francisco Macia, Joana Margarita Pla, Helena Vall, Ferran Vilalta, Carlos Cabreira, Irene Sanjuan, Alexis Andreu Gracia, Joan Ribas, Mavi Sanchez, Esen Küçüktütüncü.

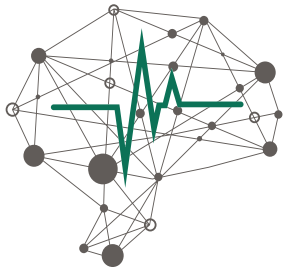
Highlighted projects

- **Intervenció en Psicologia Clínica i de la Salut i Promoció del Benestar.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR00666. Francisco Jose Eiroa-Orosa
- **Grup d'investigació sobre aplicacions 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 (AGAUR). 2021SGR00714. Jose Gutierrez-Maldonado
- **Moments in Time in Immersive Virtual Environments (MoTIVE).** Unió Europea. 742989. Mel Slater
- **GuestXR: A Machine Learning Agent for Social Harmony in eXtended Reality (GuestXR).** Unió Europea. 101017884. Mel Slater
- **Reducing the impact of major environmental challenges on mental health (environMENTAL).** Unió Europea. 101057429. Mel Slater
- **Psicoterápia para jovenes con depresión moderada: ¿Puede la realidad virtual aumentar su eficacia?.** Ministerio de Ciencia, Innovación y Universidades. RTI2018-094294-B-I00. Guillem Feixas
- **Modificación del sesgo atencional, mediante realidad virtual, para la mejora del tratamiento de la anorexia nerviosa.** Ministerio de Ciencia, Innovación y Universidades. PID2019-108657RB-I00. Jose Gutierrez-Maldonado
- **The Ethics of Digital Immersive Experiences.** Ministerio de Ciencia, Innovación y Universidades. PID2020-117108RB-I00. Mel Slater
- **Ciudadanía como salud mental.** Ministerio de Ciencia, Innovación y Universidades. PID2021-125403OA-I00. Francisco Jose Eiroa-Orosa
- 5 confidential agreements

Selected publications

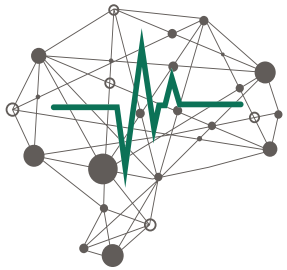
- Aguilera, M., Paz, C., Salla, M., Compañ, V., Medina, J. C., Medeiros-Ferreira, L., & Feixas, G. (2022). Cognitive-Behavioral and Personal Construct Therapies for Depression in Women with Fibromyalgia: A Randomized Controlled Trial. International Journal of Clinical and Health Psychology, 22(2), 100296. https://doi.org/10.1016/j.ijchp.2022.100296

Research



Cognitive
and Behavioural
Neuroscience

- Donini, L. M., Barrada, J. R., Barthels, F., Dunn, T. M., Babeau, C., Brytek-Matera, A., Cena, H., Cerolini, S., Cho, H., Coimbra, M., Cuzzolaro, M., Ferreira, C., Galfano, V., Grammatikopoulou, M. G., Hallit, S., Håman, L., Hay, P., Jimbo, M., Lasson, C., … Lombardo, C. (2022). A consensus document on definition and diagnostic criteria for orthorexia nervosa. Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity, 27(8), 3695–3711. https://doi.org/10.1007/s40519-022-01512-5
- Eiroa-Orosa, F. J., San Pío, M. J., Marcet, G., Sibuet, I., & Rojo, E. (2022a). Interaction between the Participation in and the Impact on Mental Health Service Users and Their Relatives of a Multicomponent Empowerment-Based Psychosocial Intervention. International Journal of Environmental Research and Public Health, 19(21), 13935. https://doi.org/10.3390/ijerph192113935
- Eiroa-Orosa, F. J., San Pío, M. J., Marcet, G., Sibuet, I., & Rojo, E. (2022b). Interaction between the Participation in and the Impact on Mental Health Service Users and Their Relatives of a Multicomponent Empowerment-Based Psychosocial Intervention. International Journal of Environmental Research and Public Health, 19(21), 13935. https://doi.org/10.3390/ijerph192113935
- Eiroa-Orosa, F. J., & Tormo-Clemente, R. (2022). Recovery, Citizenship, and Personhood of People with Lived Experience of Mental Health Problems during the Pandemic: Two Expert Focus Groups. The 3rd International Electronic Conference on Environmental Research and Public Health—Public Health Issues in the Context of the COVID-19 Pandemic, 42. https://doi.org/10.3390/ECERPH-3-09087
- Georghiades, A., & Eiroa-Orosa, F. J. (2022). A systematic review outlining the impact of education on patients and physicians in gastroenterology. Psychology, Health & Medicine, 27(7), 1468–1481. https://doi.org/10.1080/13548506.2021.1890158
- Macho, S., Andrés, A., & Saldaña, C. (2022). Antifat attitudes among Spanish general population: Psychometric properties of the antifat attitudes scale. Clinical Obesity, 12(6). https://doi.org/10.1111/cob.12543
- Medina, J. C., Paz, C., García-Mieres, H., Niño-Robles, N., Herrera, J. E., Feixas, G., & Montesano, A. (2022a). Efficacy of psychological interventions for young adults with mild-to-moderate depressive symptoms: A meta-analysis. Journal of Psychiatric Research, 152, 366–374. https://doi.org/10.1016/j.jpsychires.2022.06.034
- Medina, J. C., Paz, C., García-Mieres, H., Niño-Robles, N., Herrera, J. E., Feixas, G., & Montesano, A. (2022b). Efficacy of psychological interventions for young adults with mild-to-moderate depressive symptoms: A meta-analysis. Journal of Psychiatric Research, 152, 366–374. https://doi.org/10.1016/j.jpsychires.2022.06.034
- Medina, J. C., Paz, C., Salla, M., Aguilera, M., Montesano, A., Compañ, V., & Feixas, G. (2023). The effect of two cognitive therapies on subjective wellbeing of individuals with depression: results from a randomised controlled trial. Journal of Mental Health, 32(3), 655–661. https://doi.org/10.1080/09638237.2022.2118682
- Pérez-Sales, P., Vergara-Campos, M., Eiroa-Orosa, F. J., Olivos-Jara, P., Fernández-Liria, A., Barbero-Val, E., & Galán-Santamarina, A. (2022). Perceived resistance to experiences of trauma and crisis: A study comparing multiple life events. Traumatology, 28(1), 109–119. https://doi.org/10.1037/trm0000339
- VallRoqué, H., Andrés, A., GonzálezPacheco, H., & Saldaña, C. (2023). Women's body dissatisfaction, physical appearance comparisons, and Instagram use throughout the <scp>COVID</scp> 19 pandemic: A longitudinal study. International Journal of Eating Disorders, 56(1), 118–131. https://doi.org/10.1002/eat.23827



Cognitive
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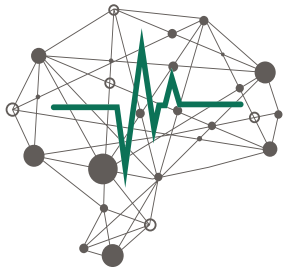
Neuroscience

- Vall-Roqué, H., Andrés, A., & Saldaña, C. (2022). Validación española de la "Escala de comparación de la apariencia física" (PACS-R): propiedades psicométricas en una muestra comunitaria de hombres y mujeres. Behavioral Psychology/ Psicología Conductual, 30(1), 269–289. https://doi.org/10.51668/bp.8322114s

Knowledge and transfer innovation

- System for provoking a physiological response. AVCRI264-E
- Motor training. AVCRI263-E
- Methods and systems for gradual exposure to a fear. UBTT0345
- Virtual Bodyworks. Mel Slater.
- Mind and Identity SL. UB spin-off. Guillem Feixas

Vision and control of action



Cognitive
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Neuroscience

Principal investigators

CRISTINA DE LA MALLA
Eye movements, sensori-motor decision-making, Perception and action

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

DANIEL LINARES
Computational modeling biologically inspired image and video processing, networks and complex systems

Members

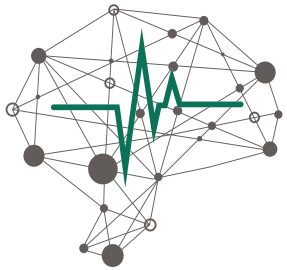
Itxaso Barberia, Angels Colome, Elisabet Tubau, Jaume Boned, Marta Natalia Torres, Mari Aguilera.

Highlighted projects

- **Vision and Control of Action (VISCA).** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR00061. Joan Lopez-Moliner
- **El benestar emocional i la salut mental en infants amb trastorns de l'aprenentatge i les seves famílies: un abordatge integral.** Fundació Caixa de Pensions 'La Caixa'. CC21-0093. Maria Del Carmen Aguilera Ruiz
- **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
- **Fundamento cognitivo de las creencias pseudocientíficas.** Ministerio de Ciencia, Innovación y Universidades. PID2019-106102GB-I00. Javier Rodriguez-Ferreiro
- **Interrupción de la predicción del movimiento visual.** Ministerio de Ciencia, Innovación y Universidades. PID2020-116400GA-I00. Cristina de la Malla
- **Actualización del espacio 3D a partir del flujo óptico.** Ministerio de Ciencia, Innovación y Universidades. PID2020-114713GB-I00. Joan Lopez-Moliner
- **Prevención del disconfort visual mediante el ajuste del contenido espectral dinámico en realidad virtual.** Ministerio de Ciencia e Innovación (MICINN). PDC2021-121090-I00. Joan Lopez-Moliner
- **Detección de riesgo de la enfermedad de Alzheimer mediante el análisis de movimientos oculares fijacionales registrados por una cámara selfie de un teléfono inteligente.** Ministerio de Ciencia e Innovación. PDC2022-133054-I00 1 confidential agreement. Hans Super

Selected publications

- Aguilera, M., Paz, C., Salla, M., Compañ, V., Medina, J. C., Medeiros-Ferreira, L., & Feixas, G. (2022). Cognitive-Behavioral and Personal Construct Therapies for Depression in Women with Fibromyalgia: A Randomized Controlled Trial. International



Cognitive
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Journal of Clinical and Health Psychology, 22(2), 100296. https://doi.org/10.1016/j.ijchp.2022.100296

- Boned, J., & López-Moliner, J. (2022). Duration judgments are mediated by the similarity with the temporal context. Scientific Reports, 12(1), 22575. https://doi.org/10.1038/s41598-022-27168-w
- Braida, B., Rodríguez-Ferreiro, J., & Hernández, M. (2023). The foreign language effect on motivational quotes. Bilingualism: Language and Cognition, 26(2), 416–424. https://doi.org/10.1017/S1366728922000505
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- Bustos-Valenzuela, P., Romeo, A., Boxhoorn, S., Helfer, B., Freitag, C. M., Asherson, P., & Supèr, H. (2022). Atypical cognitive vergence responses in children with attention deficit hyperactivity disorder but not with autism spectrum disorder in a facial emotion recognition task. Psychiatry Research Communications, 2(2), 100045. https://doi.org/10.1016/j.psycom.2022.100045
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- Garcia-Arch, J., Barberia, I., Rodríguez-Ferreiro, J., & Fuentemilla, L. (2022). Authority Brings Responsibility: Feedback from Experts Promotes an Overweighting of Health-Related Pseudoscientific Beliefs. International Journal of Environmental Research and Public Health, 19(22), 15154. https://doi.org/10.3390/ijerph192215154
- Gaspar, M. C. de M. P., Celorio-Sardà, R., Comas-Basté, O., Latorre-Moratalla, M. L., Aguilera, M., Llorente-Cabrera, G. A., Puig-Llobet, M., & Vidal-Carou, M. C. (2022). Knowledge and perceptions of food sustainability in a Spanish university population. Frontiers in Nutrition, 9. https://doi.org/10.3389/fnut.2022.970923
- Medina, J. C., Paz, C., Salla, M., Aguilera, M., Montesano, A., Compañ, V., & Feixas, G. (2023). The effect of two cognitive therapies on subjective wellbeing of individuals with depression: results from a randomised controlled trial. Journal of Mental Health, 32(3), 655–661. https://doi.org/10.1080/09638237.2022.2118682
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- Romeo, A., & Supèr, H. (2022). Spiking model of fixational eye movements and figure-ground segmentation. Network: Computation in Neural Systems, 33(1–2), 143–166. https://doi.org/10.1080/0954898X.2022.2073393
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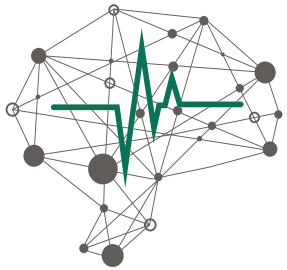
Research



Cognitive
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Neuroscience

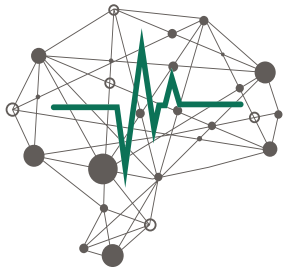
Knowledge and transfer innovation

- Method of measuring attention. AVCRI147
- Measuring and improving attention. UBTT0410
- Braingaze. UB spin-off Hans Super

Thesis

- **Estimating motion and time-to-contact in 3D environments: Priors matter.** Borja Aguado. Supervisor: Joan López-Moliner

Artificial Intelligence



Cognitive
and Behavioural
Neuroscience

Principal investigators

PETIA RADEVA
Machine learning, Computer Vision, Medical Imaging

Members

Bhalaji Nagarajan, Simone Balocco, Oliver Diaz, Ricardo Marques, Karim Lekadir.

Highlighted projects

- **Modelització del comportament i calibració de sensors de gas basats en Deep learning (DeepSens) (ACE053/22/000029).** ACCIÓ. Agència de Suport a l'Empresa Catalana. ACE053/22/000029
- **Artificial Intelligence and Biomedical Applications (AIBA).** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR) . 2021SGR01094
- **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
- Robo STEAM - Inclusive Technologies. Education, Audiovisual and Culture Executive Agency (EACEA) . 2022-1-BG01-KA220-VET-000089434
- **An intelligent tool based on Deep learning for Food Intake monitoring of Elderly (LogmeaI4Shape).** Unió Europea
- **Better insured for less, customer first!.** Unió Europea. 22092
- **MUSAE: a human-centred factory for a future technological sustainable development driven by arts (MUSAE).** Unió Europea. 101070421
- **Una herramienta digital para la estimación de la cantidad de comida usando deep learning.** Ministerio de Ciencia e Innovación. PDC2022-133642-I00
- 4 confidential agreements

Selected publications

- Abdar, M., Fahami, M. A., Rundo, L., Radeva, P., Frangi, A. F., Acharya, U. R., Khosravi, A., Lam, H.-K., Jung, A., & Nahavandi, S. (2023). Hercules : Deep Hierarchical Attentive Multilevel Fusion Model With Uncertainty Quantification for Medical Image Classification. IEEE Transactions on Industrial Informatics, 19(1), 274–285. https://doi.org/10.1109/TII.2022.3168887
- Aguilar, E., Nagarajan, B., & Radeva, P. (2022). Uncertainty-aware selecting for an ensemble of deep food recognition models. Computers in Biology and Medicine, 146, 105645. https://doi.org/10.1016/j.compbiomed.2022.105645
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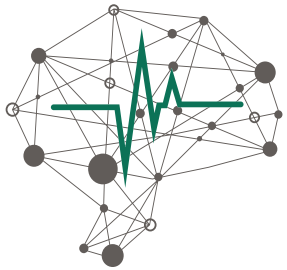
- Boscolo Galazzo, I., Cruciani, F., Brusini, L., Salih, A., Radeva, P., Storti, S. F., & Menegaz, G. (2022). Explainable Artificial Intelligence for Magnetic Resonance Imaging Aging Brainprints: Grounds and challenges. IEEE Signal Processing Magazine, 39(2), 99–116. https://doi.org/10.1109/MSP.2021.3126573
- Das, M., Gupta, D., Radeva, P., & Bakde, A. M. (2022a). Multimodal image sensor fusion in a cascaded framework using optimized dual channel pulse coupled neural network. Journal of Ambient Intelligence and Humanized Computing. https://doi.org/10.1007/s12652-022-03749-5



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- Das, M., Gupta, D., Radeva, P., & Bakde, A. M. (2022b). Optimized Multimodal Neurological Image Fusion Based on Low-Rank Texture Prior Decomposition and Super-Pixel Segmentation. IEEE Transactions on Instrumentation and Measurement, 71, 1–9. https://doi.org/10.1109/TIM.2022.3165263
- Raisi-Estabragh, Z., Salih, A., Gkontra, P., Atehortúa, A., Radeva, P., Boscolo Galazzo, I., Menegaz, G., Harvey, N. C., Lekadir, K., & Petersen, S. E. (2022). Estimation of biological heart age using cardiovascular magnetic resonance radiomics. Scientific Reports, 12(1), 12805. https://doi.org/10.1038/s41598-022-16639-9
- Salih, A., Galazzo, I. B., Petersen, S. E., Lekadir, K., Radeva, P., Menegaz, G., & Altmann, A. (2022). Telomere length is causally connected to brain MRI image derived phenotypes: A mendelian randomization study. PLOS ONE, 17(11), e0277344. https://doi.org/10.1371/journal.pone.0277344

Knowledge and transfer innovation

- AIGecko Technologies. UB spin-off Petia Radeva.

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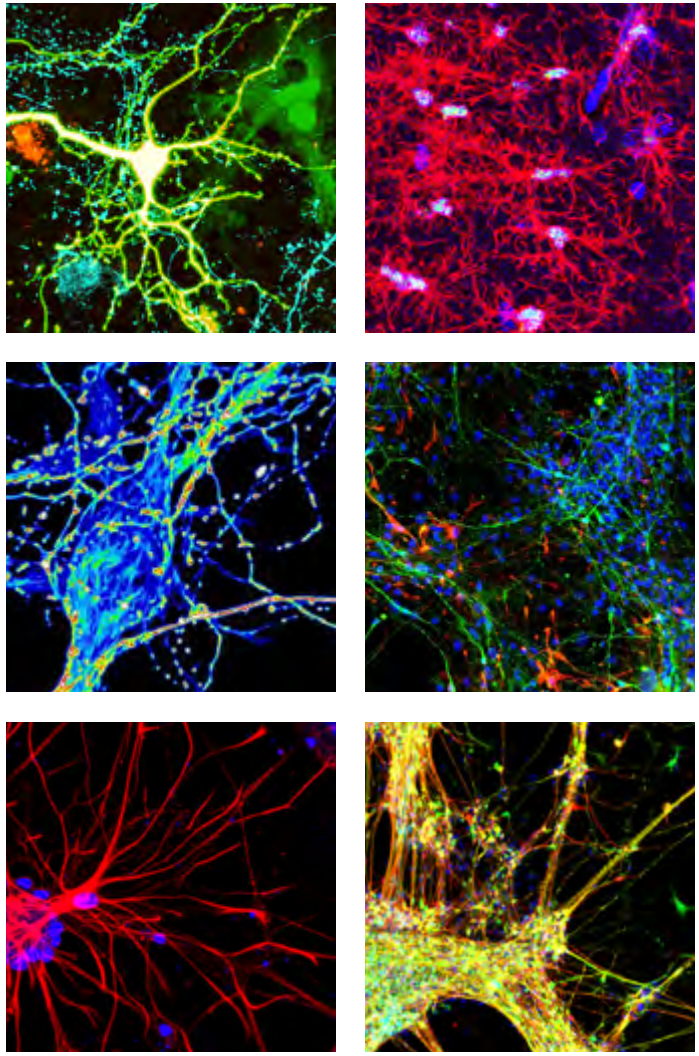
Images

All images are courtesy of Albert Giralt from the Hippocampal function in health and disease group, and Artur Llobet from the Outside-in control of synaptic function; Study of synaptic disfunctions in the experimental model of X. tropicalis tadpoles group.



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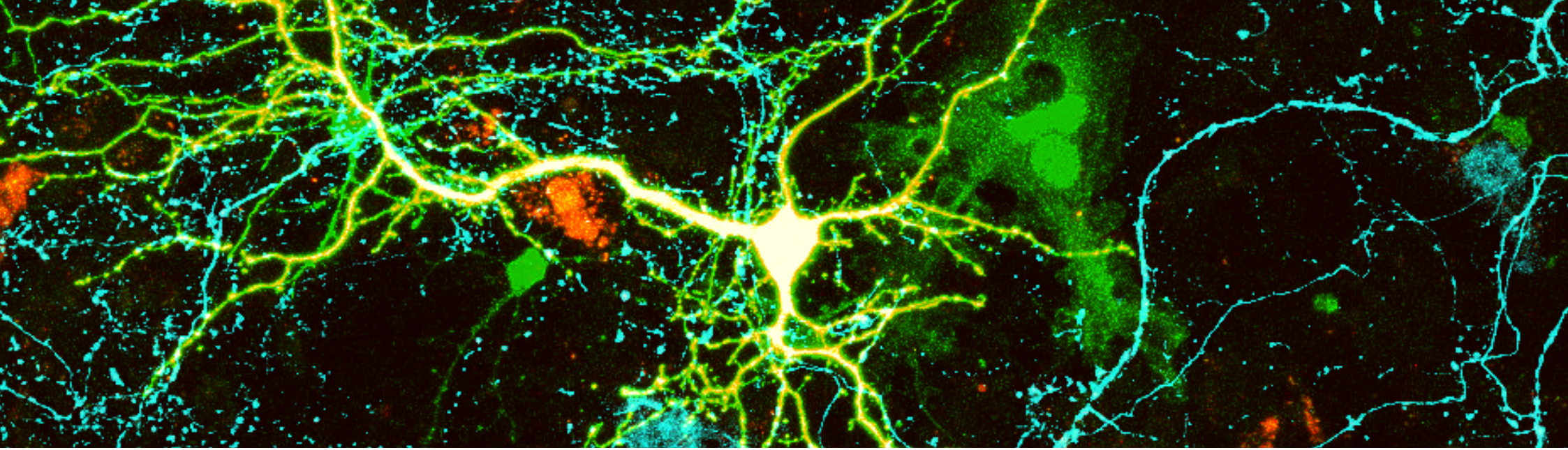
AGENCIA ESTATAL DE INVESTIGACIÓN

EXCELENCIA MARÍA DE MAEZTU



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