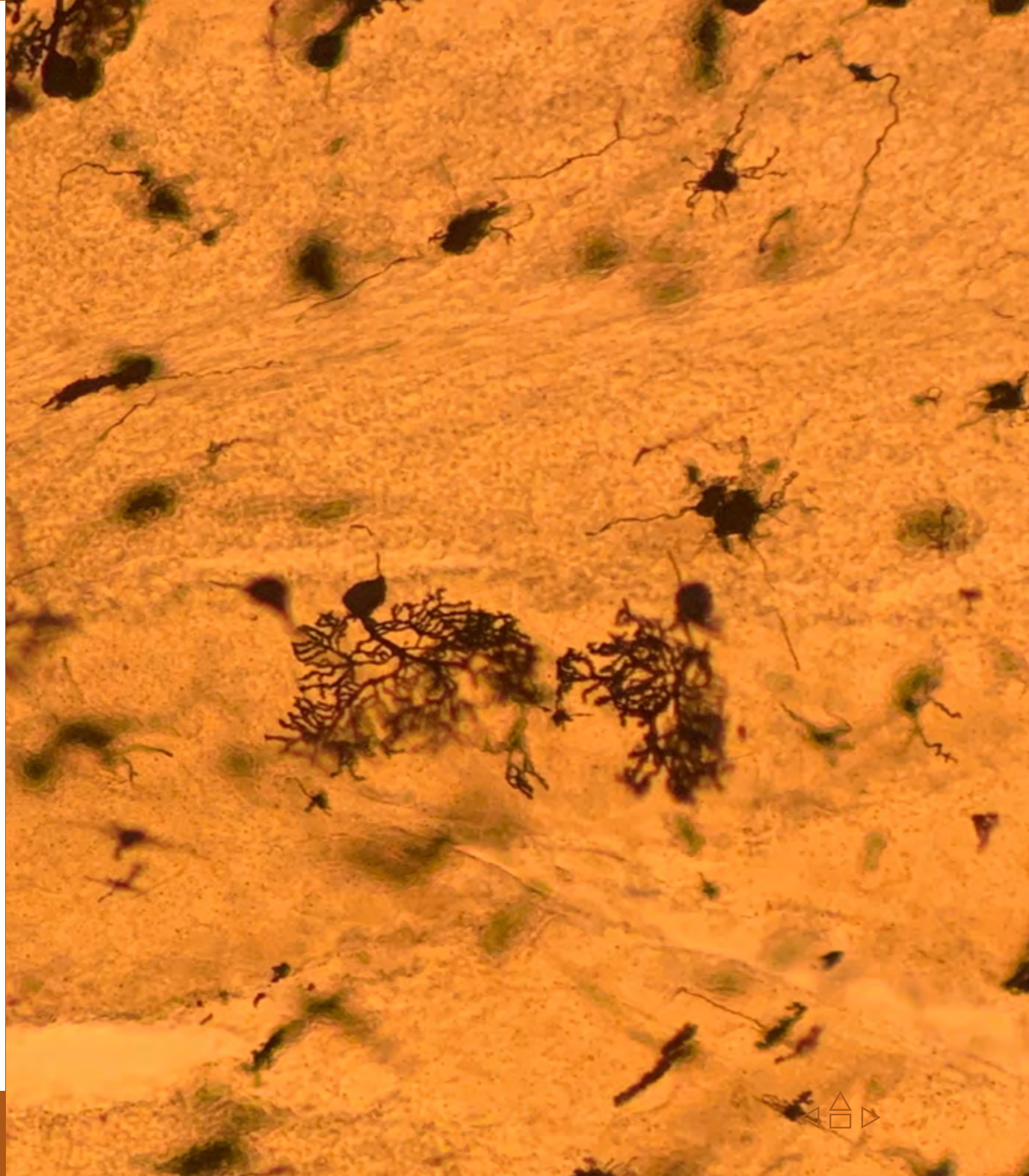
UNIVERSITAT DE BARCELONA

Institute of Neurosciences of the University of Barcelona

ANNUAL REPORT 2023



Institut de Neurociències
UNIVERSITAT DE BARCELONA

EXCELENCIA MARÍA DE MAEZTU

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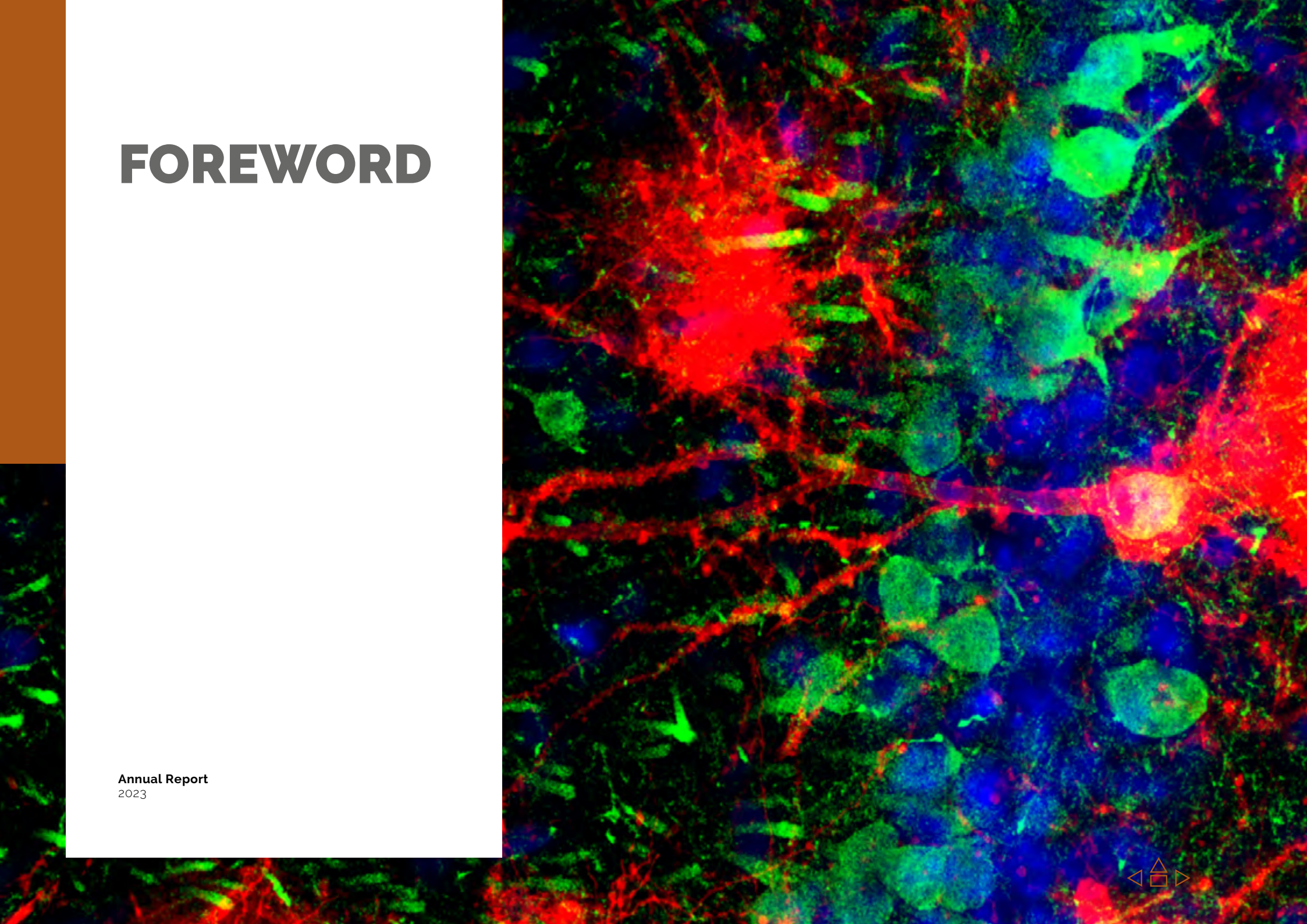
FOREWORD



Foreword

The 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 twice consecutively with the María de Maeztu Excellence Unit accreditation, and gathers around 530 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.

Foreword

Dr. Jordi Alberch
Director

Message from the Director

The field of neuroscience is undergoing a transformative era, driven by groundbreaking technological advances that allow us to delve deeper into the complexities of the brain. This is an exhilarating time for neuroscientists, as these new tools are unlocking discoveries with profound implications for understanding mental and neurological disorders.

In 2023, UBneuro proudly embarked on an ambitious new chapter by renewing, for the second consecutive term, the prestigious María de Maeztu Unit of Excellence distinction. This consecutive renewal not only reaffirms our position as a global leader in neuroscience research but also reflects the sustained excellence and impact of the Institute of Neurosciences. Our mission is clear: to tackle key scientific, technological, and innovation challenges that enhance our research capabilities, expand resources, and foster an environment of excellence that attracts the brightest minds in neuroscience.

In this first year of the new MdM program, we are proud to have strengthened our team with exceptional new talent, with the addition of 11 Junior PI. Our efforts to secure international funding have borne fruit, with significant support from leading organizations like the Wellcome Trust and the European Research Council (ERC). These partnerships are not only enhancing our ability to conduct world-class research but also enabling us to invest in cutting-edge technologies that redefine neuroscience. Our growing success in prestigious international programs such as Marie Skłodowska-Curie Actions underscores UBneuro's commitment to nurturing the next generation of neuroscientists.

One of our most exciting developments is the launch of a new non-invasive transcranial stimulation unit, a step forward in bridging technological innovation and neurological health. This initiative, made possible with financial support from the Generalitat de Catalunya, exemplifies our dedication to exploring the brain's full potential while addressing real-world challenges.

As we advance in our scientific endeavors, UBneuro is equally committed to strengthening our connection with society. By making neuroscience more accessible and impactful, we aim to ensure that our discoveries benefit individuals and communities alike.

UBneuro is poised for an exciting future, with a vision that embraces talent, innovation, and societal engagement. Together, we are building a global hub of neuroscience excellence, and we look forward to sharing this journey with you.

Jordi Alberch *MD, PhD*

Director, Institute of Neurosciences University of Barcelona

Governing and Advisory Bodies

Board of Directors

Director

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

Deputy Director

- **Cristina de la Malla, PhD**
  Department of Cognition, Development and Educational Psychology

Representatives of Research Areas

- **Ester Aso, PhD**
  Pathophysiology of Neurvous System Diseases
- **Yaroslau Compta, MD, PhD**
  Experimental Neurology
- **Maite Barrios, PhD**
  Mental Health
- **David Bartrés, PhD**
  Cognitive and Behavioural Neuroscience

PhD Committee

Siham Ijjou, Clara Romera, Raquel Alsina, Pol Garcia i Irene Rodríguez

Management Team

- **Cristina Pulido, PhD**
  Research Manager Coordinator
- **Marta Turro**
  Administrative Manager
- **Marta Rubio**
  Communication and Outreach Manager
- **Julia Peral**
  Equality Officer

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- **Ernest Arenas, MD, PhD**
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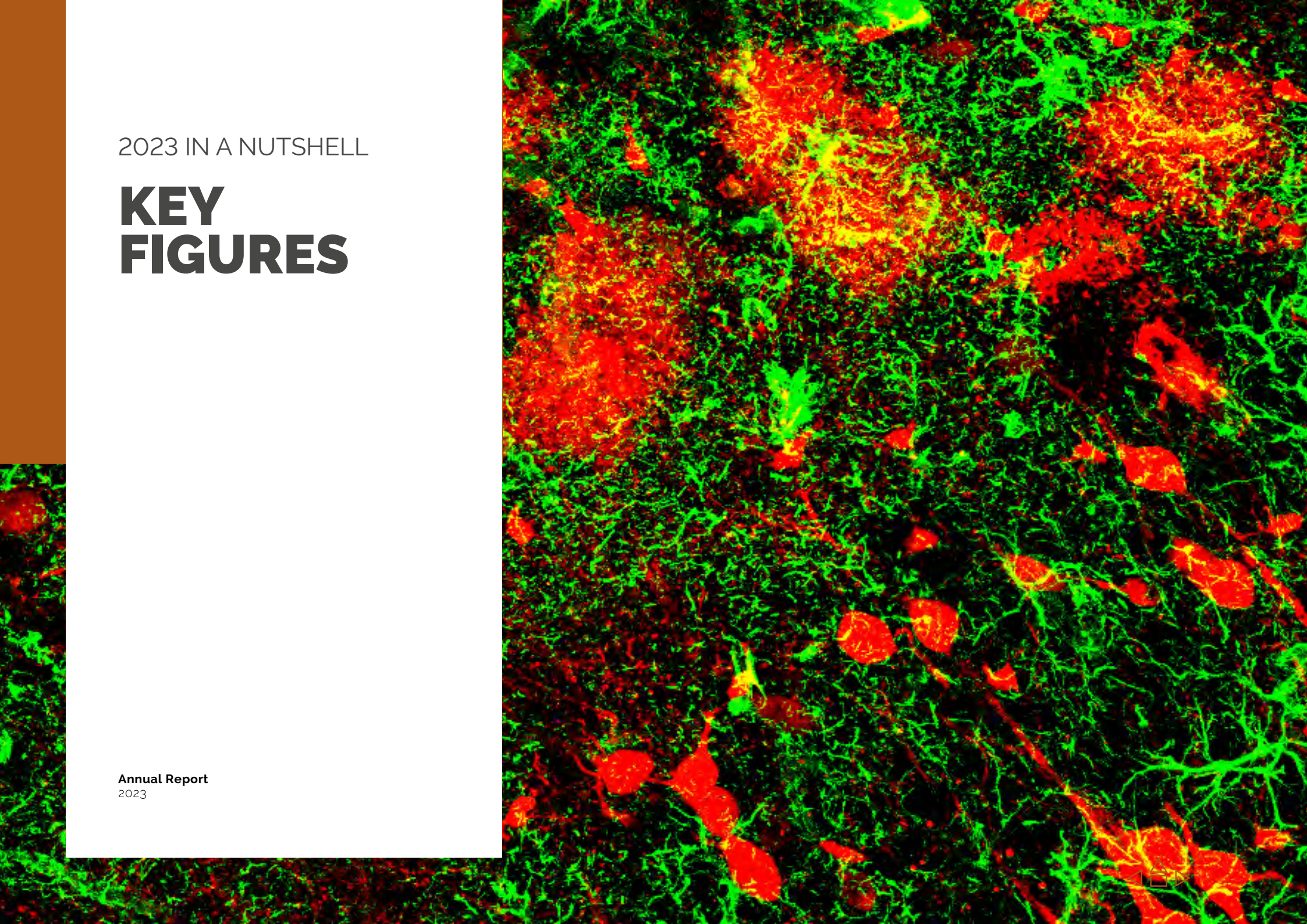
  Universidad Pablo de Olavide, Spain
- **Frederic Saudou, PhD**
  Institute of Neuroscience, University Grenoble-Alps, France

2023 IN A NUTSHELL

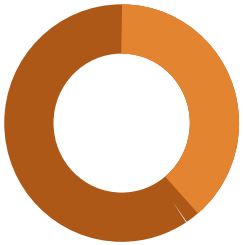
KEY FIGURES



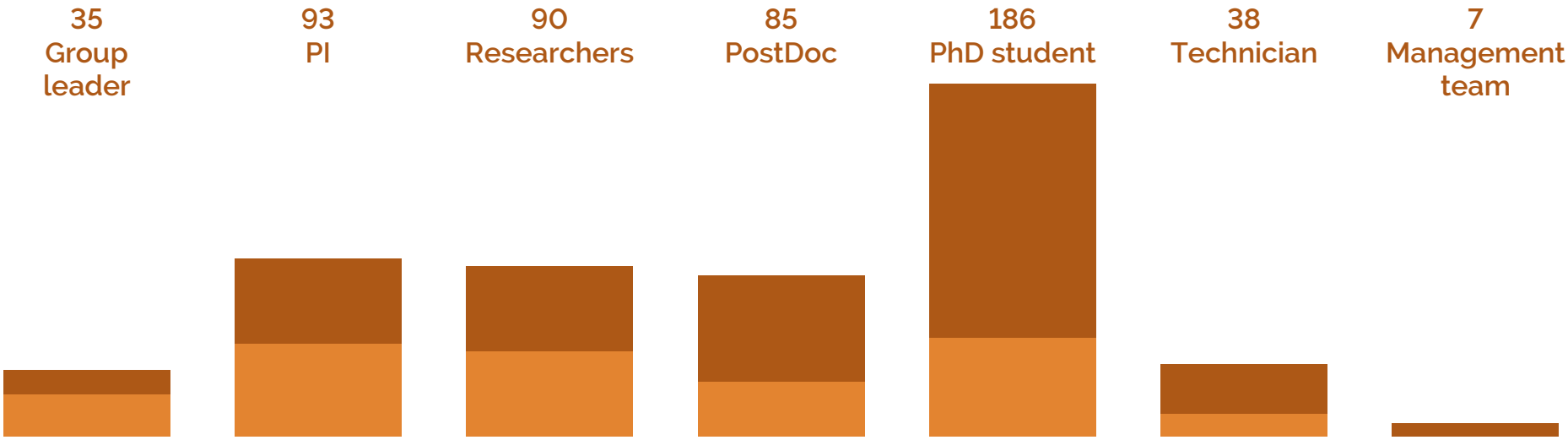
Annual Report
2023

534 Total human resources

325 women | **61%**



209 men | **39%**



635 Total articles

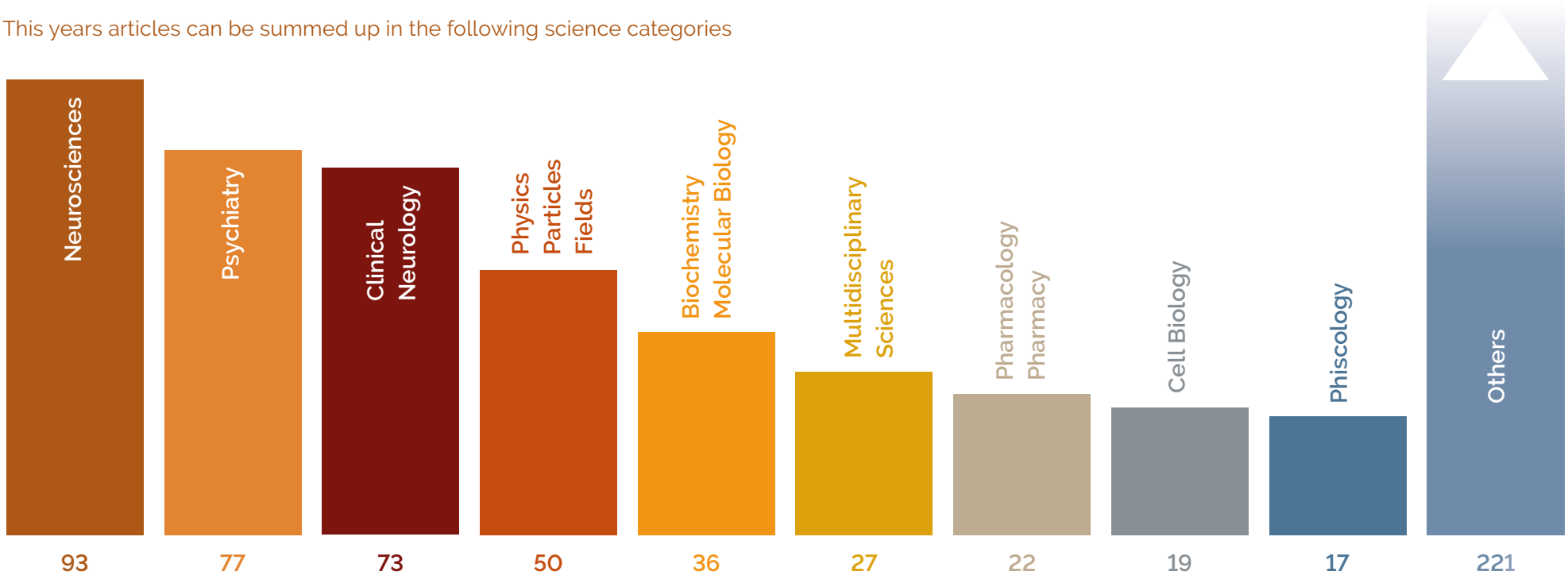
1
- Nature
- Nature Human Behaviour
- Nature Metabolism
- Nature Methods
- Annals of Clinical and Translational Neurology
- Lancet Psychiatry

2
- Brain
- Journal of the American Academy of Child and Adolescent Psychiatry
- Proceedings of the National Academy of Sciences of the United States of America (PNAS)

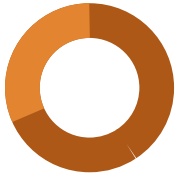
3
- JAMA Neurology
- Lancet Neurology
- Nature Neuroscience

6
- Journal of Neurology

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

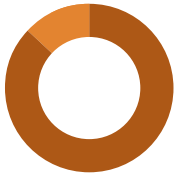


Total budget ongoing 2023 | **66 M€**



69% National projects
45.4M€

31% International projects
20.4M€



87% Public Funding
57.2M€

13% Private Funding
8.6M€

EXCELENCIA MARÍA DE MAEZTU

Ayuda María de Maeztu Unit of Excellence CEX2021-001159-M / financiada por MICIU/AEI / 10.13039/501100011033. Institute of Neurosciences of the University of Barcelona. **2,000,000€**

erc

2 Advanced Grants
1 Consolidator Grants

ICREA

4 Research professors
6 Academia professors

MSCA

6 Postdoctoral Fellowships
1 Doctoral Network

4

CIBERs

CIBERNED, CIBERSAM, CIBERER, CIBERESP

21

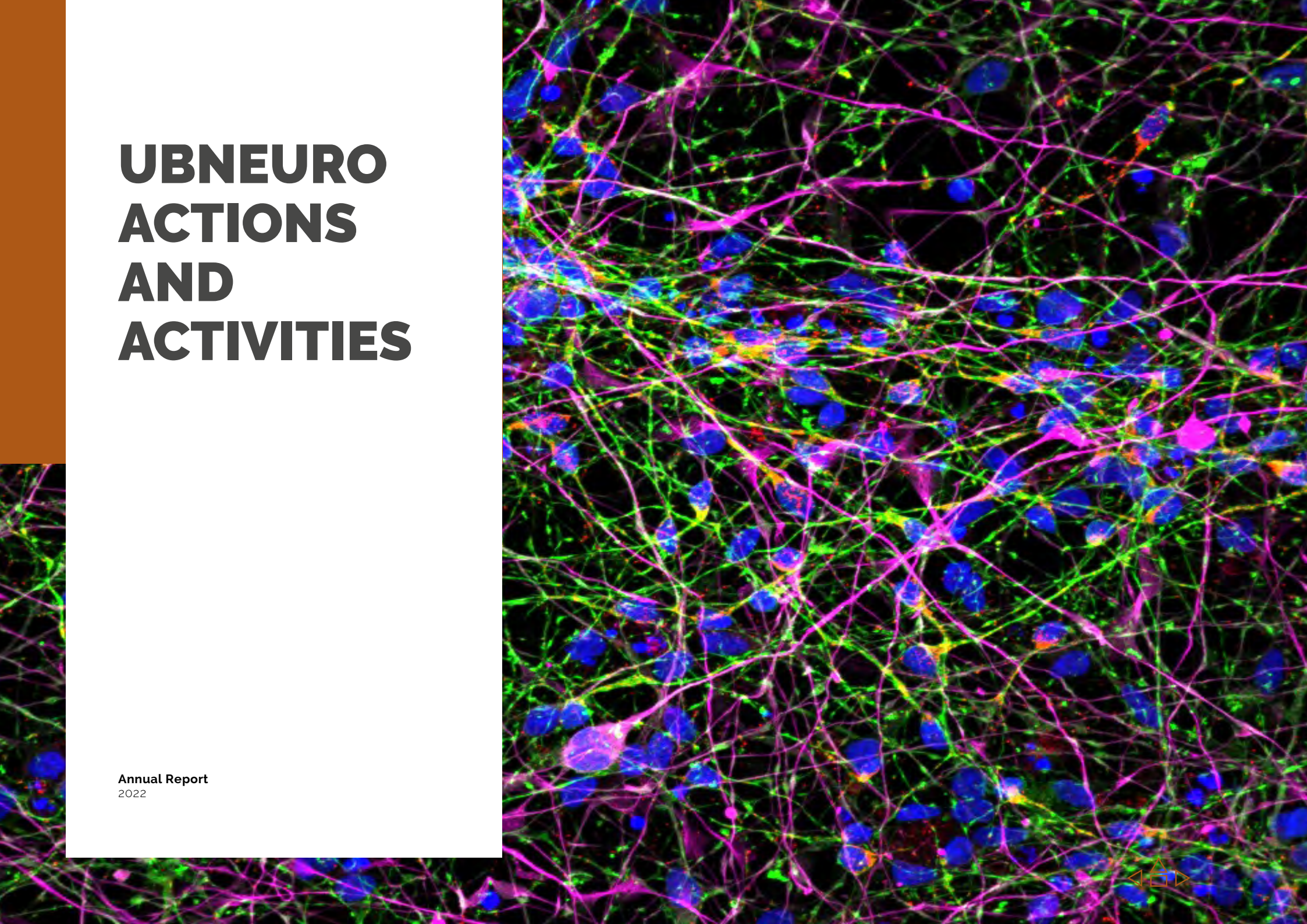
Patents ongoing

6

Spin-offs ongoing

UBNEURO ACTIONS AND ACTIVITIES

Annual Report
2022



UBneuro Actions and Activities

UBneuro's MISSION aims to identify new treatments for neurological and mental disorders deciphering the complexity of the human brain applying multidisciplinary and innovative technological advances.

To reach this mission UBneuro has defined the following goals:

- **EXCELLENCE** in basic and pre-clinical potentially translational neuroscience
- **EFFICACY** directing resources to accelerate discovery and team-based science
- **SINGULARITY** promoting innovative and transformative research in neurodegenerative disorders, neurologic autoimmune diseases, stroke and mental health
- **SYNERGIES** enhancing collaborative research across UBneuro, and also with national and international partners
- **INTEGRATION** with areas like engineering, chemistry, physics, mathematics, computer science, humanities, and others
- **INTERNATIONALIZATION** building an integrated neuroscience research community reference
- **TECHNOLOGICAL** revolution in Neuroscience with cutting-edge equipments and analysis
- **INNOVATION** developing a NeuroHub to put together innovative projects between academia and industry for bringing products and knowledge to the market and health system
- **ATTRACTING** and retaining talent and leadership providing an excellent scientific and technological environment at the frontiers of knowledge
- **TRAINING** of the new generation of neuroscientist with a competitive international profile at the public and private sector to guarantee a better future.
- **SOCIAL IMPACT** of neuroscience research towards improving health and well-being of our citizens

Below we briefly describe the execution of actions and activities performed in 2023 to face the the presented goals. All these actions would have not been possible without the new María de Maeztu Unit of Excellence seal, which started in January 2023. Besides the 2 M€ and the 6 PhD fellowships, this recognition guarantees that we will continue to enjoy the international prestige of the label and be able to promote the scientific strategy that will continue to position us as world leaders in the field of neuroscience and behaviour.

Grant CEX2021-001159-M funded by:

MINISTERIO DE CIENCIA E INNOVACIÓN

AGENCIA ESTATAL DE INVESTIGACIÓN

EXCELENCIA MARÍA DE MAEZTU

Ayuda María de Maeztu Unit of Excellence CEX2021-001159-M / financiada por MICIU/AEI / 10.13039/501100011033. Institute of Neurosciences of the University of Barcelona. 2,000,000€

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 and putting it to the service and benefit of 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 unsolved problems in the field of neuropsychiatric diseases.

During the year 2023, at UBneuro, we expanded our intellectual property portfolio with the addition of **6 new patents**, getting a total of **21 active patents**. Furthermore, our own 6 Spin-offs have continued their successful journey, some of them with a renovated identity.

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
- **kiin:** 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
- **Neureka LAB:** Science to overcome learning difficulties. More information
- **AIGecko Technologies** Image recognition and analysis services based on algorithms, and artificial intelligence. More information
- **EYME:** VR-based immersive digital platform to enhance the success of psychotherapeutic work, improve personal abilities, equipment performance and detect market niches. 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. *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
14. *Compuestos para el tratamiento de la fibrilación auricular.* UBTT0062. Lluis Biset, M. del Carmen; Müller, Christa; Ciruela Alférez, Francisco; Franco Fernández, Rafael; Cinca Cuscullola, Joan; Hove-Madsen, Leif
15. *Nutraceutic combination and its use in the treatment of neurological disorders.* UBTT0421-E. García Cazorla, Ángeles; De Oyarzábal Sanz, Alfonso Luis; Altafaj Tardio, Xavier
16. *G9a inhibiTors.* UBTT0466. Griñán Ferré, Cristian Gaspar; Pallàs Lliberia, Mercè; Bellver Sanchis, Aina; Escolano Mirón, María Carmen; Vázquez Cruz, Santiago; Barbaraci, Carla
17. *Method for the diagnosis or prognosis of Huntington's disease.* UBTT0468. Martí Puig, Eulàlia; Gámez Valero, Ana; Herrero Lozano, Marina; Escaramis Babiano, Georgia; Kulisevsky Bojarsky, Jaime; Pérez Pérez, Jesús; Martínez Horta, Saül Indra.

UBneuro Actions and Activities

Patents

18. *New methods for the detection of neuronal antibodies.* UBTT0479-E. Consiglio, Antonella; Raya Chamorro, Ángel; Pons Espinal, Meritxell; Fernández Carasa, Irene; Calatayud Aristoy, Carles; Dalmau Obrador, Josep; Martínez Hernández, Eugenia

19. *Synthetic cannabinoids based on chromenopyrimidine scaffold and use thereof.* UBTT0482-E. Jagerovic, Nadine; Morales Lázaro, Paula; Figuerola Asencio, Laura; Franco Fernández, Rafael; Navarro Brugal, Gemma

20. *A method and system for processing virtual reality content for preventing motion-sickness.* UBTT0487. López Moliner, Joan; Moreno Sánchez, Manuel

21. *TREX2 inhibitors.*UBTT0400. Francisco Ciruela i Concepció Soler

Technologinal 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 2023:

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

Infraestructures

These technological platforms, made possible with financial support from the Generalitat de Catalunya, contribute to positioning the Institute at the forefront of knowledge advancement, actively participating in cutting-edge research and development.

- Electrophysiology Lab
- Virtual Motion Lab
- Non-invassive Transcraneal Stimulation Lab
- Children Neuroimaging Lab
- Social Lab

2) High-quality training and education

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 in Neurosciences
2. Master's degree in 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 2023, thanks to an INVESTIGO grant UBneuro could offer one year master-bridge contracted. The selected person was Bianca Franzoia supervised by Ruth de Diego. After her contract Bianca Franzoia started an InPHinit incoming fellowship from Fundació La Caixa. 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 Josè Gutierrez Maldonado
4. PhD in Medicine and Translational Research, coordinated by Julià González Martín
5. ASCTN-Training consoritum, coordinated by Josep M Canals

Furthermore, 6 PhD fellowships have been granted associated to the prestigious María de Maeztu PhD fellowship, providing a remarkable opportunity for a promising researcher to pursue their doctoral studies. Below we list the area of Research, the PhD fellow and their supervisors:

- Pathophysiology; Clara Romera; Carme Pelegri and Jaume del Valle Macia
- Experimental Neurology; Enric Abelli, Guadalupe Soria and David Bartres
- Mental Health; Lidia Izquierdo, Marina Sola and Josep Marco
- Cognitive and behavioural Neuroscience; Raquel Cosio; Joan Guàrdia Olmos
- Basic Neuroscience; Uxía Fraga; Mar Puigdellivol and David Soto
- Traslational Neuroscience; Montse Flores; Victor Fernandez Dueñas and Jordi Bonaventura

Highly Specialized Courses

BRAIN ORGANOIDS | ADVANCED HANDS-ON COURSE 2023

01-06 July. Practical sessions took place in the CRG training facilities. Organized by Sandra Acosta (UBneuro) and Laura Batlle Centre for Genomic Regulation (CRG).

This course proivides an overview of the background and current methods for the generation and characterization of brain organoids. Attendants had the opportunity to learn and practice how to:

- Generate brain organoid differentiation systems
- Analyze brain organoid system by advanced imaging and multi-omics approaches
- Introducing brain organoids ethics and regulation

The Institute of Neurosciences of the University of Barcelona has awarded one fellowship to facilitate the access to this highly specialized workshop to people working in an EU Widening country. The fellow Jarmila Havelková was working on her doctoral thesis at the Faculty of Science, Charles University. In her own words *"Organoid cultivation skills are crucial for my effectiveness and success in biomedical research, and this workshop will fulfil my desire to deepen my understanding of brain organoids"*.

UBneuro Actions and Activities

NEUROPSYCHOLOGICAL ASSITANCE HAND-ON COURSE:

Held on 22-24 November under the framework of the 6th mapping course. Practical sessions took place in the University Hospital of Bellvitge. Organized by Joanna Sierpowska.

The course was aimed at Neuropsychologists, Psychologists, Speech Therapists, Therapists, Nurses, Neurosurgeons, and all professionals involved in the peri- and intra-operative (neuro) psychological who could learn and practice about:

- Intraoperative mapping and monitoring of language and cognition during awake surgery from a neuropsychological standpoint
- Assessment of language and cognition during the surgery: methodological aspects and tasks to use intraoperatively
- Precision medicine: personalized electrical stimulation mapping tasks for tumor resection
- Crash course in psychometrics: understanding what the results mean for each person given their profile (age and education)

DATA SCIENCE | INTRODUCTION COURSE:

The Introduction to Data Science and Machine Learning, taught by Petia Radeva among other researchers from the University of Barcelona.

This course provides students with a syllabus that covers the concepts and tools you will need throughout the entire cycle of a data science project: asking the right questions; data preprocessing and cleaning; hypothesis generation; modelling; data visualization; evaluation of solutions; and deploy data products.

GENETIC COUNSELING IN EUROPEAN UNIVERSITIES | THE CASE OF NEURODEGENERATIVE DISEASES

The GECONEU project aims to develop an online course for university students focused on genetic counselling. The main objective and central impact of this project is to help individuals and society to better understand the objectives of genetic testing and the usefulness of genetic counseling through an innovative learning and teaching environment for students. The development of the 'Best Genetic Counseling Protocol" will be based on the PICOGEN program – a Genetic Counseling intervention for familial dementia as described by Neurologist Raquel Sánchez-Valle.

*European project co-funded by Erasmus + KA2 – Cooperation and Innovation for Good Practices. Strategic Partnerships for school education.

UBneuro Actions and Activities

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 2023, a total of 7 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.

Finally, to promote the recruitment of International Research personnel **International talent attraction grant (IMAN)** has been created in 2023. This grant covers the cost of short visits of highly potential PhD and Postdoctoral candidates.

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.

SCIENTIFFIC ADVISORY BOARD Meeting

After the achievement of being granted once again the María de Maeztu Excellence award, it was the time to turn in the assessment on the actions taken and present the strategic plan for the next period. During the last 4 years we have bet on young talent to help them become the researchers of the future. We have developed new strategies which increased international projects and promoted synergies within the Institute.

We recruited highly talented personnel with a multidisciplinary approach. We have improved our scientific outputs and kept up with the high level of European research. We have engaged with the public even more, giving rise to new initiatives. We have further increased the contacts with private companies, promoting technological and knowledge transfer towards improving health and well-being of our society.

All these actions were reviewed at the Annual Scientific Advisory Board (SAB) meeting of the Institute of Neurosciences of the University of Barcelona that took place last 9th-10th February 2023 in the Faculty of Medicine and Health Sciences at Campus Clinic. The aim of this meeting was to discuss and plan the strategy of the Institute to ensure growth and scientific excellence, and to celebrate the granting of the María de Maeztu award for the 2022-2025 period. The SAB is composed by Kimmo Alho, University of Helsinki, Mercedes Atienza, Universidad Pablo de Olavide, Frederic Saudou, Institute of Neuroscience, University Grenoble-Alps and Ernest Arenas, Karolinska Institute, who attended online. Carmen Sandi, Ecole Polytechnique Federale de Lausanne, relinquished her position in favor of new candidate

The event started with the institutional welcome conducted by Antoni Trilla Garcia, Dean of Medicine and Health Sciences Faculty of Universitat de Barcelona (UB). The Director of Institute of Neurosciences of UB, Jordi Alberch, initiated the meeting introducing Cristina Espa, Head of Severo Ochoa/María de Maeztu Management Team (AEI).

UBneuro Actions and Activities

All of them agreed on the significance of the María de Maeztu award and the importance of maintaining this standard of performance to go beyond ordinary activities.

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

Director Jordi Alberch and the research promotor Cristina Pulido exposed the current Scientific strategy of the Institute, the main points of the Analysis of María de Maeztu Evaluation and discussed future actions.

The morning of the second day was focused on young researchers sessions divided in 4 sections based on different study area at the Institute of Neurosciences. The Chair of the session was Cristina de la Malla (Deputy Director, Department of Cognition, Development and Educational Psychology). The session on "Pathophysiology of Nervous System Disease" started with Daniel Tornero, who lectured about Neural stem cells and brain damage. He was followed by Veronica Brito who talked about Epitranscriptomic regulation in brain disorders, in the section of "Experimental neurology". At "Cognitive and behavioural" section, Ernest Mas presented his work on brain dynamics of higher pleasures. The last presentation on "Pathology and Experimental Therapeutics" entitled "Human modeling of neurological disorders" was conducted by Juan Alberto Ortega Cano. At the end of each presentation, the members of the SAB formulated questions to the speakers.

The last part of the morning session was a round table at the PhD Workshop, a session on PhD mentoring where the students had the chance to formulate questions, request for advice, and discuss many different aspects of interest related with near future as investigators.

At a later time, the SAB got together to deliberate and discuss all the information provided.

Afterwards, the SAB presented their conclusions to the Board of Directors of the Institute of Neurosciences. Along with congratulations on a job well done, the SAB provided very insightfull feedback about the future strategy based on strengths and weaknesses to ensure that we keep pushing the boundaries of neuroscience research.

As a result of the meeting, the SAB will write a report stating the actual state of the Institute and recommendations for the following years.

Neuroscience Conference Series

Since January 2023, our Neuroscience Conference Series has been honored to host and feature 14 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.

MoNNets: An in vitro bioengineerable model of neuronal ensembles
22/02/2023
Ángeles Rabadán
Senior Associated Scientist and Head of ZeNeuroid (ZeClinics)

NO PAIN NO GAIN: how does the brain decide what is the right price to pay to avoid pain?
21/03/2023
Mathieu Roy
McGill University

LEARNING TO PREDICT FUTURE REWARDS: Dissociating Learning 'What' Will Happen from 'When' It Will Happen
30/03/2022
Andrew Delamater
Associate Professor, dept. of Psychology, McGill

Paving the RHOadwith new molecular mechanisms of brain development
13/04/2023
Joaquim Egea
Institut de Recerca Biomédica de la Universitat de Lleida

EU funding for neurosciences – Support for Researchers
27/04/2022 – 28/04/2023
Naomi de Haas
Senior Grant Consultant, Hezelburcht B.V

Learning in a virtual world
22/05/2023
Jesse Rissman
University of California, Los Angeles

THE INFLUENCE OF SOCIAL PRESENCE ON EMPATHY
22/06/2023
Ulrike M. Krämer
University of Lübeck

THE SELF-PERCEPTION OF AGING
12/06/2023
Serena Sabatini
Institute of Mental Health, School of Medicine, University of Nottingham
Fiona Rupprecht
Department of Developmental and Educational Psychology, University of Vienna

PERSISTENT PAIN: mechanisms and functions in nociceptor cell bodies
5/09/2023
Edgar T. Walters
The University of Texas Health Science Center at Houston, McGovern Medical School

pBAE polymers: a new nano delivery platform of nucleic acids for targeted therapies applications
04/10/2023
Cristina Fornanguera
Principal investigator at IQS School of Engineering

RE-IMAGINING THE GLUTAMATERGIC SYNAPSE: from structure-function to neurological disease
06/10/2023
Derek Bowie
Department of Pharmacology & Therapeutics, McGill University, Montreal, Canada

Investigating abstract and concrete words in the brain
06/10/2023
Costanza Papagno
Researcher at CIMeC Center for Mind/Brain Sciences, University of Trento

Cannabidiol as a potential therapeutic treatment for Leigh syndrome
10/10/2023
Emma Puighermanal
Ramon y Cajal Researcher

Development and application of genetically encoded sensors
01/12/2023
Ariel Valiente Gabioud
Max Planck Institute for Biological Intelligence

Congress and Mobility (Neuroestades) Grants

The Mobility Grants (Neuroestades) aim to support researchers in their mobility endeavors, facilitating collaborations, knowledge exchange, and the exploration of new research opportunities. In 2023 a total of 10 researchers could benefit from this program staying from weeks to months in prestiogious institutions such as: Katholieke Universiteit Leuven (Belgioum); Karolinska Institute (Sweden); Universidad de Xile (Chile); Institut de Cardiologie de Montréal (Canada); National Xenopus Resource (Marine Biological Laboratory- United States of America), Max Planck Institute of Biological Intelligence (Germany); Asan Medical Center (South Korea); Musicality Genomics Consortium (The Netherlands); The City University of New York City (United States of America); Universität Heidelberg (Germany)

In addition, we are proud to have awarded 35 Congress Fellowships to researchers, enabling them to attend and participate in various prestigious congresses such as:

- European Academy of Childhood Disability (EACD);
- 92nd Annual Meeting of the American Association of Biological Anthropology;
- Alzheimer's Association International Conference;
- 11th World Congress of Neuroscience IBRO 2023;
- 50th Meeting European Brain and Behaviour Society (EBBS);
- TRF3 - 4rd Conference of the Timing Research Forum;
- 29th Annual Meeting of the Organization of Human Brain Mapping 2023;
- International Congress of Parkinson's Disease and Movement Disorders;
- SfN Neuroscience 2023;
- 36th ECNP Congress;
- 148th Annual Metting of the American Neurological Association;
- AXON;
- XXXIII International Conference of the Spanish Society for Comparative Psychology (SEPC);
- Society for Neurobiology of Language (SNL);
- Future Investigators of Regenerative Medicine (FIRMS 2023).

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 promoting internationalitation.

4) Fostering synergies

VI PhD Workshop

On the 10th of February 2023, the Institute of Neurosciences of the University of Barcelona hosted a PhD Workshop at Campus Clinic

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The workshop session started with an opening ceremony by Cristina Pulido, Research developer of the Institute, who presented the PhD Committee. They introduced themselves and explained what the PhD Committee is, some ideas and plans they have for the future and introduced the first activity of the day. To kick start the workshop, Alba Ortega Gascó teased the PhD students asking if they would be able to explain their research in less than 5 minutes. After some tips on how to explain the basis of a good scientific speech for a general audience, 6 brave students from the audience took a chance a gave it a try right then and there.

Afterwards there was a Round Table where the students had the opportunity to talk with the members of the Scientific Advisory Board (SAB). Following this activity, the PhD Committee introduced Dr. Elena Kokkinara, Dr. David Aguilar Lleyda and Dr. Laura Cervera-Carles. These alumni shared their personal experience presenting a variety of carrer paths.

Furthermore, On November 9th, 2023, the Institute of Neurosciences of the University of Barcelona, hosted the annual VI PhD Workshop at the Faculty of Pharmacy and Food Sciences.

Once again, the Institue of Neurociences of the University of Barcelona, promotes a day to celebrate the remarkable scientiffic passion among early and late stage researchers.

The day began with the welcoming words of Yolanda Cajal, the Vice Dean of Research, Scientific Policy and Transfer joined with Jordi Alberch, the director of the Institute of Neurociences.

Right after the opening ceremony the 6 selected oral presentations took place and the day also included two sessions of poster presentations where more than 50 students showcased their work with fellow peers and researchers.

The plenary lecture was given by Dr. Lauren M. Hablitz, Assistant Professor at the Center for Translational Neuromedicine in the Department of Neurology at the University of Rochester Medical Center. Her current research focuses on the underlying biological principles of circadian rhythms and entrainment in health and illness. Dr. Hablitz conducted a session titled "Circadian gating of glymphatic flow: current mechanisms and future directions" where she shared her latest research on leveraging circadian rhythms and sleep to enhance cerebrovascular, neuronal, and glymphatic function in pre-clinical models of persistent neuropathic pain and stroke.

Additionally there where also 3 practical seminars to complement the workshop:

1. Mental health in research: It's Time to Talk by Laura Hermida and Mireia Prime, Hospital Clínic de Barcelona
2. How to use ChatGPT in science by Mel Slater, PhD, Michael Wiesing Ph D, Jaime Gallego PhD, Ramon Oliva PhD, Event Lab
3. Relevance of gender in research by Guadalupe Soria, PhD, Neuroimaging in experimental animal models and Julia Peral, Gender officer (UBneuro, ICCUB and IQTC)

UBneuro Actions and Activities

The VI PhD Workshop ended on a high note with a roundtable, open to everyone, aimed to re-discover Parkinson's disease from different point of views brought by experts in the field:

- Chair: **Pol Garcia Segura**, Neurodegeneration and Signaling
- **Fulvio Capitano**, Parkinson's Movement Advocate
- **Yaroslau Compta**, MD, PhD, Clinical and experimental research in Parkinson's diseaseand other neurodegenerative movement disorders, Institute of Neurosciences, UB
- **Cristina Malagelada**, PhD, mTOR signaling dysregulation in neurodegenerativediseases, Institute of Neurosciences, UB

We thank organizers from the Institute of Neurosciences Jordi Alberch, Cristina Pulido, Marta Turró, Marta Rubio and the members of the PhD Committee: Siham Ijjou, Clara Romera, Raquel Alsina, Pol Garcia and Irene Rodríguez

SOMMA Membership

The Science Park of Granada ho stedcthe seventh edition of 100xCiencia on October 23 and 24. This annual meeting of the SOMMa alliance brought together the scientific community from the Severo Ochoa Centers of Excellence and María de Maeztu Units of Excellence.

On Monday, October 23, the SOMMa general assembly was held, coordinated by our president, María José Sanz, with the attendance of the directors and scientific directors of the 65 entities currently part of the alliance. They shared the various activities and milestones achieved throughout 2023, as well as the strategic lines of work to be developed in 2024.

The same day also featured the annual in-person meetings of the alliance's seven working groups, dedicated to open science, technology transfer, gender, research project management, communication, and management.

On Tuesday, October 24, in the morning session, scientific communication and dissemination professionals from the alliance had the opportunity to attend a masterclass on high-interest topics relevant to their work.

Starting at 19:00, the Techno-Forum hall of the Science Park of Granada hosted the grand closing event, "7 Questions to Change the World."

This assembly served as a platform for collective discussions and decision-making, facilitating collaboration and coordination among the participating units.

Support Scientific Activities

The institute has supported international courses and symposiums offered by our researchers.

XX Technical Conference on Huntington's Disease

The University of Barcelona hosted the XX Technical Conference on Huntington's Disease tomorrow, Friday, April 28, organized together with the Catalan Association of Huntington's Disease Patients (ACMAH). The event, which coincided with the 25th anniversary of this organization and was presided over by the rector of the UB, Joan Guàrdia, was attended by the Director General of Research of the Department of Research and Universities, Joan Gómez Pallarès; the Secretary of Healthcare and Participation, Carme Bertral López; the Head of Integrated Social and Health Care of the Department of Social Rights, Conxita Barbeta Mir; and the Director of Health Services of the Barcelona City Council, Davide Malmuse.

UB faculty and researchers participated in the conference, including Josep Maria Canals, professor at the Faculty of Medicine and Health Sciences, and Jordi Alberch, director of the Institute of Neurosciences of the UB. Representatives from various hospitals also attended, such as the Hospital Clínic, Hospital de la Santa Creu i Sant Pau, Bellvitge University Hospital, and Mare de Déu de la Mercè Hospital.

Throughout the conference, discussions covered the twenty-year history of these conferences, clinical trials of gene therapy and the future of cell therapy for treating Huntington's disease, the medical and legal aspects of euthanasia, and the impact of the disease on family members, among other topics.

UBneuro Actions and Activities

Human Brain Project: Towards a collaborative neuroscience

On Tuesday, June 20, 2023, the University of Barcelona's Faculty of Medicine hosted the event "Human Brain Project: Towards a Collaborative Neuroscience." This event was organized by the Human Brain Project and EBRAINS, in collaboration with IDIBAPS and the Institute of Neurosciences, University of Barcelona. It was open to the Barcelona neuroscience community.

The event was divided into two main parts

1) "Human Brain Project: Present and Future";

2) "EBRAINS: A Platform for Collaborative Neuroscience".

The event brought together leading figures in neuroscience to discuss the current state and future directions of the Human Brain Project and EBRAINS, fostering collaboration and knowledge sharing within the community.

They also introduced EBRAINS, an open research infrastructure created by the Human Brain Project, which brings together data, tools, and computing facilities for brain-related research. On the other hand, Roser Sala as representative of UBneuro assisted at the event "Adquisición y uso de datos en Neurociencia e Inteligencia Artificial a través de la infraestructura europea EBRAINS" on the 25th of September, Madrid.

5) Responsible research and innovation actions

Open Access

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

The Institute of Neuroscience is dedicated to fostering diversity, gender equality, and integrating gender and diversity perspectives into our research. We strive to create an environment that promotes equal opportunities and supports a positive work-life balance, enabling our researchers to thrive both professionally and personally.

Currently, 61% of our researchers are women. However, like in many scientific fields, we experience the "scissor effect," where there are more male group leaders than female. Our goal is to address this imbalance and ensure equality at all stages of the research career.

With this purpose in mind, the Institute has set several objectives: implementing measures to reaffirm women in leadership roles, correcting gender bias in research through targeted training, and promoting leadership from a gender-equal perspective to enhance the Institute's culture and inclusivity.

In 2023, we have undertaken several gender-related actions and activities to achieve these objectives. We hired a gender and equality officer, who has been instrumental in designing long-term actions for the coming years. We have also drafted texts on gender aspects for project proposals and ensured representation in the University of Barcelona's (UB) equality commission. Our gender officer has actively participated in meetings, including the COIMBRA gender group meeting in Brussels, strengthening our relationship with the UB.

As for specific actions, we organized a PhD workshop on gender and sex in neuroscience research, led by Guadalupe Soria and Julia Peral, which received positive feedback and is planned to be repeated. Also, the gender officer has been available to researchers to provide support regarding the writing of texts for projects. Lastly, we began designing our Equality Plan, completing its introductory and legal sections, with the next step being a comprehensive diagnosis of the Institute to implement appropriate measures, soon to be approved and implemented.

Outreach

NeuroArt

The NeuroArt 22-23 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 2023 at CCCB, with over a 100 attendees from 17 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.

The awarded works of art were:

Most Popular | **Recorda'm**
There are different parts of the brain involved in dreams. The sculpture represents a person asleep, dreaming; the colored parts of the brain are those involved in dreams, and the image represents the dream itself. The person may even see images with their eyes closed.

Most Creative | **Mals records i Drogues al·lucinògenes**
Both by IEA Oriol Martorell: Through movements, music, and images that share common aspects, we can convey to the viewer our understanding of **hallucinogenic drugs, bad memories**, and **neuroscientific concepts**, thereby facilitating their comprehension.

UBneuro Actions and Activities

Best Oral Presentation | **Sinapsi de Records**
By Col·legi Santo Angel: From the wooden base grows the hand of an elderly person. It holds a sick brain. The degradation of the pinkish-gray color conveys memories that have been both preserved and forgotten. The dripping silicone represents its loss. The small hand of a baby holds the hand of the elderly person, and, along with the photographs, it represents their childhood and memories.

Best Scientiffic Concept | **De Manolillo a Manolo**
By Col·legi Sagrada Família: The work expresses the neuronal pruning that occurs in children when they transition to adolescence or adulthood. Imagination is more pronounced in children because the multiple associations our adult brain can make between objects or concepts are disconnected, but not in children.

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.

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.

Cajal: Science and Art

Ramón y Cajal, an artist, photographer, bodybuilder, researcher, chess player, writer, father of seven children, and the founder of neuroscience, led a life as remarkable as his career. This exhibition, organized by the Institute of Neurosciences of the University of Barcelona, showcased facsimiles of Cajal's masterpieces, preserved and lent by the Legado Cajal at the Instituto Cajal (CSIC). These works highlighted Cajal's exceptional skill in illustrating the complexity of the human brain, blending science with artistry.

The exhibition was held between September 20 and October 14 of 2023, at the Faculty of Medicine and Health Sciences, Campus Clínic.

Round table on creativity: What makes us human

On October 6th, at 7:00 PM, the University of Barcelona hosted a round table titled "*Creativity: What Makes Us Human*" in the Aula Magna of the Historic Building. The event brought together three internationally renowned speakers: Pep Gatell, Artistic Director of La Fura dels Baus; Carme Ruscalleda, a seven-Michelin-starred chef; and Idan Segev, a neuroscientist from Hebrew University.

The panel was expertly moderated by Aurora Anton, who guided the discussion on the role of creativity in human identity, exploring its influence across different fields such as art, cuisine, and neuroscience. The conversation provided valuable insights into how creativity shapes the human experience, leaving attendees with a deeper understanding of its significance.

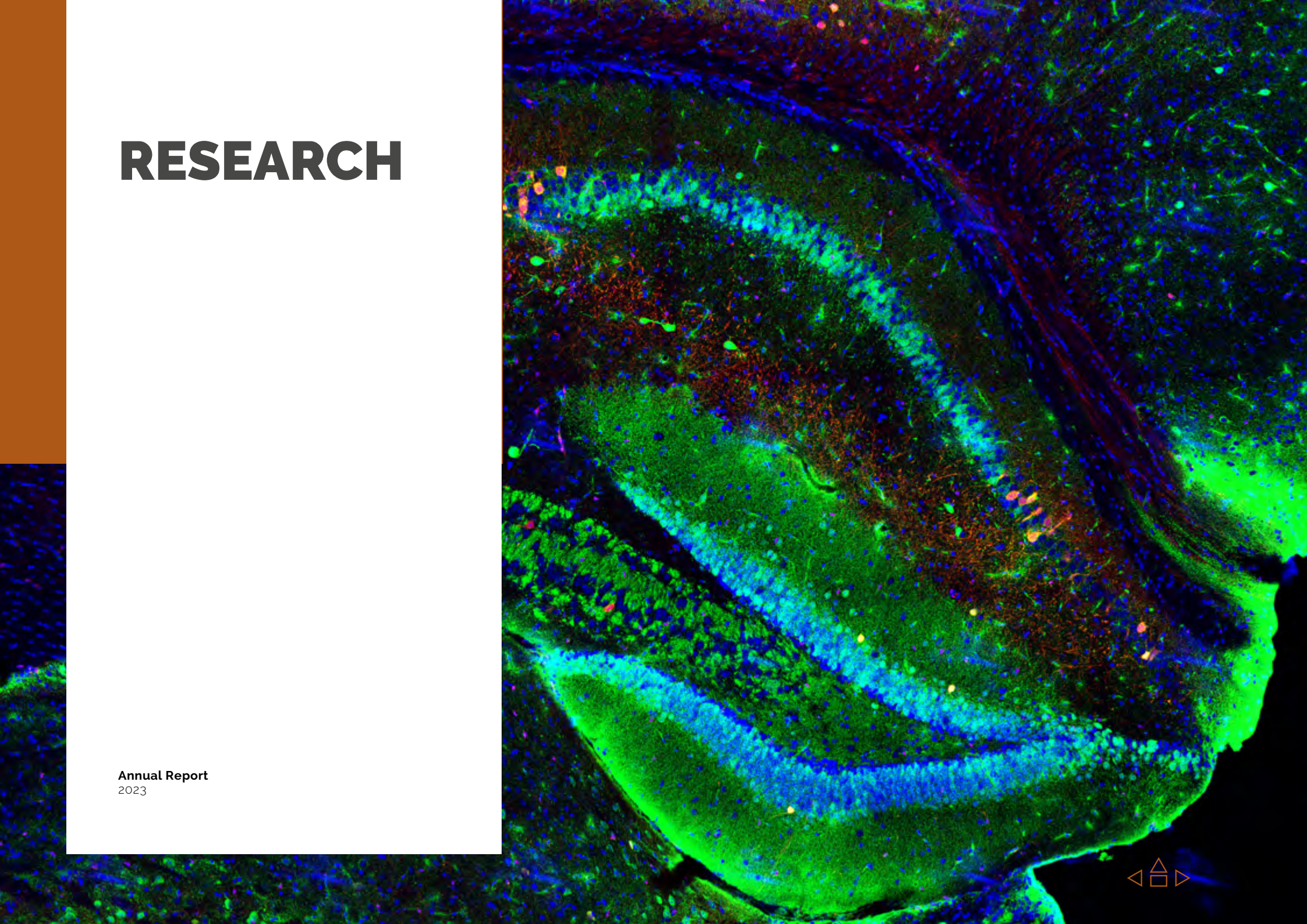
MEDIA PRESENCE

In 2023 we reached more than 42,000 visits to our website.

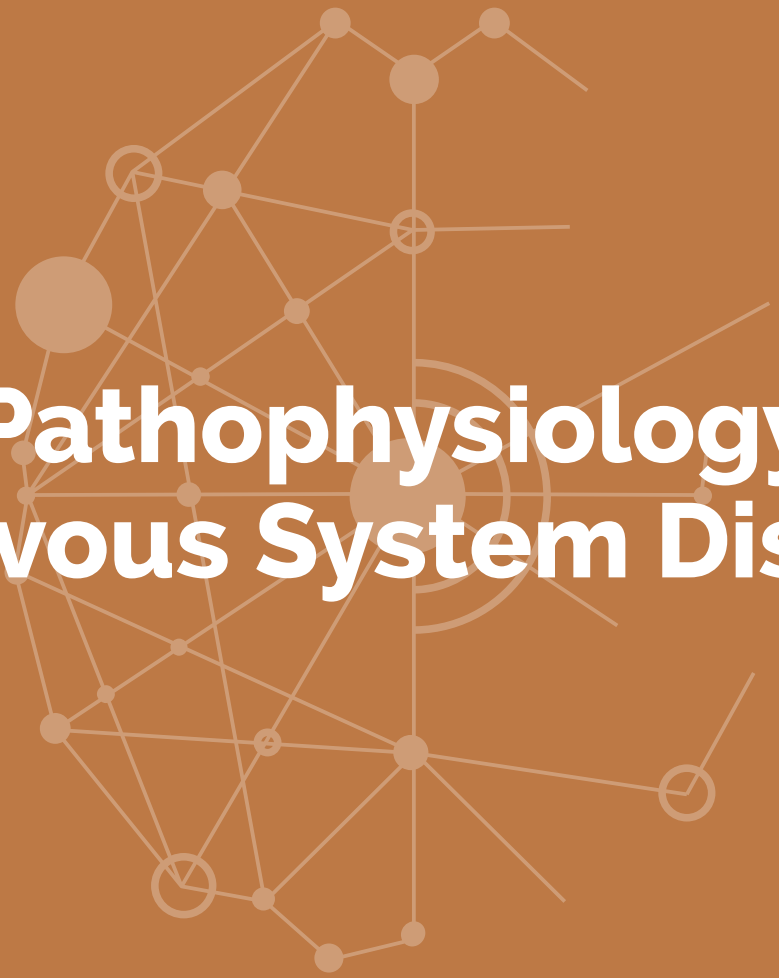
Moreover, we achieved the sum of 3,593 followers on **Twitter** (opened in May 2018). We have 330 subscribers to our **Youtube channel** (created in April 2020) and we increased in a 15% our visualizations in comparison to 2023. The **LinkedIn** channel has been reinforced with more publications of our activities and available vacancies, we have doubled our average engagement (14.94 compared to 6.6 in 2023), and not only this but we've achieved an outstanding growth reaching the 1233 followers by the end of the year.

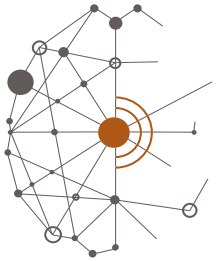
RESEARCH

Annual Report
2023



Pathophysiology of Nervous System Diseases





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.

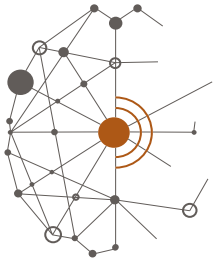
Neurological and psychiatric disorders can disrupt molecular pathways, synapses, neuronal andglial subpopulations, and local circuits in specific brain regions, as well as higher-order neural networks. Therefore, research must range from the study of large-scale brain network alterations to the microscopic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

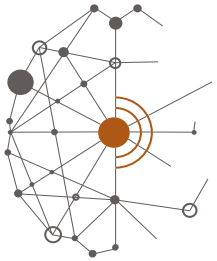
Highlighted projects

- **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
- **Vesículas 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
- **Estudio del proteoma de líquido cefalorraquídeo en ratas normales y transgénicas. Búsqueda de biomarcadores de la enfermedad de Alzheimer.** Ministerio de Ciencia, Innovación y Universidades. PID2022-142187OB-I00. Fernando Aguado

Selected publications

- Ramiro-Pareta, M., Müller-Sánchez, C., Portella-Fortuny, R., Soler-Botija, C., Torres-Cano, A., Esteve-Codina, A., Bayés-Genís, A., Reina, M., Soriano, F. X., Montanez, E., & Martínez-Estrada, O. M. (2023). Endothelial deletion of Wt1 disrupts coronary angiogenesis and myocardium development. Development, 150(6). https://doi.org/10.1242/dev.201147
- Tena-Morraja, P., Riqué-Pujol, G., Müller-Sánchez, C., Reina, M., Martínez-Estrada, O. M., & Soriano, F. X. (2023). Synaptic Activity Regulates Mitochondrial Iron Metabolism to Enhance Neuronal Bioenergetics. International Journal of Molecular Sciences, 24(2), 922. https://doi.org/10.3390/ijms24020922

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, Aïda Palou, Xavier Vallve, Emma Cerrato Valtueña.

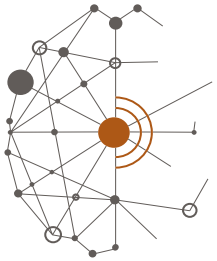
Highlighted projects

- **Bases Cel·lulars i Moleculars dels Trastorns Sensorials.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR00368. Jordi Llorens
- **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. Jordi Llorens
- **Vestibular Loss and Spatial Orientation**. Ministerio de Ciencia, Innovación y Universidades. PCI2020-120681-2. Jordi Llorens
- **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. Ana Mandez
- **Nuevos mecanismos moleculares en el daño vestibular crónico.** Ministerio de Ciencia e Innovación (MICINN). PID2021-124678OB-I00
- **Desarrollo de MP004 como tratamiento innovador para la retinosis pigmentaria y otras enfermedades retinianas: estudio de eficacia y toxicología, validación delmecanismo de acción y plan de desarrollo de actividades regulatorias preclínicas**. Ministerio de Ciencia e Innovación (MICINN). CPP2022-009867. Ana Mendez
- 1 confidential agreement

Selected publications

- Greguske, E. A., Maroto, A. F., Borrajo, M., Palou, A., Gut, M., Esteve-Codina, A., Barrallo-Gimeno, A., & Llorens, J. (2023). Decreased expression of synaptic genes in the vestibular ganglion of rodents following subchronic ototoxic stress. Neurobiology of Disease, 182, 106134. https://doi.org/10.1016/j.nbd.2023.106134
- Maroto, A. F., Borrajo, M., Prades, S., Callejo, À., Amilibia, E., Pérez-Grau, M., Roca-Ribas, F., Castellanos, E., Barrallo-Gimeno, A., & Llorens, J. (2023). The vestibular calyceal junction is dismantled following subchronic streptomycin in rats and sensory epithelium stress in humans. Archives of Toxicology, 97(7), 1943–1961. https://doi.org/10.1007/s00204-023-03518-z
- Schenberg, L., Palou, A., Simon, F., Bonnard, T., Barton, C.-E., Fricker, D., Tagliabue, M., Llorens, J., & Beraneck, M. (2023). Subchronic alteration of vestibular hair cells in mice: implications for multisensory gaze stabilization. https://doi.org/10.7554/elife.88819.2
- Sirés, A., Pazo-González, M., López-Soriano, J., Méndez, A., de la Rosa, E. J., de la Villa, P., Comella, J. X., Hernández-Sánchez, C., & Solé, M. (2023). The Absence of FAIM Leads to a Delay in Dark Adaptation and Hampers Arrestin-1 Translocation upon Light Reception in the Retina. Cells, 12(3), 487. https://doi.org/10.3390/cells12030487

Developmental neurobiology and regeneration



Pathophysiology of Nervous System Diseases

Principal investigators

EDUARDO SORIANO
Developmental genes and neural plasticity

YASMINA MANSO
Neurodegeneration and Neuroinflammation

Members

Ferran Burgaya, Antoni Parcerisas, Fausto Alexander Ulloa, Marta Pascual, Jesus Mariano Ureña, Lluis Pujadas, Tiziana Cortrufo, Katherine Herrera.

Highlighted projects

- **Enfermedades neurodegenerativas.** Ministerio de Sanidad y Consumo. CB06/05/0098. Eduardo Soriano.
- **Papel de la proteina de matriz extracelular Reelina en plasticidad neural y en la enfermedad de Alzheimer**. Ministerio de Ciencia, Innovación y Universidades. PID2019-106764RB-C21. Eduardo Soriano
- **Nuevas funciones de la reelina en el desarrollo neuronal y en la patogénesis de la enfermedad de Alzheimer**. Ministerio de Ciencia, Innovación y Universidades. PID2022-138105OB-C21. Eduardo Soriano, Yasmina Manso

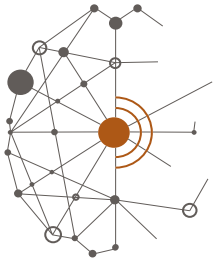
Selected publications

- Martínez-Mármol, R., Muhaisen, A., Cotrufo, T., Roselló-Busquets, C., Ros, O., Hernaiz-Llorens, M., Pérez-Branguli, F., Andrés, R. M., Parcerisas, A., Pascual, M., Ulloa, F., & Soriano, E. (2023a). Syntaxin-1 is necessary for UNC5A-C/Netrin-1-dependent macropinocytosis and chemorepulsion. Frontiers in Molecular Neuroscience, 16. https://doi.org/10.3389/fnmol.2023.1253954
- Olloquequi, J., Ettcheto, M., Cano, A., Fortuna, A., Bicker, J., Sánchez-Lopez, E., Paz, C., Ureña, J., Verdaguer, E., Auladell, C., & Camins, A. (2023). Licochalcone A: A Potential Multitarget Drug for Alzheimer's Disease Treatment. International Journal of Molecular Sciences, 24(18), 14177. https://doi.org/10.3390/ijms241814177
- 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. (2023). Regulation of young-adult neurogenesis and neuronal differentiation by neural cell adhesion molecule 2 (NCAM2). Cerebral Cortex, 33(21), 10931–10948. https://doi.org/10.1093/cercor/bhad340

Thesis

- **Anàlisi de les funcions de la proteïna NCAM2 en el desenvolupament i la plasticitat neuronal.** Alba Ortega Gascó. Supervisor: Eduardo Soriano Garcia; Lluís Pujadas Puigdomènech.

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

FRANCISCO JOSÉ LÓPEZ MURCIA:
Presynaptic dysfunction and brain disorders

Members

Pablo Martinez San-Segundo, Marta Casas, David Sedano.

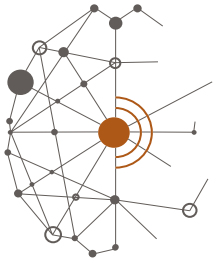
Highlighted projects

- **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
- **La dimensión presináptica de las patologías cerebrales: complexina y sintaxina y su control sobre la (dis)función sinàptica.** Ministerio de Ciencia e Innovación (MICINN). PID2022-141685NA-I00. Francisco José López Murcia
- **Presynaptic dysfunction and brain disorders: from the neurotransmitter release machinery to microcircuits.** Max Planck Society. 30185. Francisco José López Murcia

Selected publications

- López-Murcia, F. J., Reim, K., & Taschenberger, H. (2023). Complexins: Ubiquitously Expressed Presynaptic Regulators of SNARE-Mediated Synaptic Vesicle Fusion (pp. 255–285). https://doi.org/10.1007/978-3-031-34229-5_10
- Martínez San Segundo, P., Terni, B., & Llobet, A. (2023). Multivesicular release favors short term synaptic depression in hippocampal autapses. Frontiers in Cellular Neuroscience, 17. https://doi.org/10.3389/fncel.2023.1057242
- Tolosa-Monfà A, V. A. B.-C. J. B.-P. M. B.-J. E. (2023). Cytotoxicity comparison of Bio C Sealer against multiple root canal sealers. Journal of Clinical and Experimental Dentistry, 15(2), e110-117.
- Velasco, C. D., Santarella-Mellwig, R., Schorb, M., Gao, L., Thorn-Seshold, O., & Llobet, A. (2023). Microtubule depolymerization contributes to spontaneous neurotransmitter release in vitro. Communications Biology, 6(1), 488. https://doi.org/10.1038/s42003-023-04779-1

Molecular and cellular neurobiotechnology



Pathophysiology of Nervous System Diseases

Principal investigators

JOSE ANTONIO DEL RIO
Molecular and cellular neurobiotechnology

Members

Rosalina Gavin, Karen Wells, Miriam Segura.

Highlighted projects

- **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
- **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

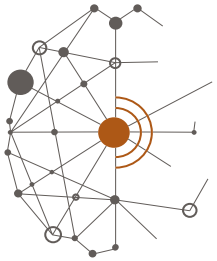
Selected publications

- Andrés-Benito, P., Flores, Á., Busquet-Areny, S., Carmona, M., Ausín, K., Cartas-Cejudo, P., Lachén-Montes, M., Del Rio, J. A., Fernández-Irigoyen, J., Santamaría, E., & Ferrer, I. (2023). Deregulated Transcription and Proteostasis in Adult mapt Knockout Mouse. International Journal of Molecular Sciences, 24(7), 6559. https://doi.org/10.3390/ijms24076559
- Andrés-Benito, P., Íñigo-Marco, I., Brullas, M., Carmona, M., Rio, J. A. del, Fernández-Irigoyen, J., Santamaría, E., Povedano, M., & Ferrer, I. (2023). Proteostatic modulation in brain aging without associated Alzheimer's disease-and age-related neuropathological changes. Aging, 15(9), 3295–3330. https://doi.org/10.18632/aging.204698
- Hernández, F., Ferrer, I., Pérez, M., Zabala, J. C., del Rio, J. A., & Avila, J. (2023). Tau Aggregation. Neuroscience, 518, 64–69. https://doi.org/10.1016/j.neuroscience.2022.04.024
- Martinez-Torres, S., Mesquida-Veny, F., Del Rio, J. A., & Hervera, A. (2023). Injury-induced activation of the endocannabinoid system promotes axon regeneration. IScience, 26(6), 106814. https://doi.org/10.1016/j.isci.2023.106814
- Tonelli, M., Catto, M., Sabaté, R., Francesconi, V., Laurini, E., Pricl, S., Pisani, L., Miniero, D. V., Liuzzi, G. M., Gatta, E., Relini, A., Gavín, R., Del Rio, J. A., Sparatore, F., & Carotti, A. (2023). Thioxanthenone-based derivatives as multitarget therapeutic leads for Alzheimer's disease. European Journal of Medicinal Chemistry, 250, 115169. https://doi.org/10.1016/j.ejmech.2023.115169

Thesis

- **Evaluation of tau seeding, spreading, and cytotoxicity using in vitro and in vivo modelsof tau pathology.** Julia Sala Jarque. Supervisor: Jose antonio del Río
- **Development of 3D in vitro platforms for the study of muscle function and axonal growth and regeneration.** Karen Isabel Wells Zembrano. Supervisor: José Antonio del Río

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

EKAITZ ERRASTI-MURUGARREN
Structure and physiopathology of SLC transporters

TANIA LÓPEZ HERNÁNDEZ
Ion homeostasis and membrane trafficking in neurological disorders

Members

Hector Gaitan, Laura Ferigle, Adria Pla, Ashraf Muhaisen.

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
- **Screening of pharmacological chaperones for Megalencephalic leukoencephalopathy with subcortical cysts.** ELA Foundation. 2023-013I2. Raul Estevez
- 2 Confidential agreement

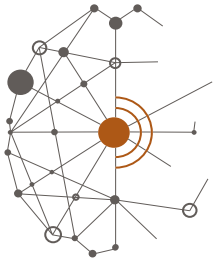
Selected publications

- Mayayo-Vallverdú, C., Prat, E., Vecino-Pérez, M., González, L., Gràcia-Garcia, S., San Miguel, L., Lopera, N., Arias, A., Artuch, R., López de Heredia, M., Torrecilla, C., Rousaud-Barón, F., Angerri, O., Errasti-Murugarren, E., & Nunes, V. (2023). Exploring the Contribution of the Transporter AGT1/rBAT in Cystinuria Progression: Insights from Mouse Models and a Retrospective Cohort Study. International Journal of Molecular Sciences, 24(24), 17140. https://doi.org/10.3390/ijms242417140

Thesis

- **Insights into the role of Gprc5b in the pathophysiology of MLC disease.** Adrià Pla. Supervisor: Raúl Estévez

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

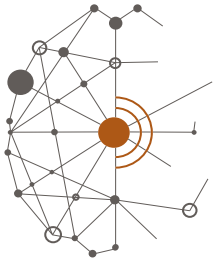
Andrea Marti, Jose Pablo Soriano, Isabel Turpin, Gisele Aguiar, Adriana Modrego-Muñoz Laura Garcia-Gonzalez.

Highlighted projects

- **theALSmatrisome: Defining the contribution of ALS-associated alterations in motor neuron microenvironment to disease pathogenesis.** THE FRENCH MUSCULAR DYSTROPHY ASSOCIATION AFM TÉLÉTHON. 25060. Alberto Ortega
- **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
- **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
- **Filling in the regulatory gap of the use of organoids as an in vitro Medical Device in personalized medicine_The regulatory for the OrganAId. F2I-PdC_2022-009**. Fundació Bosch i Gimpera de la Universitat de Barcelona. F2I-PdC_2022-009. Sandra Acosta

Selected publications

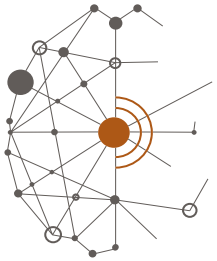
- Álvarez, Z., Ortega, J. A., Sato, K., Sasselli, I. R., Kolberg-Edelbrock, A. N., Qiu, R., Marshall, K. A., Nguyen, T. P., Smith, C. S., Quinlan, K. A., Papakis, V., Syrgiannis, Z., Sather, N. A., Musumeci, C., Engel, E., Stupp, S. I., & Kiskinis, E. (2023). Artificial extracellular matrix scaffolds of mobile molecules enhance maturation of human stem cell-derived neurons. Cell Stem Cell, 30(2), 219-238.e14. https://doi.org/10.1016/j.stem.2022.12.010
- García-González, L., Martí-Sarrias, A., Puertas, M. C., Bayón-Gil, Á., Resa-Infante, P., Martinez-Picado, J., Navarro, A., & Acosta, S. (2023). Understanding the neurological implications of acute and long COVID using brain organoids. Disease Models & Mechanisms, 16(7). https://doi.org/10.1242/dmm.050049
- Musokhranova, U., Grau, C., Vergara, C., Rodríguez-Pascau, L., Xiol, C., Castells, A. A., Alcántara, S., Rodríguez-Pombo, P., Pizcueta, P., Martinell, M., García-Cazorla, A., & Oyarzábal, A. (2023). Mitochondrial modulation with leriglitazone as a



Pathophysiology of Nervous System Diseases

potential treatment for Rett syndrome. Journal of Translational Medicine, 21(1), 756. https://doi.org/10.1186/s12967-023-04622-5

- Ortega, J. A., Sasselli, I. R., Boccitto, M., Fleming, A. C., Fortuna, T. R., Li, Y., Sato, K., Clemons, T. D., Mckenna, E. D., Nguyen, T. P., Anderson, E. N., Asin, J., Ichida, J. K., Pandey, U. B., Wolin, S. L., Stupp, S. I., & Kiskinis, E. (2023). CLIP-Seq analysis enables the design of protective ribosomal RNA bait oligonucleotides against C9ORF72 ALS/FTD poly-GR pathophysiology. Science Advances, 9(45). https://doi.org/10.1126/sciadv.adf7997
- Smith, C. S., Álvarez, Z., Qiu, R., Sasselli, I. R., Clemons, T., Ortega, J. A., Vilela-Picos, M., Wellman, H., Kiskinis, E., & Stupp, S. I. (2023). Enhanced Neuron Growth and Electrical Activity by a Supramolecular Netrin-1 Mimetic Nanofiber. ACS Nano, 17(20), 19887–19902. https://doi.org/10.1021/acsnano.3c04572



Pathophysiology of Nervous System Diseases

Neuropharmacology, neuroepigenetics, neurodegeneration and ageing

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-Sanchis, Julia Companys, Julia Jarne-Ferrer, Jaume Lillo, Catalina Perez, Iu Raïch, Marta Riba, Rafael Rivas, Clara Romera, Iraida Tena, Irene Reyes-Resinas, Joan Biel Rebassa, Raquel Alsina, Teresa Taboada.

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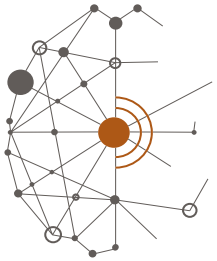
Highlighted projects

- **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
- **Nuevas perspectivas sobre el papel del receptor de imidazolina I2 en la neuroinflamación. Identificación y validación como diana para laenfermedad de Alzheimer**. Ministerio de Ciencia e Innovación (MICINN). PID2022-138079OB-I00. Merce Pallas
- **Validación de la inhibición dual G9a/GSK-3B como nueva estrategia terapéutica para el deterioro cognitivo y la enfermedad de Alzheimer.** Ministerio de Ciencia e Innovación (MICINN). PID2022-139016OA-I00. Christian Griñan-Ferre
- **Cells in limbo: how senescent cells may lead to Alzheimer's Disease.** Ministerio de Ciencia e Innovación (MICINN). AARF-21-848511. Ana Guerrero
- **Cellular senescence in ageing and neurodegenerative diseases.** Ministerio de Ciencia e Innovación (MICINN). RYC2021-034046-I. Ana Guerrero



Pathophysiology of Nervous System Diseases

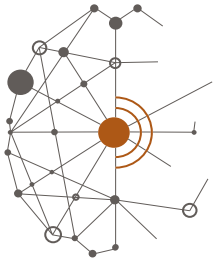
- **Entendiendo la contribución de la senescencia celular a la enfermedad de Alzheimer**. Ministerio de Ciencia e Innovación (MICINN). PID2022-138829OA-I00. Ana Guerrero
- **Effects of peripheral cellular senescence in Alzheimer´s Disease.** Ministerio de Ciencia e Innovación (MICINN). CNS2023-144676. Ana Guerrero
- 5 Confidential agreements

Selected publications

- Bagán A, Rodriguez-Arévalo S, Taboada-Jara T, Griñán-Ferré C, Pallàs M, Brocos-Mosquera I, Callado LF, Morales-García JA, Pérez B, Diaz C, Fernández-Godino R, Genilloud O, Beljkas M, Oljacic S, Nikolic K, Escolano C.. (2023). Preclinical Evaluation of an Imidazole-Linked Heterocycle for Alzheimer's Disease. Pharmaceutics, 15(10), 2381. https://doi.org/10.3390/pharmaceutics10020057
- Bellver-Sanchis, A., Ávila-López, P. A., Tic, I., Valle-García, D., Ribalta-Vilella, M., Labrador, L., Banerjee, D. R., Guerrero, A., Casadesus, G., Poulard, C., Pallàs, M., & Griñán-Ferré, C. (2024). Neuroprotective effects of G9a inhibition through modulation of peroxisome-proliferator activator receptor gamma-dependent pathways by miR-128. Neural Regeneration Research, 19(11), 2532–2542. https://doi.org/10.4103/1673-5374.393102
- Guerrero, A. (2023). Nucleosome disruption by 5 bromodeoxyuridine leads to senescence. The FEBS Journal, 290(3), 684–687. https://doi.org/10.1111/febs.16630
- Guerrero, A., & Gil, J. (2023). 3-Deazaadenosine keeps senescence at bay. Aging, 15(7), 2369–2370. https://doi.org/10.18632/aging.204625
- Jana, A., Bellver-Sanchis, A., Griñán-Ferré, C., & Banerjee, D. R. (2023). Repurposing of Raltitrexed as an Effective G9a/EHMT2 Inhibitor and Promising Anti-Alzheimer's Agent. ACS Medicinal Chemistry Letters, 14(11), 1531–1536. https://doi.org/10.1021/acsmedchemlett.3c00344
- Riba, M., del Valle, J., Romera, C., Alsina, R., Molina-Porcel, L., Pelegrí, C., & Vilaplana, J. (2023). Uncovering tau in wasteosomes (corpora amylacea) of Alzheimer's disease patients. Frontiers in Aging Neuroscience, 15. https://doi.org/10.3389/fnagi.2023.1110425
- Riba, M., Romera, C., Alsina, R., Alsina-Scheer, G., Pelegrí, C., Vilaplana, J., & del Valle, J. (2023). Analyzing the Virchow pioneering report on brain corpora amylacea: shedding light on recurrent controversies. Brain Structure and Function, 228(6), 1371–1378. https://doi.org/10.1007/s00429-023-02664-5
- Rivas-Santisteban, R., Rico, A. J., Muñoz, A., Rodríguez-Pérez, A. I., Reyes-Resina, I., Navarro, G., Labandeira-García, J. L., Lanciego, J. L., & Franco, R. (2023). Boolean analysis shows a high proportion of dopamine D2 receptors interacting with adenosine A2A receptors in striatal medium spiny neurons of mouse and non-human primate models of Parkinson's disease. Neurobiology of Disease, 188, 106341. https://doi.org/10.1016/j.nbd.2023.106341

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
- Compounds as soluble epoxide hydrolase inhibitors. UBTT0307d
- G9a inhibitors. UBTT0466
- Synthetic cannabinoids based on chromenopyrimidine scaffold and use thereof. UBTT0482-E

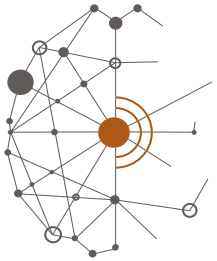


Pathophysiology of Nervous System Diseases

Thesis

- **Noves evidències de l'efecte neuroprotector del Sistema Cannabinoide a nivell del Sistema Nerviós Central.** Jaume Lillo Jové. Supervisor: Gemma Navarro Brugal i Rafael Franco Fernández
- **Potencial dels heteròmers de receptors d'adenosina i de cannabinoides com a dianes terapèutiques en malalties neurodegeneratives i obesitat**. Alejandro Lillo Márquez. Supervisor: Gemma Navarro Brugal i Rafael Franco Fernández
- **Expresión y funcionalidad de receptores de cannabinoides y de adenosina y de sus heterómeros en modelos de Alzheimer y de Esclerosis múltiple.** Catalina Pérez Olives. Supervisor: Gemma Navarro Brugal i Rafael Franco Fernández
- **The butterfly effect on GPCRs.** Clàudia Llinàs del Torrent Masachs. Supervisor: Gemma Navarro Brugal i Leonardo Pardo

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

MERCE IZQUIERDO-SERRA
Synaptic function in channelophathies

Members

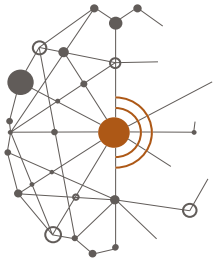
Arcadi Gual, Roberto Garcia, Silvia Locubiche, Federico Miguez, Federico Ponente, Anna Pujol, Lenin Reyes, Ana Santos, Sara Abello, Anna Priscilla Perez, Aida Castellanos, Irene Pallas, Julia Limós, Helena Lluis, Maria Isabel Bahamonde, Uxía Fraga, Javi Picañol, Yxia Jin.

Highlighted projects

- **A new target for the treatment of acute and chronic itch.** LEO FOUNDATION. LF-OC-22-001114. Xavier Gasull
- **Medicina personalizada para las Grinpatías y sinaptopatías glutamatérgicas asociadas a encefalopatías del desarrollo.** Instituto de Salud Carlos III. PI22/00515. Xavier Altafaj
- **Modulating microglia-neuron crosstalk in Alzheimer's disease. Alzheimer's Association.** AARG-22-968879. Mar Puigdellivol
- **Defectes de plasticitat homeostàtica en l'autisme: aportacions de l'estudi de mutacions humanes del genCNTNAP2.** Fundació La Marató de TV3. 609/U/2022. Xavier Altafaj
- **Laboratori de Neurofisiologia.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR00292. Nuria Comes
- **FISIOLOGÍA DE INTERACTORES DE RECEPTORES AMPA (TARPs y CPT1C) EN NEURONAS Y GLÍA.** Ministerio de Ciencia, Innovación y Universidades. PID2020-119932GB-I00. David Soto
- **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. Xavier Altafaj
- **Papel de la microglia en la disfunción sináptica y neuronal en la enfermedad de Alzheimer.** Ministerio de Ciencia e Innovación (MICINN). PID2021-125785OA-I00. Mar Puigdellivol
- **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. Mercé Izquierdo-Serra
- 2 confidential agreements

Selected publications

- Ballasch, I., García-García, E., Vila, C., Pérez-González, A., Sancho-Balsells, A., Fernández, J., Soto, D., Puigdellívol, M., Gasull, X., Alberch, J., Rodríguez, M. J., Canals, J. M., & Giralt, A. (2023). Ikzf1



Pathophysiology of Nervous System Diseases

as a novel regulator of microglial homeostasis in inflammation and neurodegeneration. Brain, Behavior, and Immunity, 109, 144–161. https://doi.org/10.1016/j.bbi.2023.01.016

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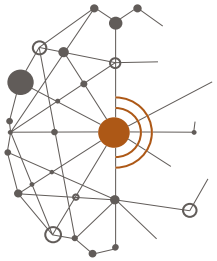
Knowledge and transfer innovation

- 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. Carme Auladell
- **Estrategias terapéuticas para mejorar la resiliencia cognitiva en enfermedades neurodegenerativas.** Ministerio de Ciencia e Innovación (MICINN). PID2021-123462OB-I00. Antoni Camins, Carme Auladell
- **Enfermedades neurodegenerativas.** Ministerio de Sanidad y Consumo. CB06/05/0024. Antoni Camins
- **Papel de los micro-RNAs circulantes como potenciales biomarcadores y dianas terapéuticas de la resistencia a la insulina y la enfermedad de Alzheimer.** Ministerio de Sanidad y Consumo. PI2021/03. Antoni Camins
- **Diagnóstico diferencial da doença de Alzheimer por sensores eletroquímicos usando ADAM10 como biomarcador sanguíneo.** Ministerio de Sanidad y Consumo. 45358058000140. Antoni Camins
- **Epigenetic modulation of blood-brain barrier integrity for the prevention of epileptogenesis.** 202203133. Antoni Camins

Selected publications

- Cano, A., Ettcheto, M., Bernuz, M., Puerta, R., Esteban de Antonio, E., Sánchez-López, E., Souto, E. B., Camins, A., Martí, M., Pividori, M. I., Boada, M., & Ruiz, A. (2023). Extracellular vesicles, the emerging mirrors of brain physiopathology. International Journal of Biological Sciences, 19(3), 721–743. https://doi.org/10.7150/ijbs.79063
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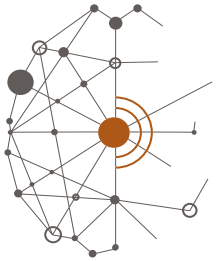
Research



Pathophysiology of Nervous System Diseases

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- Olloquequi, J., Ettcheto, M., Cano, A., Fortuna, A., Bicker, J., Sánchez-Lopez, E., Paz, C., Ureña, J., Verdaguer, E., Auladell, C., & Camins, A. (2023). Licochalcone A: A Potential Multitarget Drug for Alzheimer's Disease Treatment. International Journal of Molecular Sciences, 24(18), 14177. https://doi.org/10.3390/ijms241814177
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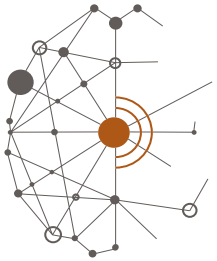
Thesis

- **Desarrollo de Sistemas Nanoestructurados de Poliésteres de Licochalcona A Funcionalizados con Péptidos para el Tratamiento de Enfermedadess Oculares.** Ruth Galindo Camacho. Supervisor: Antoni Camins; Maria Luisa Garcia
- **El déficit cognitivo y la enfermedad de Alzheimer en presencia de alteraciones metabólicas: estudio in vivo de una nueva diana terapéutica y de la estrategia multidiana para el tratamiento de estas condiciones.** Triana Espinosa Jimenez. Supervisor: Miren Ettcheto; Antoni Camins

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-DUEÑAS
Pain

AFRICA FLORES
Orexins in health and disease

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. 20211068. Victor Fernandez-Dueñas
- **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. 20201041. Ester Aso

Selected publications

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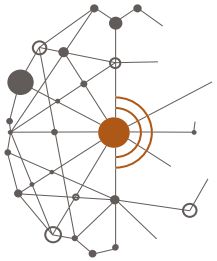

Pathophysiology of Nervous System Diseases

- Gambino, G., Giglia, G., Gallo, D., Scordino, M., Giardina, C., Zuccarini, M., Di Iorio, P., Giuliani, P., Ciruela, F., Ferraro, G., Mudò, G., Sardo, P., & Di Liberto, V. (2022). Guanosine modulates K+ membrane currents in SH-SY5Y cells: involvement of adenosine receptors. Pflügers Archiv - European Journal of Physiology, 474(11), 1133–1145. https://doi.org/10.1007/s00424-022-02741-4
- Garozzo, R., Zuccarini, M., Giuliani, P., Di Liberto, V., Mudò, G., Caciagli, F., Ciccarelli, R., Ciruela, F., Di Iorio, P., & Condorelli, D. F. (2022). Guanine inhibits the growth of human glioma and melanoma cell lines by interacting with GPR23. Frontiers in Pharmacology, 13. https://doi.org/10.3389/fphar.2022.970891
- Herraiz-Martínez, A., Tarifa, C., Jiménez-Sábado, V., Llach, A., Godoy-Marín, H., Colino-Lage, H., Nolla-Colomer, C., Casabella-Ramon, S., Izquierdo-Castro, P., Benítez, I., Benítez, R., Roselló-Díez, E., Rodríguez-Font, E., Viñolas, X., Ciruela, F., Cinca, J., & Hove-Madsen, L. (2022). Influence of sex on intracellular calcium homoeostasis in patients with atrial fibrillation. Cardiovascular Research, 118(4), 1033–1045. https://doi.org/10.1093/cvr/cvab127
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- Parameswaran, J., Goicoechea, L., Planas-Serra, L., Pastor, A., Ruiz, M., Calingasan, N. Y., Guilera, C., Aso, E., Boada, J., Pamplona, R., Portero-Otín, M., de la Torre, R., Ferrer, I., Casasnovas, C., Pujol, A., & Fourcade, S. (2022). Activating cannabinoid receptor 2 preserves axonal health through GSK-3/NRF2 axis in adrenoleukodystrophy. Acta Neuropathologica, 144(2), 241–258. https://doi.org/10.1007/s00401-022-02451-2
- Prieto-Díaz, R., González-Gómez, M., Fojo-Carballo, H., Azuaje, J., El Maatougui, A., Majellaro, M., Loza, M. I., Brea, J., Fernández-Dueñas, V., Paleo, M. R., Díaz-Holguín, A., Garcia-Pinel, B., Mallo-Abreu, A., Estévez, J. C., Andújar-Arias, A., García-Mera, X., Gomez-Tourino, I., Ciruela, F., Salas, C. O., … Sotelo, E. (2023). Exploring the Effect of Halogenation in a Series of Potent and Selective A 2B Adenosine Receptor Antagonists. Journal of Medicinal Chemistry, 66(1), 890–912. https://doi.org/10.1021/acs.jmedchem.2c01768
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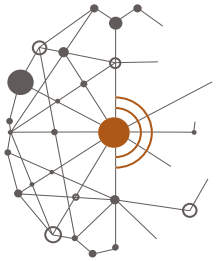
Stem cells and neurodevelopment



Pathophysiology of Nervous System Diseases

Principal investigators

JOSEP M. CANALS
Stem cells and regenerative medicine

DANIEL TORNERO
Neural stem cells and brain damage

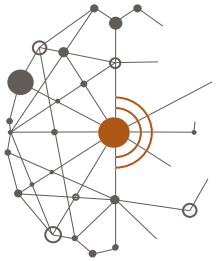
DANIEL DEL TORO
In vivo reprogramming during cortex development

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
- **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
- **Ajut per a la intensificació de les activitats de transferència per al curs 2023-24.** Universitat de Barcelona. Josep M. Canals
- **Contracte del Programa Ramon y Cajal. Ministerio de Economía y Competitividad. RYC-2017-23486. Daniel**
- **Neuronal networks from Cortical human iPSCs for Machine Learning Processing (NEU-ChiP).** Unió Europea 964877. Daniel Tornero
- **Produccion preclinica de particulas lentivirales para el proyecto de investigacion AC20/00110. Exp. FIBHGM PA 05/2022.** FUNDACIÓN PARA LA INVESTIGACIÓN BIOMÉDICA DEL HOSPITAL GREGORIO MARAÑÓN (FIBHGM). 311821. Josep M. Canals

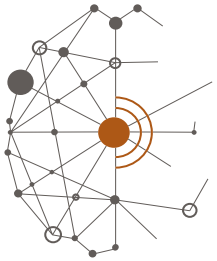


Pathophysiology of Nervous System Diseases

- **Servei de producció de partícules lentivirals de tercera generació amb certificat GMP per al Servei d'Immunologia de l'Hospital Clínic de Barcelona.** Hospital Clínic i Provincial de Barcelona. 311774. Josep M. Canals
- **Servei de producció de partícules lentivirals de tercera generació amb certificat GMP per al Servei d'Immunologia de l'Hospital Clínic de Barcelona.** Hospital Clínic i Provincial de Barcelona. 312300. Josep M. Canals
- **Servicio de producción y suministro de un lentivirus recombinante codificado de un CAR (LV-CL30) de la Fundació Institut de Recerca contra la Leucèmia Josep Carreras.** Fundació Institut de Recerca contra la Leucèmia Josep Carreras. 312085. Josep M. Canals
- **Servicio relativo a la producción y suministro de un lentivirus recombinante codificado de un CAR (LV-CL19) para la Fundación Institut de Recerca de l'Hospital de la Santa Creu i Sant Pau. NEGSPIR 22/03.** Institut de Recerca de l'Hospital de la Santa Creu i Sant Pau. 312061. Josep M. Canals
- **Servicio relativo a la producción y suministro de un lentivirus recombinante codificado de un CAR (LV-CL30) para la Fundación Institut de Recerca de l'Hospital de la Santa Creu i Sant Pau. Exp. NEGSPIR 22/01.** Institut de Recerca de l'Hospital de la Santa Creu i Sant Pau. 311682. Josep M. Canals
- **Servicio sobre la producción de Células Mesenquimales troncales adultas alogénicas y autólogas de médula ósea expandides.** INSTITUTO DE INVESTIGACIÓN BIOMÉDICA DE SALAMANCA (IBSAL). 311728. Josep M. Canals
- **Somatic cell therapy (Mesenchymal Stem Cells).** Ministerio de Ciencia e Innovación (MICINN). CERT22/00038. Josep M. Canals
- **Molecular interactions of guidance receptors acting in early cortical development.** Wellcome Trust. 226647/Z/22/Z. Daniel del Toro
- **Validación y estrategia de industrialización de procesos de bioimpresión 4D para aplicaciones médicas; tejido cutáneo (4D-BIOSKIN).** Ministerio de Ciencia e Innovación (MICINN). CPP2022-009969. Josep M. Canals
- 4 confidential agreements

Selected publications

- Ballasch, I., García-García, E., Vila, C., Pérez-González, A., Sancho-Balsells, A., Fernández, J., Soto, D., Puigdellívol, M., Gasull, X., Alberch, J., Rodríguez, M. J., Canals, J. M., & Giralt, A. (2023). Ikzf1 as a novel regulator of microglial homeostasis in inflammation and neurodegeneration. Brain, Behavior, and Immunity, 109, 144–161. https://doi.org/10.1016/j.bbi.2023.01.016
- Estévez-Priego, E., Moreno-Fina, M., Monni, E., Kokaia, Z., Soriano, J., & Tornero, D. (2023). Long-term calcium imaging reveals functional development in hiPSC-derived cultures comparable to human but not rat primary cultures. Stem Cell Reports, 18(1), 205–219. https://doi.org/10.1016/j.stemcr.2022.11.014
- Miguez, A., Gomis, C., Vila, C., Monguió-Tortajada, M., Fernández-García, S., Bombau, G., Galofré, M., García-Bravo, M., Sanders, P., Fernández-Medina, H., Poquet, B., Salado-Manzano, C., Roura, S., Alberch, J., Segovia, J. C., Allen, N. D., Borràs, F. E., & Canals, J. M. (2023). Soluble mutant huntingtin drives early human pathogenesis in Huntington's disease. Cellular and Molecular Life Sciences, 80(8), 238. https://doi.org/10.1007/s00018-023-04882-w
- Morales Pantoja, I. E., Smirnova, L., Muotri, A. R., Wahlin, K. J., Kahn, J., Boyd, J. L., Gracias, D. H., Harris, T. D., Cohen-Karni, T., Caffo, B. S., Szalay, A. S., Han, F., Zack, D. J., Etienne-Cummings, R., Akwaboah, A., Romero, J. C., Alam El Din, D.-M., Plotkin, J. D., Paulhamus, B. L., … Hartung, T. (2023). First Organoid Intelligence (OI) workshop to form an OI community. Frontiers in Artificial Intelligence, 6. https://doi.org/10.3389/frai.2023.1116870



Pathophysiology of Nervous System Diseases

- Pereira, I., Lopez-Martinez, M. J., Villasante, A., Introna, C., Tornero, D., Canals, J. M., & Samitier, J. (2023). Hyaluronic acid-based bioink improves the differentiation and network formation of neural progenitor cells. Frontiers in Bioengineering and Biotechnology, 11. https://doi.org/10.3389/fbioe.2023.1110547
- Rodríguez-Urgellés, E., Casas-Torremocha, D., Sancho-Balsells, A., Ballasch, I., García-García, E., Miquel-Rio, L., Manasanch, A., del Castillo, I., Chen, W., Pupak, A., Brito, V., Tornero, D., Rodríguez, M. J., Bortolozzi, A., Sanchez-Vives, M. V., Giralt, A., & Alberch, J. (2023). Thalamic Foxp2 regulates output connectivity and sensory-motor impairments in a model of Huntington's Disease. Cellular and Molecular Life Sciences, 80(12), 367. https://doi.org/10.1007/s00018-023-05015-z
- Sánchez-Guijo, F., Avendaño-Solá, C., Badimón, L., Bueren, J. A., Canals, J. M., Delgadillo, J., Delgado, J., Eguizábal, C., Fernández-Santos, M.-E., García-Olmo, D., González-Aseguinolaza, G., Juan, M., Martín, F., Mata, R., Montserrat, N., Pérez-Martínez, A., Pérez-Simón, J. A., Prósper, F., Urbano-Ispizua, Á., Moraleda, J. M. (2023). Role of Hospital Exemption in Europe: position paper from the Spanish Advanced Therapy Network (TERAV). Bone Marrow Transplantation, 58(6), 727–728. https://doi.org/10.1038/s41409-023-01962-0
- Shen, Y., Zaballa, S., Bech, X., Sancho-Balsells, A., Díaz-Cifuentes, C., Seyit-Bremer, G., Ballasch, I., Alcázar, N., Alberch, J., Abad, M., Serrano, M., Klein, R., Giralt, A., & del Toro, D. (2023). Expansion of the neocortex and protection from neurodegeneration by in vivo transient reprogramming. BioRxiv, 2023.11.27.568858. https://doi.org/10.1101/2023.11.27.568858

Thesis

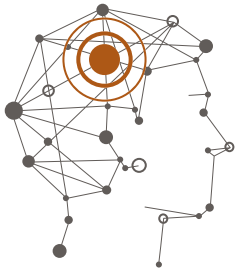
- **Complex in vitro models to study Huntington's Disease.** Clelia Introna. Supervisor: Josep M. Canals y Daniel Tornero
- **Characterization of striatal development in Huntington's disease and its implication to the adult phenotype.** Cristina Vila Torondel. Supervisor: Josep M Canals

Knowledge and transfer innovation

- Cytes Biotechnologies. Jordi Alberch, Josep M. Canals.

Experimental Neurology

Annual Report
2022

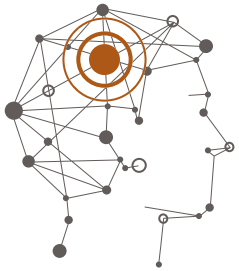


Experimental Neurology

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.

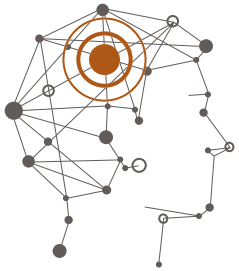
Highlighted projects

- **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
- 3 confidential agreements

Selected publications

- Alvarez-Mora, M. I., Rodríguez-Revenga, L., Jodar, M., Potrony, M., Sanchez, A., Badenas, C., Oriola, J., Villanueva-Cañas, J. L., Muñoz, E., Valldeoriola, F., Cámara, A., Compta, Y., Carreño, M., Martí, M. J., Sánchez-Valle, R., & Madrigal, I. (2023). Implementation of Exome Sequencing in Clinical Practice for Neurological Disorders. Genes, 14(4), 813. https://doi.org/10.3390/genes14040813
- Buongiorno, M., Marzal, C., Fernandez, M., Cullell, N., de Mena, L., Sánchez-Benavides, G., de la Sierra, A., Krupinski, J., & Compta, Y. (2023). Altered sleep and neurovascular dysfunction in alpha-synucleinopathies: the perfect storm for glymphatic failure. Frontiers in Aging Neuroscience, 15. https://doi.org/10.3389/fnagi.2023.1251755
- Carrasco, M., Camara, A., & Compta, Y. (2023). Healthy diet versus added sugars and unsaturated fatty acids in Parkinson's disease: Food for thought. Parkinsonism & Related Disorders, 115, 105865. https://doi.org/10.1016/j.parkreldis.2023.105865
- Martínez, M., Ariz, M., Alvarez, I., Castellanos, G., Aguilar, M., Hernández-Vara, J., Caballol, N., Garrido, A., Bayés, À., Vilas, D., Marti, M. J., Pascual-Sedano, B., Marin, J., Avila, A., Buongiorno, M., Tartari, J. P., Puente, V., Ezquerra, M., Valldeoriola, F., … Pastor, M. A. (2023). Brainstem neuromelanin and iron MRI reveals a precise signature for idiopathic and LRRK2 Parkinson's disease. Npj Parkinson's Disease, 9(1), 62. https://doi.org/10.1038/s41531-023-00503-2
- Painous, C., & Compta, Y. (2023). Sacades, pupils and blink tracking: More than meets the eye in the Parkinson's disease cognitive spectrum? Parkinsonism & Related Disorders, 110, 105363. https://doi.org/10.1016/j.parkreldis.2023.105363

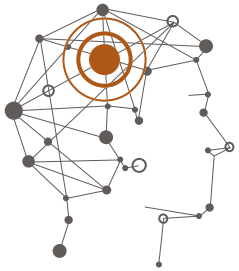
Research



Experimental Neurology

- Parnetti, L., Bellomo, G., & Compta, Y. (2023). Lipoproteins and -synuclein in cerebrospinal fluid in Parkinson's disease: "Dangerous liaisons" on the road to neurodegeneration? Parkinsonism & Related Disorders, 116, 105884. https://doi.org/10.1016/j.parkreldis.2023.105884
- Shafiei, G., Bazinet, V., Dadar, M., Manera, A. L., Collins, D. L., Dagher, A., Borroni, B., Sanchez-Valle, R., Moreno, F., Laforce, R., Graff, C., Synofzik, M., Galimberti, D., Rowe, J. B., Masellis, M., Tartaglia, M. C., Finger, E., Vandenberghe, R., de Mendonça, A., … Polyakova, M. (2023). Network structure and transcriptomic vulnerability shape atrophy in frontotemporal dementia. Brain, 146(1), 321–336. https://doi.org/10.1093/brain/awac069

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

ALBERT LLADO: Clinical research in Alzheimer's disease and other cognitive disorders

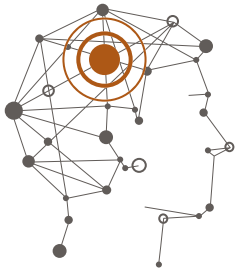
MIRCEA BALASA: Clinical research in Alzheimer's disease and other cognitive disorders

Members

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

Highlighted projects

- **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
- **Malaltia d'Alzheimer i altres trastorns cognitius. Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021 SGR 01126. Raquel Sanchez-Valle**
- **Cohorte clínica de investigación en demencias neurodegenerativas (Biomarkdem-ClínicBarcelona): marcadores multimodales diagnósticos y pronósticos.** Fundació Clínic per a la Recerca Biomèdica. II040142. Raquel Sanchez-Valle
- **Urban Design for Brain and Cognitive Health: Exploring its Impact on Ageing and Dementia.** Ajuntament de Barcelona. 23S06157-001. 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
- **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
- **Dominantly Inherited Alzheimer Network.** National Institutes of Health (NIH). 5U19AG032438-11. Raquel Sanchez-Valle
- 25 confidential agreements



Experimental Neurology

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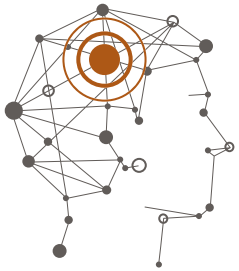
- Borrego-Écija, S., Montagut, N., Martín-Trias, P., Vaqué-Alcázar, L., Illán-Gala, I., Balasa, M., Lladó, A., Casanova-Mollà, J., Bargalló, N., Valls-Solé, J., Lleó, A., Bartrés-Faz, D., & Sánchez-Valle, R. (2023). Multifocal Transcranial Direct Current Stimulation in Primary Progressive Aphasia Does Not Provide a Clinical Benefit Over Speech Therapy. Journal of Alzheimer's Disease, 93(3), 1169–1180. https://doi.org/10.3233/JAD-230069
- Campabadal, A., Oltra, J., Junqué, C., Guillen, N., Botí, M. Á., Sala Llonch, R., MontéRubio, G. C., Lledó, G., Bargalló, N., Rami, L., SánchezValle, R., & Segura, B. (2023). Structural brain changes in postacute COVID19 patients with persistent olfactory dysfunction. Annals of Clinical and Translational Neurology, 10(2), 195–203. https://doi.org/10.1002/acn3.51710
- Dalmau, J., Dalakas, M. C., Kolson, D. L., Paul, F., Sánchez-Valle, R., & Zamvil, S. S. (2023). N2 Year in Review. Neurology Neuroimmunology & Neuroinflammation, 10(1). https://doi.org/10.1212/NXI.0000000000200076
- Falgàs, N., Walsh, C. M., Yack, L., Simon, A. J., Allen, I. E., Kramer, J. H., Rosen, H. J., Joie, R. La, Rabinovici, G., Miller, B., Spina, S., Seeley, W. W., Ranasinghe, K., Vossel, K., Neylan, T. C., & Grinberg, L. T. (2023). Alzheimer's disease phenotypes show different sleep architecture. Alzheimer's & Dementia, 19(8), 3272–3282. https://doi.org/10.1002/alz.12963
- Forno, G., Contador, J., PérezMillan, A., Guillen, N., Falgàs, N., Sarto, J., TortMerino, A., Castellví, M., Bosch, B., Fernández Villullas, G., Balasa, M., Antonell, A., Sala Llonch, R., Sanchez Valle, R., Hornberger, M., & Lladó, A. (2023). The <scp> APOE4 </scp> effect: structural brain differences in Alzheimer's disease according to the age at symptom onset. European Journal of Neurology, 30(3), 597–605. https://doi.org/10.1111/ene.15657
- Forno, G., Saranathan, M., Contador, J., Guillen, N., Falgàs, N., Tort-Merino, A., Balasa, M., Sanchez-Valle, R., Hornberger, M., & Lladó, A. (2023). Thalamic nuclei changes in early and late onset Alzheimer's disease. Current Research in Neurobiology, 4, 100084. https://doi.org/10.1016/j.crneur.2023.100084
- Guillén, N., Contador, J., Buongiorno, M., Álvarez, I., Culell, N., Alcolea, D., Lleó, A., Fortea, J., Piñol-Ripoll, G., Carnes-Vendrell, A., Lourdes Ispierto, M., Vilas, D., Puig-Pijoan, A., Fernández-Lebrero, A., Balasa, M., Sánchez-Valle, R., & Lladó, A. (2023). Agreement of cerebrospinal fluid biomarkers and amyloid-PET in a multicenter study. European Archives of Psychiatry and Clinical Neuroscience. https://doi.org/10.1007/s00406-023-01701-y
- 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. (2023). Correction: Cortical microstructure in primary progressive aphasia: a multicenter study. Alzheimer's Research & Therapy, 15(1), 29. https://doi.org/10.1186/s13195-023-01179-9
- Pérez-Carbonell, L., Sarto, J., Gaig, C., Muñoz-Lopetegi, A., Ruiz-García, R., Naranjo, L., Augé, J. M., Perissinotti, A., Santamaria, J., Iranzo, A., & Sánchez-Valle, R. (2023). Sleep in Gerstmann-Straüssler-Scheinker disease. Sleep Medicine, 108, 11–15. https://doi.org/10.1016/j.sleep.2023.05.010
- Pérez-Millan, A., Borrego-Écija, S., van Swieten, J. C., Jiskoot, L., Moreno, F., Laforce, R., Graff, C., Masellis, M., Tartaglia, M. C., Rowe, J. B., Borroni, B., Finger, E., Synofzik, M., Galimberti, D., Vandenberghe, R., de Mendonça, A., Butler, C. R., Gerhard, A., Ducharme, S., … Borracci, V. (2023). Loss of brainstem white matter predicts onset and motor neuron symptoms in C9orf72 expansion carriers: a GENFI study. Journal of Neurology, 270(3), 1573–1586. https://doi.org/10.1007/s00415-022-11435-x

Research

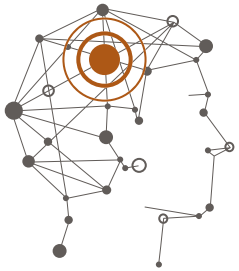


Experimental Neurology

- PérezMillan, A., Contador, J., JuncàParella, J., Bosch, B., Borrell, L., TortMerino, A., Falgàs, N., BorregoÉcija, S., Bargalló, N., Rami, L., Balasa, M., Lladó, A., SánchezValle, R., & SalaLlonch, R. (2023). Classifying Alzheimer's disease and frontotemporal dementia using machine learning with crosssectional and longitudinal magnetic resonance imaging data. Human Brain Mapping, 44(6), 2234–2244. https://doi.org/10.1002/hbm.26205
- Sarto, J., Ruiz-García, R., Guillén, N., Ramos-Campoy, Ó., Falgàs, N., Esteller, D., Contador, J., Fernández, G., González, Y., Tort-Merino, A., Juncà-Parella, J., Bosch, B., Borrego-Écija, S., Molina-Porcel, L., Castellví, M., Vergara, M., Antonell, A., Augé, J. M., Naranjo, L., … Balasa, M. (2023). Diagnostic Performance and Clinical Applicability of Blood-Based Biomarkers in a Prospective Memory Clinic Cohort. Neurology, 100(8). https://doi.org/10.1212/WNL.0000000000201597
- Schultz, S. A., Shirzadi, Z., Schultz, A. P., Liu, L., Fitzpatrick, C. D., McDade, E., Barthelemy, N. R., Renton, A., Esposito, B., JosephMathurin, N., Cruchaga, C., Chen, C. D., Goate, A., Allegri, R. F., Benzinger, T. L. S., Berman, S., Chui, H. C., Fagan, A. M., Farlow, M. R., … Chhatwal, J. P. (2023). Location of pathogenic variants in PSEN1 impacts progression of cognitive, clinical, and neurodegenerative measures in autosomaldominant Alzheimer's disease. Aging Cell, 22(8). https://doi.org/10.1111/acel.13871
- Shafiei, G., Bazinet, V., Dadar, M., Manera, A. L., Collins, D. L., Dagher, A., Borroni, B., Sanchez-Valle, R., Moreno, F., Laforce, R., Graff, C., Synofzik, M., Galimberti, D., Rowe, J. B., Masellis, M., Tartaglia, M. C., Finger, E., Vandenberghe, R., de Mendonça, A., … Polyakova, M. (2023). Network structure and transcriptomic vulnerability shape atrophy in frontotemporal dementia. Brain, 146(1), 321–336. https://doi.org/10.1093/brain/awac069
- Vöglein, J., Franzmeier, N., Morris, J. C., Dieterich, M., McDade, E., Simons, M., Preische, O., Hofmann, A., Hassenstab, J., Benzinger, T. L., Fagan, A., Noble, J. M., Berman, S. B., GraffRadford, N. R., Ghetti, B., Farlow, M. R., Chhatwal, J. P., Salloway, S., Xiong, C., … Levin, J. (2023). Pattern and implications of neurological examination findings in autosomal dominant Alzheimer disease. Alzheimer's & Dementia, 19(2), 632–645. https://doi.org/10.1002/alz.12684

Thesis

- **Tracking the Papez Circuit: A Multifeatured Approach Towards Alzheimer's Disease.** Gonzalo Forno Martinic. Supervisor: Albert Lladó i Michael Hornberger
- **Estudio de variantes genéticas, transcriptoma y metiloma en Enfermedad de Alzheimer y Demencia frontotemporal familiares y esporádicas para la identificación de nuevos biomarcadores diagnósticos y pronósticos, y dianas terapéuticas.** Oscar Ramos Campoy. Supervisor: Raquel Sánchez del Valle i Anna Antonell
- **Utilitat dels models matemàtics amb neuroimatge pel diagnòstic i l'estudi de la variabilitat en la malaltia d'Alzheimer i la demència frontotemporal.** Agnès Perez-Millan. Supervisor: Raquel Sánchez del Valle i Roser Sala-Llonch



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

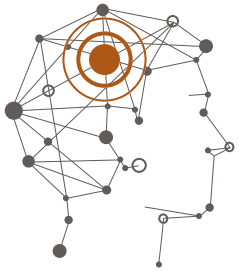
HUGO PELUFFO
Role of immune receptors in neuro-immune interactions

Members

Georgina Escarmis, Ana Gamez, Genis Campoy, Carla Castany, Marc Espina, Anna Guisado, Marina Herrero, Laura Lopez-Molina, Maria Solaguren, Julia Solana, Anika Pupak, Nadia Di Franco, Almudena Chicote, Pol Garcia-Segura.

Highlighted projects

- **Mecanismes Moleculars i aproximacions terapèutiques en patologies cerebrals.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR01086. Esther Perez Navarro
- **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 Huntigton: ¿Un problema en la mitofagia transcelular?.** Ministerio de Ciencia e Innovación (MICINN). PID2021-123732OB-I00 Silvia Gines
- **Investigación y desarrollo de una nueva terapia para el tratamiento de la enfermedad de Huntington.** Ministerio de Ciencia e Innovación (MICINN). CPP2022-009575. Esther Perez Navarro
- **Epidemiología y Salud Pública.** Ministerio de Sanidad y Consumo. CB06/02/0058. Eulalia Marti



Experimental Neurology

- **Ajut per a la intensificació de les activitats de transferència per al curs 2022-23. Modalitat A.** Universitat de Barcelona. Eulalia Marti
- **A pilot study of a novel molecular assay to quantify DNA repair synthesis in the HTT exon 1 as readout of somatic instability in Huntington´s Disease.** European Huntington Disease Network. Seed fund 1296. Veronica Brito
- **Editing the M6A Mark in mHTT RNA: Exploring a new therapeutic strategy in HD.** Hereditary Disease Foundation. 1260317. Veronica Brito
- **Diseccionando el papel de M6A como guardian epignético de la inestabilidad somatica en la enfermedad de Huntington.** Ministerio de Ciencia e Innovación (MICINN). CNS2023-144738. Veronica Brito
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Selected publications

- Espina, M., Di Franco, N., Brañas-Navarro, M., Navarro, I. R., Brito, V., Lopez-Molina, L., Costas-Insua, C., Guzmán, M., & Ginés, S. (2023). The GRP78-PERK axis contributes to memory and synaptic impairments in Huntington's disease R6/1 mice. Neurobiology of Disease, 184, 106225. https://doi.org/10.1016/j.nbd.2023.106225
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- GarciaForn, M., CastanyPladevall, C., Golbano, A., PérezPérez, J., Brito, V., Kulisevsky, J., & PérezNavarro, E. (2023). Lamin B1 and nuclear morphology in peripheral cells as new potential biomarkers to follow treatment response in Huntington's disease. Clinical and Translational Medicine, 13(2). https://doi.org/10.1002/ctm2.1154
- GarciaSegura, P., & Malagelada, C. (2023). STAT3 and REDD1: an unconventional story of gene repression. The FEBS Journal, 290(7), 1735–1739. https://doi.org/10.1111/febs.16727
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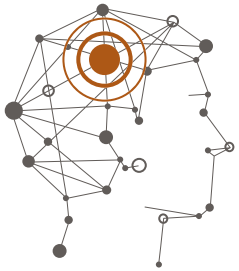
- Sancho-Balsells, A., Borràs-Pernas, S., Brito, V., Alberch, J., Girault, J.-A., & Giralt, A. (2023). Cognitive and Emotional Symptoms Induced by Chronic Stress Are Regulated by EGR1 in a Subpopulation of Hippocampal Pyramidal Neurons. International Journal of Molecular Sciences, 24(4), 3833. https://doi.org/10.3390/ijms24043833
- Solaguren-Beascoa, M., Gámez-Valero, A., Escaramís, G., Herrero-Lorenzo, M., Ortiz, A. M., Minguet, C., Gonzalo, R., Bravo, M. I., Costa, M., & Martí, E. (2023a). Phospho-RNA-Seq Highlights Specific Small RNA Profiles in Plasma Extracellular Vesicles. International Journal of Molecular Sciences, 24(14), 11653. https://doi.org/10.3390/ijms241411653
- Solaguren-Beascoa, M., Gámez-Valero, A., Escaramís, G., Herrero-Lorenzo, M., Ortiz, A. M., Minguet, C., Gonzalo, R., Bravo, M. I., Costa, M., & Martí, E. (2023b). Phospho-RNA-Seq Highlights Specific Small RNA Profiles in Plasma Extracellular Vesicles. International Journal of Molecular Sciences, 24(14), 11653. https://doi.org/10.3390/ijms241411653



Experimental Neurology

- SolanaBalaguer, J., CampoyCampos, G., MartínFlores, N., Pérez Sisqués, L., SitjàRoqueta, L., Kucukerden, M., GámezValero, A., CollManzano, A., Martí, E., PérezNavarro, E., Alberch, J., Soriano, J., Masana, M., & Malagelada, C. (2023). Neuronderived extracellular vesicles contain synaptic proteins, promote spine formation, activate TrkBmediated signalling and preserve neuronal complexity. Journal of Extracellular Vesicles, 12(9). https://doi.org/10.1002/jev2.12355
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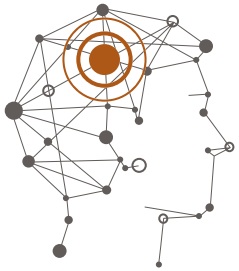
Knowledge and transfer innovation

- 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

- **Unravelling the contribution of small non-coding RNAs to Huntington's disease pathogenesis**. Anna Gisado Corcoll. Supervisor: Esther Pérez Navarro; Eulàlia Martí Puig
- **The role of 4E-BP1 in Huntington’s disease: modulation of translation initiation as therapeutic strategy.** Carla Castany Pladevall. Supervisor: Esther Pérez Navarro
- **Molecular contents and functional characterization of extracellular vesicles in plasma of Alzheimer's disease patients: analysis in response to the AMBAR treatment.** Maria Solaguren Beascoa. Supervisor: Eulàlia Martí
- **ROLE OF NEURAL EXTRACELLULAR VESICLES IN TRANSNEURONAL COMMUNICATION IN HEALTH AND DISEASE**. Julia Solana Balaguer. Supervisor: Cristina Malagelada;Jordi Alberch

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

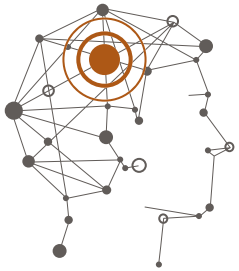
ROSER SALA-LLONCH
Statistical modeling and data analysis for neuroimaging

Members

Carme Uribe, Javier Oltra, Nuria Bargallo, Adrià Casamitjana, Agnès Pérez-Millan, Raul Tudela, Aida Niñerola, Maria Suñol, Saül Pascual-Diaz, Laura Martin-Herrero, Lucia Blanc, Pardo-Ruiz, Nacho Roura, Capdevila.

Highlighted projects

- **The sex/gender dimension in Parkinson's disease from a whole-brain data-driven functional connectivity dynamics approach (DYNAGEND) .** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021 BP 00071. Carme Junque
- **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
- **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
- **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

- **Marcadores cerebrales de la representación del self explican y predicen la emergencia de depresión futura en pacientes con dolor crónico.** Ministerio de Ciencia, Innovación y Universidades. CNS2023-145425. Marina Lopez-Sola
- **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
- **Moldeando la conectividad cerebral para aumentar la resiliencia cognitiva en un modelo de rata transgénica de Alzheimer mediante el usode DREADDs.** Ministerio de Ciencia e Innovación (MICINN). PID2022-136318OB-I00. Guadalupe Soria
- **Disseny i anàlisi de l'eficàcia d'una intervenció breu basada en una aplicació mòbil per l'autolesió: mesures d'autoinforme, momentànies i biològiques com a predictors de tractament.** Fundació La Marató de TV3. 506/U/2022. Marina Lopez-Sola
- **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. 358/U/2022. Barbara Segura
- **Conveni de col·laboració per a la realització d'un estudi sobre diferents subgrups en pacients amb la malaltia de Parkinson.** Karolinska Institutet. Carme Junque
- 1 confidential agreement

Selected publications

- J. Oltra, A. Campabadal, C. Uribe, J. Pardo, I. Roura, MJ. Martí, Y. Compta, F. Valldeoriola, N. Bargallo, A. Iranzo, C. Junque, B. Segura. Cortical thickness and global atrophy progression in Parkinson's disease with probable RBD. Mov Disord. 2023; 38 (suppl 1). https://www.mdsabstracts.org/abstract/cortical-thickness-and-global-atrophy-progression-in-parkinsons-disease-with-probable-rbd/
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- Ariza, M., Cano, N., Segura, B., Adan, A., Bargalló, N., Caldú, X., Campabadal, A., Jurado, M. A., Mataró, M., Pueyo, R., Sala-Llonch, R., Barrué, C., Bejar, J., Cortés, C. U., Bernia, J. A., Arauzo, V., Balague-Marmaña, M., Valles-Pauls, B., Caballero, J., … Junqué, C. (2023). COVID-19 severity is related to poor executive function in people with post-COVID conditions. Journal of Neurology, 270(5), 2392–2408. https://doi.org/10.1007/s00415-023-11587-4
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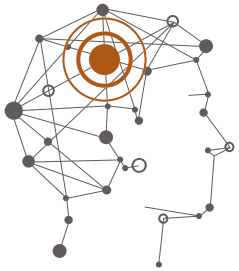
- Conde-Berriozabal, S., García-Gilabert, L., García-García, E., Sitjà-Roqueta, L., López-Gil, X., Muñoz-Moreno, E., Boutagouga Boudjadja, M., Soria, G., Rodríguez, M. J., Alberch, J., & Masana, M. (2023). M2 Cortex Circuitry and Sensory-Induced Behavioral



Experimental Neurology

Alterations in Huntington's Disease: Role of Superior Colliculus. The Journal of Neuroscience, 43(18), 3379–3390. https://doi.org/10.1523/JNEUROSCI.1172-22.2023

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- Pinto, A. M., Geenen, R., Wager, T. D., Häuser, W., Kosek, E., Ablin, J. N., Amris, K., Branco, J., Buskila, D., Castelhano, J., Castelo-Branco, M., Crofford, L. J., Fitzcharles, M.-A., López-Solà, M., Luís, M., Marques, T. R., Mease, P. J., Palavra, F., Rhudy, J. L., … da Silva, J. A. P. (2023). Reply to: Hypothetical model ignores many important pathophysiologic mechanisms in fibromyalgia. Nature Reviews Rheumatology, 19(5), 322–323. https://doi.org/10.1038/s41584-023-00952-2
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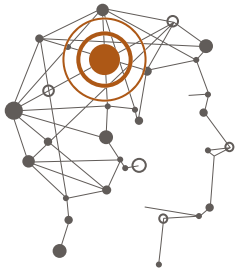
- Tong, H., Maloney, T. C., Payne, M. F., Suñol, M., Dudley, J. A., King, C. D., Ting, T. V., Kashikar-Zuck, S., Coghill, R. C., & López-Solà, M. (2023). Augmented pain-evoked primary sensorimotor cortex activation in adolescent girls with juvenile fibromyalgia. Pain, 164(10), 2316–2326. https://doi.org/10.1097/j.pain.0000000000002933



Experimental Neurology

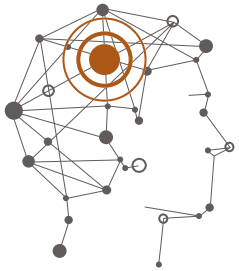
Knowledge and transfer innovation

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

- Neurophysiological signatures for fibromyalgia. 10881322

Thesis

- **Utilitat dels models matemàtics amb neuroimatge pel diagnòstic i l'estudi de la variabilitat en la malaltia d'Alzheimer i la demència Frontotemporal.** Agnès Pérez Millan. Supervisor: Raquel Sánchez-Valle i Roser Sala Llonch



Experimental Neurology

Neuronal network dysfunction in neurological and psychiatric disorders

Principal investigators

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

ALBERT GIRALT
Hippocampal function in health and disease

MERCE MASANA
Modulation of neuronal circuitry in brain disorders

MANUEL RODRIGUEZ
Neuron-glia interactions in neurodegenerative disorders

Members

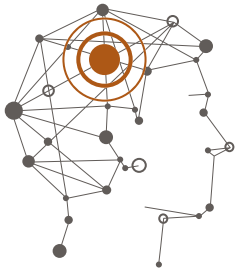
Ivan Ballasch, Sara Conde-Berriozabal, Esther Garcia-García, Laura Lopez, Ened Rodriguez, Anna Sancho, Carmen Andrade, Albert Coll, Laia Sitja-Roqueta, Melike Küçükerden, Alba Ramon-Lainez, Marcos Galan, Gisela Besa-Selva, Maryam Givehchi.

Highlighted projects

- **PhD Workshop UBneuro.** Ajuntament de Barcelona. 23S01014-001. Jordi Alberch
- **Non-invasive dynamic neural control by laser-based technology (NEUROPA).** Unió Europea. 863214. Merce Masana
- **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
- **Institut de Neurociències de la Universitat de Barcelona (UBNEURO).** Ministerio de Ciencia e Innovación (MICINN). CEX2021-001159-M. Jordi Alberch
- **Enfermedades neurodegenerativas.** Ministerio de Sanidad y Consumo. CB06/05/0054. Jordi Alberch
- **Elucidating the Superior Colliculus-related network properties and modulation in Huntington's Disease mouse model to delay the onset and ameliorate severity of the motor symptoms (HD-SC).** Unió Europea. 101104889. Merce Masana Nadal
- **Fisiopatologia i tractament de les malalties neurodegeneratives.** Fundació Clínic per a la Recerca Biomèdica. DN040756. Jordi Alberch
- **Reprogramación y rejuvenecimiento neuronal preciso in vivo en la enfermedad de alzheimer .** Fundación Ramón Areces.
- **Reprogramación y rejuvenecimiento neuronal preciso in vivo en la enfermedad de Alzheimer.** Ministerio de Ciencia e Innovación (MICINN). CNS2022-135391. Albert Giralt
- 3 confidential agreements

Selected publications

- Ballasch, I., García-García, E., Vila, C., Pérez-González, A., Sancho-Balsells, A., Fernández, J., Soto, D., Puigdellívol, M., Gasull, X., Alberch, J., Rodríguez, M. J., Canals, J. M., & Giralt,



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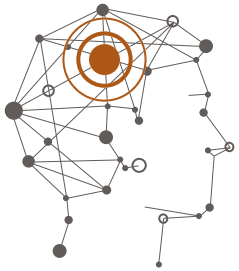

Experimental Neurology

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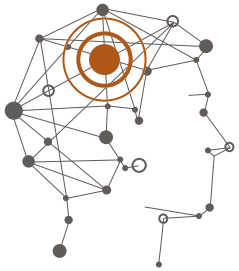
Knowledge and transfer innovation

- Cytes Biotechnologies. Jordi Alberch, Josep M. Canals.

Thesis

- **Network alterations in Huntington's disease beyond the classical model ofbasal ganglia circuitry.** Sara Conde Berriozabal. Supervisor: Mercè Masana; Jordi Alberch
- **Role of VPS13A in corticostriatal synaptic transmission in a model of Chorea-Acanthocytosis.** Esther García García. Supervisor: Mercè Masana; Manuel J Rodríguez
- **Progressive hippocampal alterations in stress-induced major depression and novel therapeutical strategies.** Anna Sancho Balseslls. Supervisor: Albert Giralt



Experimental Neurology

Pathogenesis of immune-mediated neuronal disorders

Principal investigators

JOSEP DALMAU
Syndromes and mechanisms of paraneoplastic and autoimmune encephalitis

YOLANDA BLANCO
Neuroimmunology and Multiple Sclerosis

Members

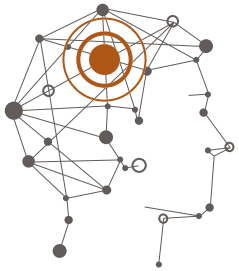
Thais Armangue, Eugenia Maria Martinez, Jesus Planaguma, Marija Radosevic, Jon Landa, Estibaliz Maudes, Gemma Olive, Paula Peixoto, Ester Aguilar, Mercedes Alba, Eva Maria Caballero, Maria Rodes, Myrna Rosenfeld, Lidia Sabater, Victor Patricio, Laura Marmolejo, Mar Guasp, Marianna Spatola, Ana Beatriz Araujo Gama Serafim.

Highlighted projects

- **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
- **Patogènesi de les malalties neuronals autoimmunes.** Fundació Clínic per a la Recerca Biomèdica. DN040789. Josep Dalmau
- **Synaptic Autoimmunity in Neurology, Psychiatry and Cognitive Neuroscience.** Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS). MRP-2. Josep Dalmau
- 29 confidential agreements

Selected publications

- Alba-Arbalat, S., Solana, E., Lopez-Soley, E., Camos-Carreras, A., Martinez-Heras, E., Vivó, F., Pulido-Valdeolivas, I., Andorra, M., Sepulveda, M., Cabrera, J. M., Fonseca, E., Calvi, A., Alcubierre, R., Dotti-Boada, M., Saiz, A., Martinez-Lapiscina, E. H., Villoslada, P., Blanco, Y., Sanchez-Dalmau, B., & Llufriu, S. (2023). Predictive value of retinal atrophy for cognitive decline across disease duration in multiple sclerosis. Journal of Neurology, Neurosurgery & Psychiatry, jnnp-2023-332332. https://doi.org/10.1136/jnnp-2023-332332
- Armangué, T., Olivé-Cirera, G., Martínez-Hernandez, E., Rodes, M., Peris-Sempere, V., Guasp, M., Ruiz, R., Palou, E., González, A., Marcos, M. Á., Erro, M. E., Bataller, L., Corral-Corral, Í., Planagumà, J., Caballero, E., Vlagea, A., Chen, J., Bastard, P., Materna, M., … Dalmau, J. (2023). Neurologic complications in herpes simplex encephalitis: clinical, immunological and genetic studies. Brain, 146(10), 4306–4319. https://doi.org/10.1093/brain/awad238



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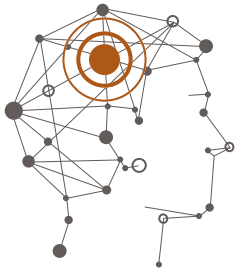

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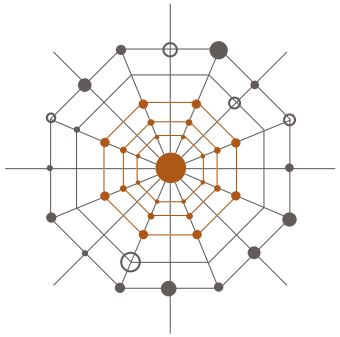
Knowledge and transfer innovation

- Diagnosis of a neurological disease. AVCRI233-E.
- New methods for the detection of neuronal antibodies. UBTT0479-E

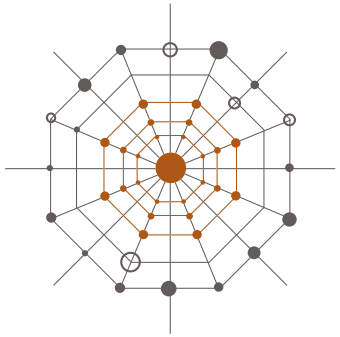
Annual Report
2022



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

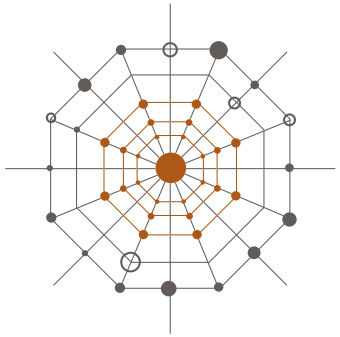
Antoni Benabarre, Iria Grande, Anabel Martinez-Aran, Marina Garriga, Diego Hidalgo, Ester Jimenez, Andrea Murru, Isabella Pacchiarotti, Carla Torrent, Marc Valenti, Gerard Anmella, Derek Clougher, Giovanna Fico, Anna Gimenez, Susana Gomes-da-Costa, Maria Sagué, Laura Montejo, Jose Sanchez-Moreno, Brisa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

Highlighted projects

- **Trastorns Bipolars i Depressius.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021 SGR 01358. 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
- **NeurobiologiaTrastorns bipolars i depressius.** Fundació Clínic per a la Recerca Biomèdica. DN040734. Eduard Vieta
- **Safety intervention for improving functioning in suicidal attempters.** Fundació Clínic per a la Recerca Biomèdica. FCRB_PB1_2022. Eduard Vieta
- **Enhancing Cognitive Function in Older-Age patients with Bipolar Disorder.** Fundació Clínic per a la Recerca Biomèdica. FCRB_PB2_2022. Eduard Vieta
- **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. Eduard Vieta
- **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. Eduard Vieta
- **Desxifrant els correlats clínics, neurobiològics i genètics delsprimers episodis de mania en el trastorn bipolar: projecte NOTION.** Fundació La Marató de TV3. 202234. Eduard Vieta
- **Contratos Miguel Servet Tipo II 2019.** Instituto de Salud Carlos III. CPII19/00009. Eduard Vieta
- **Descifrando la base genética y epigenética de la conducta suicida: desde los intentos de suicidio hasta el suicidio completo.** Instituto de Salud Carlos III. PI22/01048. Eduard Vieta
- **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
- **Contratos Juan Rodes.** Ministerio de Sanidad y Consumo . JR18/00021. Eduard Vieta
- **Salud Mental (CIBERSAM).** Ministerio de Sanidad y Consumo. CB07/09/000411 confidential agreements. Eduard Vieta

Selected publications

- Anmella, G., Sanabra, M., Primé-Tous, M., Segú, X., Cavero, M., Morilla, I., Grande, I., Ruiz, V., Mas, A., Martín-Villalba, I., Caballo, A., Esteva, J.-P., Rodríguez-Rey, A., Piazza, F., Valdesoiro, F. J., Rodriguez-Torrella, C., Espinosa, M., Virgili, G., Sorroche, C., … Hidalgo-Mazzei, D. (2023). Vickybot, a Chatbot for Anxiety-Depressive Symptoms and Work-Related Burnout in Primary



Mental Health

Care and Health Care Professionals: Development, Feasibility, and Potential Effectiveness Studies. Journal of Medical Internet Research, 25, e43293. https://doi.org/10.2196/43293

- Bioque, M., Rumià, J., Roldán, P., Hidalgo-Mazzei, D., Montejo, L., Benabarre, A., Gil-Badenes, J., Tercero, J., Parellada, E., & Vieta, E. (2023). Deep brain stimulation and digital monitoring for patients with treatment-resistant schizophrenia and bipolar disorder: A case series. Revista de Psiquiatría y Salud Mental. https://doi.org/10.1016/j.rpsm.2023.05.001
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- Fares-Otero, N. E., Alameda, L., Pfaltz, M. C., Martinez-Aran, A., Schäfer, I., & Vieta, E. (2023). Examining associations, moderators and mediators between childhood maltreatment, social functioning, and social cognition in psychotic disorders: a systematic review and meta-analysis. Psychological Medicine, 53(13), 5909–5932. https://doi.org/10.1017/S0033291723001678
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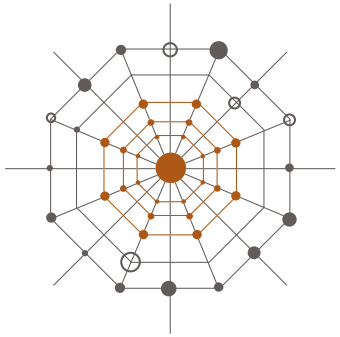
Research



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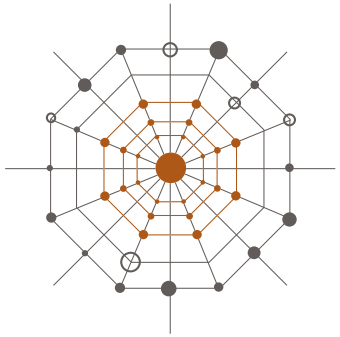
Thesis

- **Digital technologies applied to affective disorders.** Gerard Anmella Diaz. Supervisor: Diego Hidalgo Mazzei i Andrea Murru
- **Predicció anatòmico-clínica del risc d'evolució desfavorable en el pacient amb trastorn mental cap a la medicina personalitzada.** Aleix Solanes. Supervisor: Joaquim Radua i Eduard Vieta

Child and adolescent psychiatry and psychology



Mental Health

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, Olga Puig Navarro.

Highlighted projects

- **AUTISM INNOVATIVE MEDICINE STUDIES-2-TRIALS.** Unió Europea. 777394. Rosa Maria Calvo Escalona
- **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
- **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
- **Salud Mental (CIBERSAM).** Ministerio de Sanidad y Consumo . CB07/09/0005. Inmaculada Baeza
- **1/7-Collaborative Genomics Studies of Tourette Disorder.** National Institutes of Health (NIH). 671128. Astrid Morer
- **Estudio del papel de la REServa Cognitiva en AdolescenTEs (RESCATE) con Trastorno por consumo de cànnabis.** Ministerio de Sanidad. 2022I053. Inmaculada Baeza
- **Child and adolescent psychiatry and psychology group (GRUPPIC).** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021 SGR 01319. Josefina Castro-Fornieles
- **Biomarcadores multi-omics periféricos como predictores de evolución a largo plazo en el Trastorno Obsesivo-Compulsivo: la cohorte TOC Barcelona (OCD-BC).** Instituto de Salud Carlos III. PI22/00843. Maria Luisa Lazaro
- **Interacción genética y ambiente en hijos de pacientes con esquizofrenia o trastorno bipolar.** Ministerio de Ciencia, Innovación y Universidades. PI21/00519. Josefina Castro-Fornieles
- **Placebo-controlled trial in subjects at Ultra-high Risk for Psychosis with Omega-3 fatty acids in Europe.** Utrecht University. 2015-003503-39. Inmaculada Baeza
- 4 confidential agreements

Selected publications

- Baeza, I., de la Serna, E., Mezquida, G., Cuesta, M. J., Vieta, E., Amoretti, S., Lobo, A., González-Pinto, A., Díaz-Caneja, C. M., Corripio, I., Valli, I., Puig, O., Mané, A., Bioque, M., Ayora, M., Bernardo, M., Castro-Fornieles, J., García-Rizo, C., González-Díaz, J., … Balanzá-Martínez, V. (2024). Prodromal symptoms and the duration of untreated psychosis in first episode of psychosis patients: what differences are there between early vs. adult onset and between schizophrenia vs. bipolar disorder? European Child & Adolescent Psychiatry, 33(3), 799–810. https://doi.org/10.1007/s00787-023-02196-7
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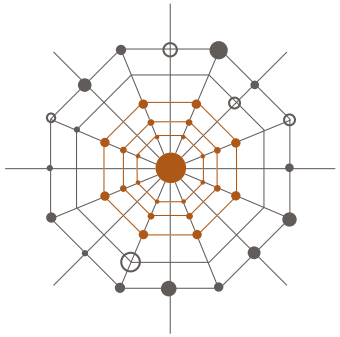
Research



Mental Health

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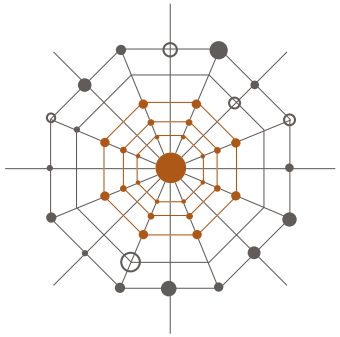
Thesis

- **Estructural neuroimaging characteristics of adolescents at clinical high risk for psychosis.** Fortea, A.. Supervisor: Baeza, I.



Mental Health

Epidemiology of mental health disorders and ageing

Principal investigators

JOSEP M. HARO
Epidemiology of mental health disorders and ageing

Highlighted projects

- **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
- **Impacte i factors de risc dels trastorns mentals.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021 SGR 01469. Josep M. Haro
- **e-Intervention Enhancing Mental Health in Adolescents.** Unió Europea. 101080934. Josep M. Haro
- **Reducció de l'impacte psicosocial de la pandèmia Covid-19 en els/les treballadors/es de les residències per persones grans o amb discapacitat.** Fundació La Marató de TV3. 202114. Josep M. Haro
- **Contratos Sara Borrell. Beneficiari: Paula Cristobal). Instituto de Salud Carlos III. CD20/00035.** Josep Maria
- **Efecto de la Covid-19 en el estado de salud general, la salud mental y el bienestar e influencia de las condiciones sociales y el estilo de vida.** Instituto de Salud Carlos III. PI22/00374. Josep M. Haro

Selected publications

- Domènech-Abella, J., Gabarrell-Pascuet, A., García-Mieres, H., Mortier, P., Felez-Nobrega, M., Cristóbal-Narváez, P., Vilagut, G., Olaya, B., Alonso, J., & Haro, J. M. (2023). Loneliness during the last phase of the COVID-19 pandemic in Spain: A longitudinal study of group-based trajectories, risk factors, and consequences in mental health. Psychiatry Research, 326, 115327. https://doi.org/10.1016/j.psychres.2023.115327
- Faris, L. H., Gabarrell-Pascuet, A., Felez-Nobrega, M., Cristóbal-Narváez, P., Mortier, P., Vilagut, G., Olaya, B., Alonso, J., Haro, J. M., López-Carrilero, R., & Domènech-Abella, J. (2023). The Association Between Substance Use Disorder and Depression During the COVID-19 Lockdown in Spain and the Moderating Role of Social Support: a Cross-Sectional Study. International Journal of Mental Health and Addiction, 21(2), 1157–1167. https://doi.org/10.1007/s11469-021-00651-7
- Felez-Nobrega, M., Werneck, A. O., Bauman, A., Haro, J. M., & Koyanagi, A. (2023). Active school commuting in adolescents from 28 countries across Africa, the Americas, and Asia: a temporal trends study. International Journal of Behavioral Nutrition and Physical Activity, 20(1), 1. https://doi.org/10.1186/s12966-022-01404-y
- Gabarrell-Pascuet, A., García-Mieres, H., Giné-Vázquez, I., Moneta, M. V., Koyanagi, A., Haro, J. M., & Domènech-Abella, J. (2023). The Association of Social Support and Loneliness with Symptoms of Depression, Anxiety, and Posttraumatic Stress during the COVID-19 Pandemic: A Meta-Analysis. International Journal of Environmental Research and Public Health, 20(4), 2765. https://doi.org/10.3390/ijerph20042765
- Gkotzamanis, V., Koliopanos, G., Sanchez-Niubo, A., Olaya, B., Caballero, F. F., Ayuso-Mateos, J. L., Chatterji, S., Haro, J. M., & Panagiotakos, D. B. (2023). Determinants of verbal fluency trajectories among older adults from the English Longitudinal Study of Aging. Applied Neuropsychology: Adult, 30(1), 110–119. https://doi.org/10.1080/23279095.2021.1913739

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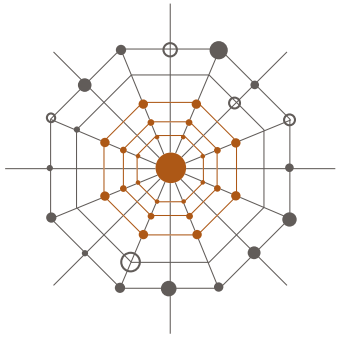

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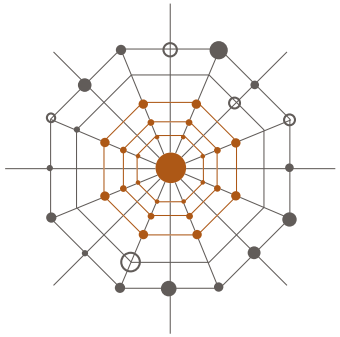
- McGrath, J. J., Al-Hamzawi, A., Alonso, J., Altwaijri, Y., Andrade, L. H., Bromet, E. J., Bruffaerts, R., de Almeida, J. M. C., Chardoul, S., Chiu, W. T., Degenhardt, L., Demler, O. V, Ferry, F., Gureje, O., Haro, J. M., Karam, E. G., Karam, G., Khaled, S. M., Kovess-Masfety, V., … Zaslavsky, A. M. (2023). Age of onset and cumulative risk of mental disorders: a cross-national analysis of population surveys from 29 countries. The Lancet Psychiatry, 10(9), 668–681. https://doi.org/10.1016/S2215-0366(23)00193-1
- Mediavilla, R., Felez-Nobrega, M., McGreevy, K. R., Monistrol-Mula, A., Bravo-Ortiz, M.-F., Bayón, C., Giné-Vázquez, I., Villaescusa, R., Muñoz-Sanjosé, A., Aguilar-Ortiz, S., Figueiredo, N., Nicaise, P., Park, A.-L., Petri-Romão, P., Purgato, M., Witteveen, A. B., Underhill, J., Barbui, C., Bryant, R., … Ayuso-Mateos, J. L. (2023). Effectiveness of a mental health stepped-care programme for healthcare workers with psychological distress in crisis settings: a multicentre randomised controlled trial. BMJ Mental Health, 26(1), e300697. https://doi.org/10.1136/bmjment-2023-300697
- Mensah, G. A., Fuster, V., Murray, C. J. L., Roth, G. A., Mensah, G. A., Abate, Y. H., Abbasian, M., Abd-Allah, F., Abdollahi, A., Abdollahi, M., Abdulah, D. M., Abdullahi, A., Abebe, A. M., Abedi, A., Abedi, A., Abiodun, O. O., Ali, H. A., Abu-Gharbieh, E., Abu-Rmeileh, N. M. E., … Roth, G. A. (2023). Global Burden of Cardiovascular Diseases and Risks, 1990-2022. Journal of the American College of Cardiology, 82(25), 2350–2473. https://doi.org/10.1016/j.jacc.2023.11.007
- Olaya, B., Moneta, M. V., Plana-Ripoll, O., & Haro, J. M. (2023). Association between mental disorders and mortality: A register-based cohort study from the region of Catalonia. Psychiatry Research, 320, 115037. https://doi.org/10.1016/j.psychres.2022.115037
- Portillo-Van Diest, A., Vilagut, G., Alayo, I., Ferrer, M., Amigo, F., Amann, B. L., Aragón-Peña, A., Aragonès, E., Asúnsolo Del Barco, Á., Campos, M., Del Cura-González, I., Espuga, M., González-Pinto, A., Haro, J. M., Larrauri, A., López-Fresneña, N., Martínez de Salázar, A., Molina, J. D., Ortí-Lucas, R. M., … Mortier, P. (2023). Traumatic stress symptoms among Spanish healthcare workers during the COVID-19 pandemic: a prospective study. Epidemiology and Psychiatric Sciences, 32, e50. https://doi.org/10.1017/S2045796023000628
- Zhang, Y., Pratap, A., Folarin, A. A., Sun, S., Cummins, N., Matcham, F., Vairavan, S., Dineley, J., Ranjan, Y., Rashid, Z., Conde, P., Stewart, C., White, K. M., Oetzmann, C., Ivan, A., Lamers, F., Siddi, S., Rambla, C. H., Simblett, S., … Dobson, R. J. B. (2023). Long-term participant retention and engagement patterns in an app and wearable-based multinational remote digital depression study. Npj Digital Medicine, 6(1), 25. https://doi.org/10.1038/s41746-023-00749-3



Mental Health

Gerontology: Health and ageing

Principal investigators

FELICIANO VILLAR
Active aging

Members

Montserrat Celdran, Vanesa Viñas.

Highlighted projects

- **Grup d'Investigació en Gerontologia (GIG).** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR00250. 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, 49(10), 866–880. https://doi.org/10.1080/03601277.2023.2174725
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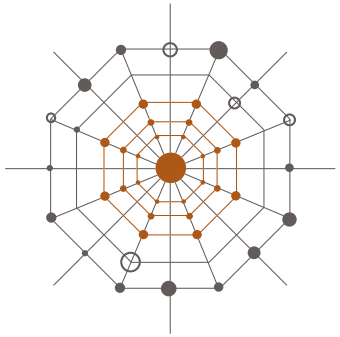
Research



Mental Health

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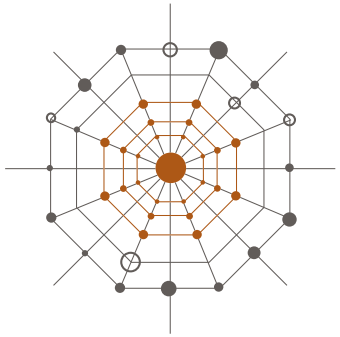
Thesis

- **Análisis de las variables psicosociales asociadas con la participación deportiva competitiva en atletes senior .** Valentina Cannella. Supervisor: Dr. Feliciano Villar i Dr. Rodrigo Serrat



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

NOEMI PEREDA
Child and adolescent victimisation

SANTIAGO REDONDO ILLESCAS
Evaluantion and treatment of offenders

ALVARO RODRIGUEZ-CARBALLEIRA
Psychological violence

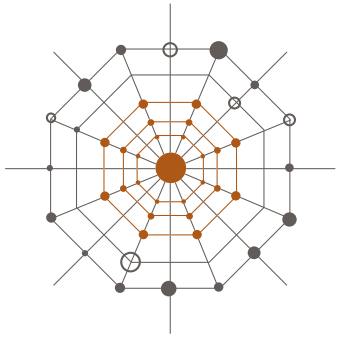
Members

Diego A. Diaz-Faz, Omar Andres Saldaña, Carolina Andana, Emma Antelo, Marta Codina,Jaume Hombrado, Laura Sicilia, Jorge Escartin, David Saeteros, Guillermo Recio, Macià Buades-Rotger, Miguel Burgaleta, Sara Luz Salas, Fernando Curioso, lmudena Tello, Andrea Escudero, Lara Longares, Alba Águila Otero, Anna M. Roselló Torres, Laura Pascual Velázquez, Diego Vaca Quintana, Laura Viñals Vilà.

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
- **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
- **Workplace Digital Mental Health Ecosystem - Evaluación Objetiva en Tiempo Real de la Funcionalidad y Salud Mental de los Trabajadores mediante IA y Psicometría, para Integrar la Gestión de Riesgos Psicosociales, Absentismo y Productividad (WD-MHE).** Ministerio de Ciencia e Innovación (MICINN). CPP2022-010001. David Gallardo-Pujol
- **Elaboración de una guía común de actuación para la detección, notificación y derivación de casos de explotación sexual contra la infancia en centros residenciales, con especial atención a niñas y adolescentes.** Ministerio de Igualdad. 311971. Noemí Pereda
- **Disseny de model de competències.** Universitat de Vic. 312084. David Gallardo-Pujol
- **Assessorament i Investigació aplicada en el camp de la polivictimització infanto-juvenil.** 309123. Noemí Pereda
- 6 confidential agreements

Research



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- Díaz-Faes, D. A., Vidal-Codina, F., Segura, A., Aguilar, R., & Pereda, N. (2023). How the COVID-19 pandemic hit crime in Barcelona: Analysis of variation in crime trends. European Journal of Criminology, 20(3), 792–816. https://doi.org/10.1177/14773708231156326
- Gardiner, G., Lee, D. I., Baranski, E., Funder, D. C., Beramendi, M., Bastian, B., Neubauer, A., Cortez, D., Roth, E., Torres, A., Zanini, D. S., Petkova, K., Tracy, J., Amiot, C., Pelletier-Dumas, M., González, R., Rosenbluth, A., Salgado, S., Guan, Y., … Thi Thu Bui, H. (2023). The economic well-being of nations is associated with positive daily situational experiences. Current Research in Ecological and Social Psychology, 4, 100088. https://doi.org/10.1016/j.cresp.2023.100088
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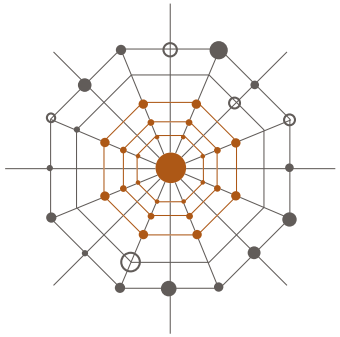
Thesis

- **Integrative understanding of bias-motivated violence targeting underrepresented populations.** Diego Arias Díaz-Faes. Supervisor: Noemí Pereda
- **La explotación sexual de la infancia y la adolescencia: diseño y validación de una herramienta para la detección del riesgo.** Beatriz Benavente. Supervisor: Noemí Pereda

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

MAITE BARRIOS
Development, adaptation, and validation of tests

Members

Juan Antonio Amador, Ernesto Mijail Magallon, Angela Iannine Berrio, Estefania Daniela Guerrero, Chuenn Ann Chai, Ma. Teresa Anguera.

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
- **Planificación de Decisiones Anticipadas en Salud Mental: Contexto, Capacitación, Efectividad y Factibilidad.** Ministerio de Ciencia e Innovación (MICINN). PID2022-137108OB-I00. Maite Barrios
- 2 confidential agreements

Selected publications

- Amador-Campos, J. A., Peró-Cebollero, M., Feliu-Torruella, M., Pérez-González, A., Cañete-Massé, C., Jarne-Esparcia, A. J., Triadó-Ivern, X., & Guàrdia-Olmos, J. (2023). Mentoring and Research Self-Efficacy of Doctoral Students: A Psychometric Approach. Education Sciences, 13(4), 358. https://doi.org/10.3390/educsci13040358
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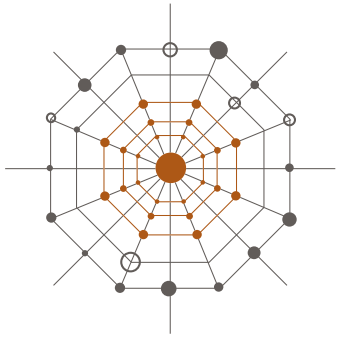
- Bertomeu, P., Pereda, N., & Guilera, G. (2023). Electronic victimization experiences in Spanish adolescents from the general population and risk contexts. Behavioral Psychology/Psicología Coonductual, 30(3), 563–578. https://doi.org/10.51668/bp.8323307n

Research



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- Blanca, M. J., Arnau, J., García-Castro, F. J., Alarcón, R., & Bono, R. (2023). Repeated measures ANOVA and adjusted F-tests when sphericity is violated: which procedure is best? Frontiers in Psychology, 14. https://doi.org/10.3389/fpsyg.2023.1192453
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- Guilera, G., Barrios, M., Carmona, V., & Gómez-Benito, J. (2023). Symptoms and functioning: a content analysis of the PANSS under the ICF framework. Journal of Mental Health, 32(4), 744–751. https://doi.org/10.1080/09638237.2023.2182427
- Guilera, G., López-Martínez, M. D., Barrios, M., Hidalgo, M. D., Steel, P., & Gómez-Benito, J. (2024). Spanish validation of the pure procrastination scale: dimensional structure, internal consistency, temporal stability, gender invariance, and relationships with personality and satisfaction with life. Frontiers in Psychology, 14. https://doi.org/10.3389/fpsyg.2023.1268855
- López-Fernández, G., Barrios, M., & Gómez-Benito, J. (2023). Breastfeeding and maternal attachment: The moderating roles of maternal stress and child behavior. Journal of Pediatric Nursing, 69, e80–e87. https://doi.org/10.1016/j.pedn.2022.12.011
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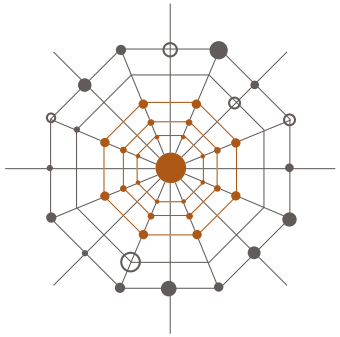
- Marcó-García, S., Guilera, G., Ferrer-Quintero, M., Ochoa, S., Escuder-Romeva, G., Martínez-Mondejar, A., Montalbán-Roca, V., del Cacho, N., Rubio-Abadal, E., Escanilla-Casal, A., Martínez-Zambrano, F., Balsells-Mejía, S., & Huerta-Ramos, E. (2023). The RECAPACITA project: Description of the clinical, neuropsychological and functional profile of a sample of people with severe mental disorder and legal capacity modification in Spain. International Journal of Law and Psychiatry, 88, 101874. https://doi.org/10.1016/j.ijlp.2023.101874



Mental Health

Schizophrenia

Principal investigators

MIQUEL BERNARDO

Members

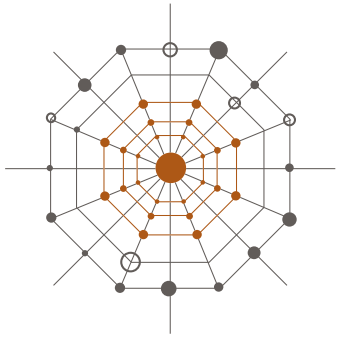
Miquel Bioque, Rosa Catalan, Clemente Carlos Garcia, Gisela Mezquida, Eduardo Parellada, Rafael Penades, Maria Mercedes Torra, Silvia Amoretti.

Highlighted projects

- **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
- **Grup Esquizofrènia Clínic (GEC).** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021 SGR 01120. Eduardo Parellada
- **PROJECTE PUZZLE.** Fundació Clínic per a la Recerca Biomèdica. DN040743. Eduardo Parellada
- 10 confidential agreements

Selected publications

- Bioque, M., Mac-Dowell, K. S., Font, C., Meseguer, A., Macau, E., Garcia-Orellana, M., Valentí, M., Leza, J. C., & Bernardo, M. (2023). Acute effects of a session of electroconvulsive therapy on brain-derived neurotrophic factor plasma levels. Spanish Journal of Psychiatry and Mental Health, 16(3), 137–142. https://doi.org/10.1016/j.rpsm.2020.05.011
- Bioque, M., Rumià, J., Roldán, P., Hidalgo-Mazzei, D., Montejo, L., Benabarre, A., Gil-Badenes, J., Tercero, J., Parellada, E., & Vieta, E. (2023). Deep brain stimulation and digital monitoring for patients with treatment-resistant schizophrenia and bipolar disorder: A case series. Revista de Psiquiatría y Salud Mental. https://doi.org/10.1016/j.rpsm.2023.05.001
- Butjosa, A., Usall, J., Vila-Badia, R., Mezquida, G., Cuesta, M. J., Rodríguez-Toscano, E., Amoretti, S., Lobo, A., González-Pinto, A., Espliego, A., Corripio, I., Vieta, E., Baeza, I., Bergé, D., Bernardo, M., Bioque, M., García-Rizo, C., Mayoral, M., Merchan, J., … Selva-Vera, G. (2023). Impact of traumatic life events on clinical variables of individuals with first-episode psychosis and healthy controls. International Journal of Social Psychiatry, 69(1), 134–145. https://doi.org/10.1177/00207640211070398
- Gassó, P., Martínez-Pinteño, A., Rodríguez, N., Madero, S., Gómez, M., Segura, A. G., García-Rizo, C., Morén, C., Mas, S., & Parellada, E. (2023). Neurotoxic/Neuroprotective Effects of Clozapine and the Positive Allosteric Modulator of mGluR2 JNJ-46356479 in Human Neuroblastoma Cell Cultures. International Journal of Molecular Sciences, 24(3), 2054. https://doi.org/10.3390/ijms24032054



Mental Health

- Martínez-Pinteño, A., Rodríguez, N., Olivares, D., Madero, S., Gómez, M., Prohens, L., García-Rizo, C., Mas, S., Morén, C., Parellada, E., & Gassó, P. (2023). Early treatment with JNJ-46356479, a mGluR2 modulator, improves behavioral and neuropathological deficits in a postnatal ketamine mouse model of schizophrenia. Biomedicine & Pharmacotherapy, 158, 114079. https://doi.org/10.1016/j.biopha.2022.114079
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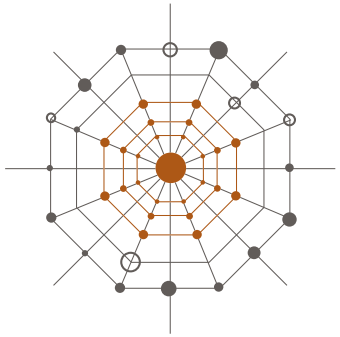
Knowledge and transfer innovation

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



Mental Health

Mood, Anxiety and Obsessive-Compulsive and Related Disorders

Principal investigators

CARLES SORIANO-MAS
OCD, anxiety, mood disorders, neuroimaging

JOSE M. MENCHON
OCD, compulsivity, clinical and neurocognitive assessments

Ma. DEL PINO ALONSO
OCD, compulsivity, genetics, neuromodulation

Members

José M. Crespo, Cinto Segalàs, Eva Real, Sara Bertolín, Sergi López, Ignacio Martínez-Zalacaín, Aida de Arriba, Carla del Río, Ana Pamela Chavarría, Marta Subirà.

Highlighted projects

- **Habits and Obsessive-Compulsive Disorder: A Neurogenetic Perspective.** Ministry of Science and Innovation. PID2022-139081OB-C22. Carles Soriano-Mas
- **Boosting Societal Adaptation and Mental Health in a Rapidly Digitalising, Post-Pandemic Europe.** HORIZON – HADEA. European Commission. 101080238. José M. Menchón
- **Prospective study of biomarkers and clinical predictors of long-term evolution and response to treatment in obsessive-compulsive disorder: the Barcelona cohort (B-OCDC).** Marató TV3. 202201 30 31 32 33. Ma. Del Pino, Carles Soriano-Mas
- **Biomarcadores multiómicos periféricos predictores de la evolución a largo plazo del Trastorno Obsesivo-Compulsivo: la cohorte TOC Barcelona (OCD-BC).** Carlos III Health Institute. PI22/00752. Ma. Del Pino Alonso
- **Evolución a largo plazo, respuesta a tratamiento y recaídas de los trastornos de la compulsividad: biomarcadores neuroinflamatorios, neuropsicológicos y de neuroimagen.** Carlos III Health Institute. PI22/00956. José M. Menchón
- **New therapeutic targets in depression: the role of situational perception.** Marató TV3. 202215. Marta Subirà

Selected publications

- Alemany-Navarro, M., Tubío-Fungueiriño, M., Diz-de Almeida, S., Cruz, R., Lombroso, A., Real, E., Soria, V., Bertolín, S., Fernández-Prieto, M., Alonso, P., Menchón, J. M., Carracedo, A., & Segalàs, C. (2023). The genomics of visuospatial neurocognition in obsessive-compulsive disorder: A preliminary GWAS. Journal of Affective Disorders, 333, 365–376. https://doi.org/10.1016/j.jad.2023.04.060
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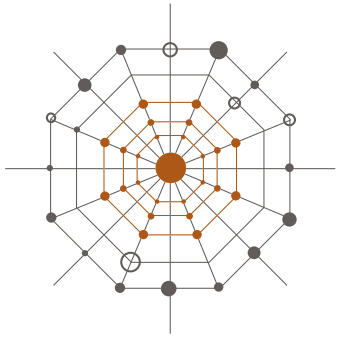
Research



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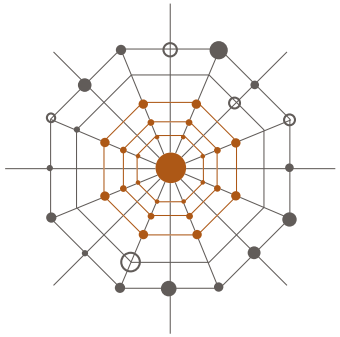

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- van Roessel, P. J., Grassi, G., Aboujaoude, E. N., Menchón, J. M., Van Ameringen, M., & Rodríguez, C. I. (2023). Treatment-resistant OCD: Pharmacotherapies in adults. Comprehensive Psychiatry, 120, 152352. https://doi.org/10.1016/j.comppsych.2022.152352
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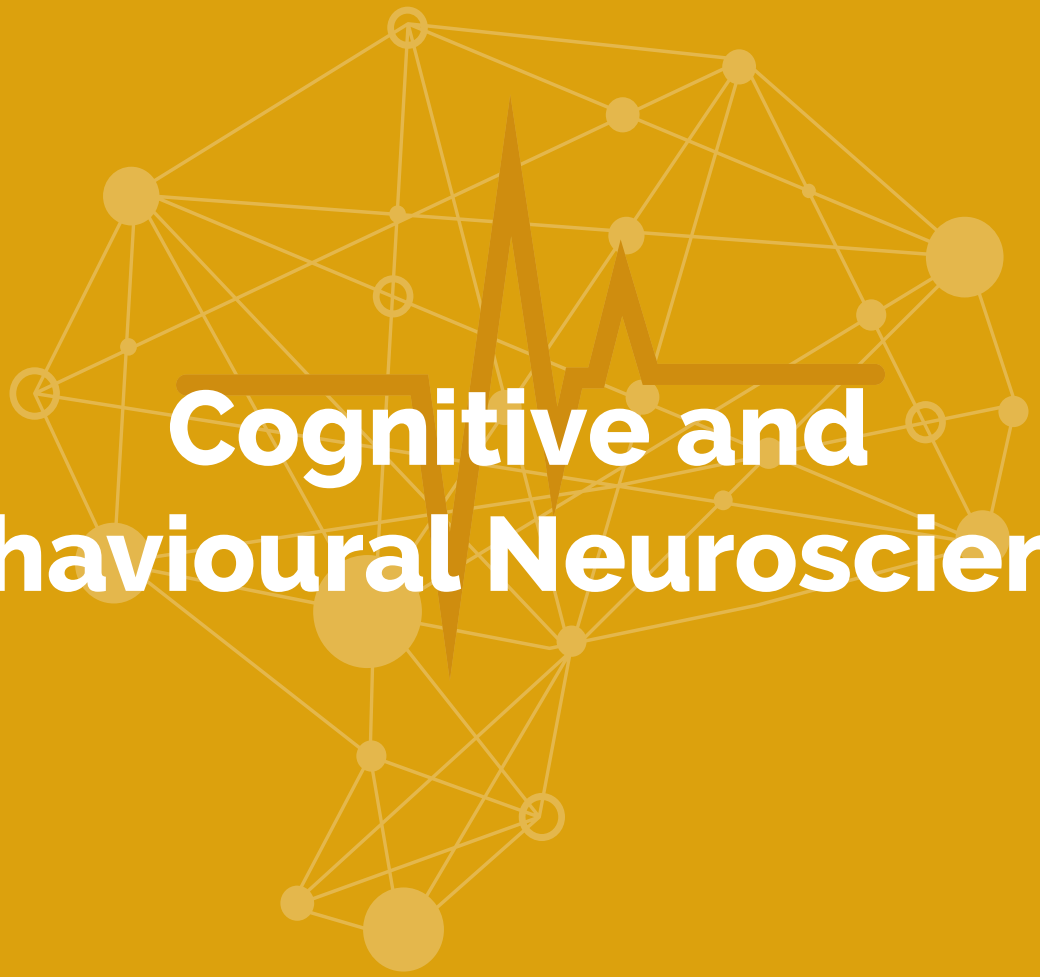
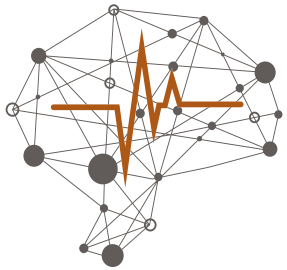
Thesis

- **Study of aversive conditioning in patients with obsessive-compulsive disorder using fMRI and MRS .** MARTÍNEZ ZALACAÍN, IGNACIO. Supervisor: Carles Soriano-Mas / José M. Menchón
- **Use of neuroimaging to evaluate the role of vmPFC activation as an indicator of safety learning .** JUANEDA SEGUÍ, ASIER . Supervisor: Carles Soriano-Mas / José M. Menchón
- **Clincal and neurobiological substrates in extreme weight and eating conditions .** MIRANDA OLIVOS, ROMINA . Supervisor: Carles Soriano-Mas/ F. Fernández-Aranda



Cognitive and Behavioural Neuroscience



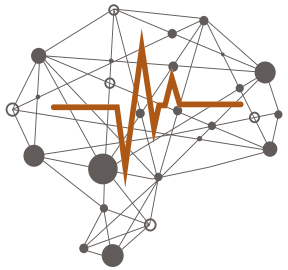
Cognitive and Behaivoural Neuroscience

THIS AREA FOCUSES 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
.

Brain Dynamics and structure of human cognition (BRACO)



Cognitive and Behavioural Neuroscience

Principal investigators

RUTH DE DIEGO-BALAGUER
Brain mechanisms of language learning

LLUÍS FUENTEMILLA
Dynamics of memory formation

JOSEP MARCO-PALLARES
Brain mechanisms of learning and reward

JOANNA SIERPOWSKA
Impact of neurological conditions on brain function and connectivity

JORDI NAVARRA
Perception and attention mechanisms

CRISTINA BAUS
Language, Cognition and Bilingualism

ERNEST MAS
Brain dynamics of higher pleasures

BEATRIZ DE DIEGO-LÁZARO
Language learning and hearing loss

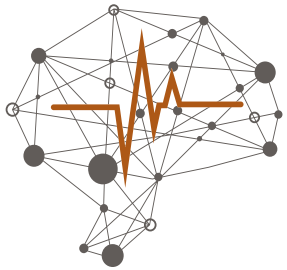
CEDRIC BOECKX
Evolution of Language

Members

Josue Garcia, Joan Tarrida, David Cucurell, Joan Rodríguez, Brian Quintero, Bianca Franzoia, Ieva Valaviciute, Alba Nuez, Marc Sabio, Pablo Marcos, Gemma Fàbrega, Marc Deosdad, Stella Nicolau, Jing Zhang, Alberto Muñoz, Laura Muntaner, Lidia Izquierdo, Francisco Contreras-Ruston.

Highlighted projects

- **Brain Dynamics and Structure of Human Cognition (BraCo).** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021 SGR 00352. Ruth de Diego-Balaguer
- **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
- **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
- **Contratos post-doctorales de investigación (Sara Borrell).** Instituto de Salud Carlos III. CD19/00093. Josep Marco-Pallares
- **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 e Innovación (MICINN). PID2021-127146NB-I00. Ruth de Diego-Balaguer
- **El papel de la incertidumbre en las propiedades reforzadoras de la información.** Ministerio de Ciencia e Innovación (MICINN). PID2021-126477NB-I00. Josep Marco-Pallares
- **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. Lluís Fuentemilla
- **La enfermedad de Huntington como el modelo para estudiar la neurodegeneración del sistema del área (pre) suplementaria motora y su relación con lenguaje y el control cognitivo.** Ministerio de Ciencia e Innovación (MICINN). PID2022-141876OA-I00. Joanna Sierpowska



Cognitive
and Behavioural
Neuroscience

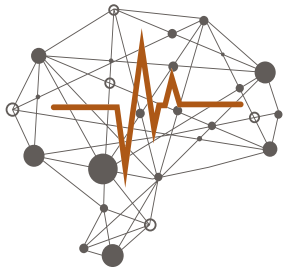
- **Descifrando la transformación representacional de una memoria: una perspectiva basada en la reactivación de la memòria.** Ministerio de Ciencia e Innovación (MICINN). PID2022-140426NB-I00. Lluís Fuentemilla

Selected publications

- MasHerrero, E., Ferreri, L., Cardona, G., Zatorre, R. J., PlaJuncà, F., Antonijoan, R. M., Riba, J., Valle, M., & RodriguezFornells, A. (2023). The role of opioid transmission in musicinduced pleasure. Annals of the New York Academy of Sciences, 1520(1), 105–114. https://doi.org/10.1111/nyas.14946
- Santesteban, M., Duñabeitia, J. A., & Baus, C. (Eds.). (2023). Bilingualism through the Prism of Psycholinguistics (Vol. 17). John Benjamins Publishing Company. https://doi.org/10.1075/bpa.17
- Vicente, U., Ara, A., & Marco-Pallarés, J. (2023). Intra- and inter-brain synchrony oscillations underlying social adjustment. Scientific Reports, 13(1), 11211. https://doi.org/10.1038/s41598-023-38292-6
- Vives, M.-L., Frances, C., & Baus, C. (2023). Automating weighing of faces and voices based on cue saliency in trustworthiness impressions. Scientific Reports, 13(1), 20037. https://doi.org/10.1038/s41598-023-45471-y

Thesis

- **Event Structured Cognition: the role of Event Boundaries.** Marta Silva. Supervisor: Lluís Fuentemilla
- **Searching for Worth: the impact of effort throughout reward processing.** López-Gamundi, Paula. Supervisor: Marco Pallarés, J.; Ernest Mas
- **Processing of sentential meaning: behavioural and electroencephalographic evidence in neurotypical and Williams syndrome adult populations.** Clara Soberats. Supervisor: Wolfram Hinzen; Ruth de Diego Balaguer
- **Procesamiento sintáctico en el lenguaje oral y función ejecutiva.** Elisa Marrodán Verdeguer. Supervisor: Laura Bosch Galceran; Beatriz de Diego Lázaro



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

MIREIA HERNANDEZ
Neurolinguistics, Multilingualism and Cognition

FERRAN PONS
Language acquisition and cognitive development

ANTONIO RODRIGUEZ-FORNELLS
Learning and Brain Plasticity

CLAUDIA PEÑALOZA

Members

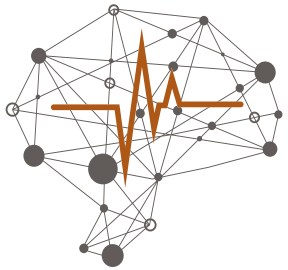
Marta Ramon, Marc Ballestero, Barbara Braida, Alba Gomez, Berta Nicolás, Jessica Sánchez-Galán, Emma Segura.

Highlighted projects

- **Grup de Cognició i Plasticitat Cerebral.** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021 SGR 01099. Antonio Rodriguez-Fornells
- **Brain Correlates of Socially Interactive Language Learning (BraSILL).** Unió Europea. 101062671. Antonio Rodriguez-Fornells
- **La lengua extranjera como factor de distancia psicològica.** Ministerio de Ciencia e Innovación (MICINN). PID2021-127053NB-I00. Mireia Hernandez
- **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
- **Indexical representation and lexical learning in audiovisual contexts: A challenge or an advantage for typically developing infants and clinical populations?.** Ministerio de Ciencia e Innovación (MICINN). PID2021-128159NB-I00. Ferran Pons
- **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**
- **Contracte del Programa Ramon y Cajal.** Ministerio de Economía y Competitividad. RYC-2016-19477. Mireia Hernandez
- **Contracte del Programa Ramon y Cajal.** Ministerio de Economía y Competitividad. RYC2021-034561-I. Claudia Peñaloza
- 3 confidential agreements

Selected publications

- Ballestero-Arnau, M., Rodríguez-Herreros, B., Nuño-Bermúdez, N., & Cunillera, T. (2023). Sporadic fasting reduces attentional control without altering overall executive function in a binary classification task. Physiology & Behavior, 260, 114065. https://doi.org/10.1016/j.physbeh.2022.114065
- Birulés, J., Bosch, L., Lewkowicz, D. J., & Pons, F. (2024a). Time course of attention to a talker's mouth in monolingual and close-language bilingual children. Developmental Psychology, 60(1), 135–143. https://doi.org/10.1037/dev0001659



Cognitive and Behavioural Neuroscience

- Birulés, J., Bosch, L., Lewkowicz, D. J., & Pons, F. (2024b). Time course of attention to a talker's mouth in monolingual and close-language bilingual children. Developmental Psychology, 60(1), 135–143. https://doi.org/10.1037/dev0001659
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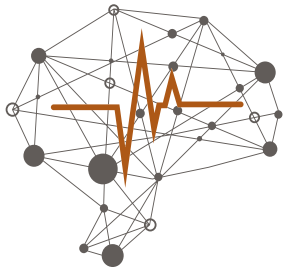
- Marte, M. J., Peñaloza, C., & Kiran, S. (2023). The cognate facilitation effect on lexical access in bilingual aphasia: Evidence from the Boston Naming Test. Bilingualism: Language and Cognition, 26(5), 1009–1025. https://doi.org/10.1017/S1366728923000251
- Navarrete-Orejudo, L., Cerda-Company, X., Olivé, G., Martin, N., Laine, M., Rodríguez-Fornells, A., & Peñaloza, C. (2023). Expressive recall and recognition as complementary measures to assess novel word learning ability in aphasia. Brain and Language, 243, 105303. https://doi.org/10.1016/j.bandl.2023.105303
- Olivé, G., Peñaloza, C., Vaquero, L., Laine, M., Martin, N., & Rodriguez-Fornells, A. (2023). The right uncinate fasciculus supports verbal short-term memory in aphasia. Brain Structure and Function, 228(3–4), 875–893. https://doi.org/10.1007/s00429-023-02628-9
- Peñaloza, C., Grasemann, U., Miikkulainen, R., & Kiran, S. (2023). Modeling Bilingualism as a Dynamic Phenomenon in Healthy and Neurologically Affected Speakers Across the Lifespan: A Commentary on "Computational Modeling of Bilingual Language Learning: Current Models and Future Directions." Language Learning, 73(S2), 78–82. https://doi.org/10.1111/lang.12566
- Varkanitsa, M., Peñaloza, C., Charidimou, A., & Kiran, S. (2023). Cerebral Small Vessel Disease Burden: An Independent Biomarker for Anomia Treatment Responsiveness in Chronic Stroke Patients With Aphasia. Archives of Physical Medicine and Rehabilitation, 104(10), 1630–1637. https://doi.org/10.1016/j.apmr.2023.05.008

Thesis

- **Developmental Intergroup Theory of Mind: The protagonist's social group membership as a pragmatic performance factor.** Carlota Saumell Andreu. Supervisor: Ferran Pons Gimeno i Mireia Hernández Pardo

- **Development of audiovisual associations in speech processing: the effect of linguistic experience and gender stereotypes.** Laia Marcet Jiménez. Supervisor: Ferran Pons Gimeno; Laura Bosch Galceran

Neuropsychology



Cognitive
and Behavioural
Neuroscience

Principal investigators

ANA ADAN
Addiction and dual disorders

DAVID BARTRES-FAZ
Brain health and neuromodulation

MARIA ANGELES JURADO
Obesity and neuroimaging

MARIA MATARO
Healthy aging and cerebrovascular disease

ROSER PUEYO
Cerebral palsy and neuroimaging

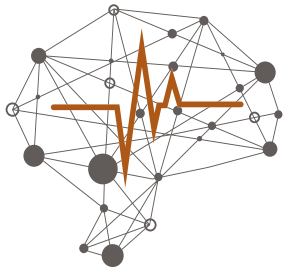
JOSEP M SERRA-GRABULOSA
Neural basis of learning difficulties

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, Alvaro González Sánchez.

Highlighted projects

- **Evaluation of Autism SpEctrum Disorder in children with Cerebral Palsy (EASED-CP).** Unió Europea. 101066954. Roser Pueyo
- **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). Maria Mataró
- **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). David Bartres-Faz
- **Characterization and modulation of brain networks to promote brain resilience for the COVID-19 pandemic.** Fundació La Marató de TV3. 592/U/2021. David Bartres-Faz
- **Home-based non-invasive brain stimulation for treatment-resistant depression: feasibility, efficacy and biomarker of treatment response.** Fundació La Marató de TV3. 202211-31. David Bartres-Faz
- **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. Ana Adan
- **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. Roser Pueyo
- **Jóvenes Activos, Mente Sana: Estrategias para la salud cerebral y el bienestar psicológico en jóvenes: un estudio aleatorizado de métodomixto con y sin realidad virtual.** Ministerio de Ciencia e Innovación (MICINN). PID2022-137776OB-I00. Maria Mataró
- 7 confidential agreements



Cognitive
and Behavioural
Neuroscience

Selected publications

- Ariza, M., Cano, N., Segura, B., Adan, A., Bargalló, N., Caldú, X., Campabadal, A., Jurado, M. A., Mataró, M., Pueyo, R., Sala-Llonch, R., Barrué, C., Bejar, J., Cortés, C. U., Bernia, J. A., Arauzo, V., Balague-Marmaña, M., Valles-Pauls, B., Caballero, J., … Junqué, C. (2023). COVID-19 severity is related to poor executive function in people with post-COVID conditions. Journal of Neurology, 270(5), 2392–2408. https://doi.org/10.1007/s00415-023-11587-4
- Blasco, M., García-Galant, M., Berenguer-González, A., Caldú, X., Arqué, M., Laporta-Hoyos, O., Ballester-Plané, J., Miralbell, J., Jurado, M. Á., & Roser Pueyo. (2023). Interventions with an Impact on Cognitive Functions in Cerebral Palsy: a Systematic Review. Neuropsychology Review, 33(2), 551–577. https://doi.org/10.1007/s11065-022-09550-7
- Blasco, M., García-Galant, M., Laporta-Hoyos, O., Ballester-Plané, J., Jorba-Bertran, A., Caldú, X., Miralbell, J., Alonso, X., Meléndez-Plumed, M., Toro-Tamargo, E., Gimeno, F., & Pueyo, R. (2023). Factors Related to Quality of Life in Children With Cerebral Palsy. Pediatric Neurology, 141, 101–108. https://doi.org/10.1016/j.pediatrneurol.2023.01.006
- Caldú, X., Prats-Soteras, X., García-García, I., Prunell-Castañé, A., Sánchez-Garre, C., Cano, N., Tor, E., Sender-Palacios, M.-J., Ottino-González, J., Garolera, M., & Jurado, M. Á. (2023). Body mass index, systemic inflammation and cognitive performance in adolescents: A cross-sectional study. Psychoneuroendocrinology, 156, 106298. https://doi.org/10.1016/j.psyneuen.2023.106298
- García-Galant, M., Blasco, M., Laporta-Hoyos, O., Berenguer-González, A., Moral-Salicrú, P., Ballester-Plané, J., Caldú, X., Miralbell, J., Alonso, X., Medina-Cantillo, J., Povedano-Bulló, E., Leiva, D., Boyd, R. N., & Pueyo, R. (2023). A randomized controlled trial of a home-based computerized executive function intervention for children with cerebral palsy. European Journal of Pediatrics, 182(10), 4351–4363. https://doi.org/10.1007/s00431-023-05072-3
- Luis-Ruiz, S., Sánchez-Castañeda, C., Garolera, M., Miserachs-González, S., Ramon-Krauel, M., Lerin, C., Sanchez, C., Miró, N., Martínez, S., & Jurado, M. A. (2023). Influence of Executive Function Training on BMI, Food Choice, and Cognition in Children with Obesity: Results from the TOuCH Study. Brain Sciences, 13(2), 346. https://doi.org/10.3390/brainsci13020346
- Moitra, S., Adan, A., Akgün, M., Anderson, A., Brickstock, A., Eathorne, A., Farshchi Tabrizi, A., Haldar, P., Henderson, L., Jindal, A., Jindal, S. K., Kerget, B., Khadour, F., Melenka, L., Moitra, S., Moitra, T., Mukherjee, R., Semprini, A., Turner, A. M., … Lacy, P. (2023). Less Social Deprivation Is Associated With Better Health-Related Quality of Life in Asthma and Is Mediated by Less Anxiety and Better Sleep Quality. The Journal of Allergy and Clinical Immunology: In Practice, 11(7), 2115-2124.e7. https://doi.org/10.1016/j.jaip.2023.03.052
- Montalà-Flaquer, M., Cañete-Massé, C., Vaqué-Alcázar, L., Bartrés-Faz, D., Peró-Cebollero, M., & Guàrdia-Olmos, J. (2023). Spontaneous brain activity in healthy aging: An overview through fluctuations and regional homogeneity. Frontiers in Aging Neuroscience, 14. https://doi.org/10.3389/fnagi.2022.1002811
- Prunell-Castañé, A., Jurado, M. Á., Ottino-González, J., Prats-Soteras, X., Sánchez Garre, C., Cano Marco, N., Salas Gómez-Pablos, P., García-García, I., & Garolera, M. (2023). Beyond BMI: cardiometabolic measures as predictors of impulsivity and white matter changes in adolescents. Brain Structure and Function, 228(3–4), 751–760. https://doi.org/10.1007/s00429-023-02615-0
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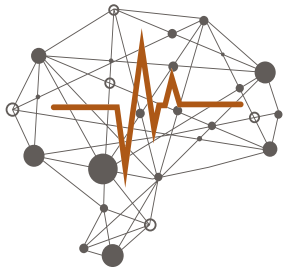


Cognitive
and Behavioural
Neuroscience

Thesis

- **La capacidad para procesar e integrar la información cuantitativa numérica y la espacial: procesos cognitivos y bases neurales. Estudio de las variaciones en tres etapas del desarrollo y efectos de la neuromodulación frontoparietal sobre el procesamiento e integración de magnitudes espacio-numéricas en adultos.** Sara García Sanz. Supervisor: Josep M. Serra Grabulosa

- **Vies a un envelliment saludable. Exercici aeròbic, entrenament cognitiu i la seva combinació.** Francesca Roig Coll. Supervisor: Maria Mataró

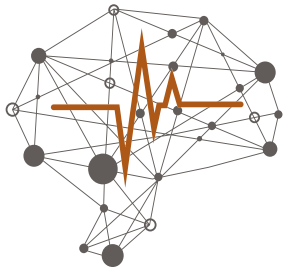
- **Biomarcadores de salud cerebral medidos con estimulación magnética transcraneal combinada con electroencefalografía y electromiografia**. María Redondo Camós. Supervisor: David Bartrés Faz i Josep Mª Tormos Muñoz

- **Brain mechanisms and psychological determinants of mental health resilience. Learning from the COVID-19 pandemic.** María del Rocío Cabello Toscano. Supervisor: David Bartrés Faz; Lídia Vaqué Alcázar

- **Cerebral palsy: executive training and brain connectivity.** García-Galant, M. . Supervisor: Roser Pueyo

- **Towards the optimisation of interventions to enhance cognitive functions and quality of life in children with cerebral palsy exploring potential far transfer effects.** Blasco-Sierra, M. . Supervisor: Roser Pueyo

Quantitative psychology



Cognitive
and Behavioural
Neuroscience

Principal investigators

JOAN GUARDIA-OLMOS
Quantitative Neuroscience

MARIA CARBO-CARRETE
Quantitative Psychology

Members

Maribel Peró-Cebollero, Vicente Quera, Francesc Salvador, Antonio Solanas, David Leiva, Rumen Rumenov, Ruth Dolado, Montserrat Colell Mimo, Isabel Paula Pérez, Jaume Turbany-Oset, Alba Pérez-González, Albert Sánchez-Niubó, Lluis Salafranca-Cosialls, Jordi Fauquet-Ars, Jordi Galvany-Casals, Raquel Adriana Hernández-Aguilar, Joan Trujols-Albet, Mercedes Mayo-Alesón, Álvaro López-Caicoya, Angelica Maritza Betancourt-Suárez.

Highlighted projects

- **Qualitat de Vida Familiar (QdVF) de l'estudiantat universitari: relació amb el rendiment acadèmic. I**nstitut 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
- **Discapacidad Intelectual y Calidad de Vida: Diseño y Evaluación de los Planes de Apoyo Personales.** Fundació Caixa de Pensions 'La Caixa'. CX22-00171. Maria De Les Salines
- 1 confidential agreement

Selected publications

- Amador-Campos, J. A., Peró-Cebollero, M., Feliu-Torruella, M., Pérez-González, A., Cañete-Massé, C., Jarne-Esparcia, A. J., Triadó-Ivern, X., & Guàrdia-Olmos, J. (2023). Mentoring and Research Self-Efficacy of Doctoral Students: A Psychometric Approach. Education Sciences, 13(4), 358. https://doi.org/10.3390/educsci13040358
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- 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
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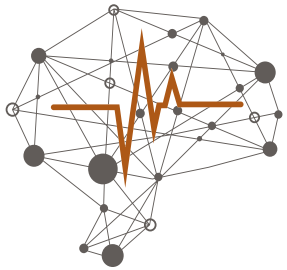
- Léniz-Maturana, L., Vilaseca, R., & Leiva, D. (2023). Non-Intrusive Maternal Style as a Mediator between Playfulness and Children's Development for Low-Income Chilean Adolescent Mothers. Children, 10(4), 609. https://doi.org/10.3390/children10040609
- Manolov, R. (2023). Does the choice of a linear trend-assessment technique matter in the context of single-case data? Behavior Research Methods, 55(8), 4200–4221. https://doi.org/10.3758/s13428-022-02013-0

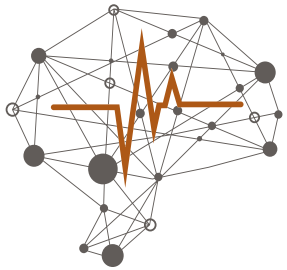
Research



Cognitive
and Behavioural
Neuroscience

- Manolov, R., Onghena, P., & Van den Noortgate, W. (2023). Meta-analysis of single-case experimental designs: How can alternating treatments and changing criterion designs be included? Evidence-Based Communication Assessment and Intervention, 17(1), 31–58. https://doi.org/10.1080/17489539.2022.2040164
- Manolov, R., & Vannest, K. J. (2023). A Visual Aid and Objective Rule Encompassing the Data Features of Visual Analysis. Behavior Modification, 47(6), 1345–1376. https://doi.org/10.1177/01454455198543 23
- Montalà-Flaquer, M., Cañete-Massé, C., Vaqué-Alcázar, L., Bartrés-Faz, D., Peró-Cebollero, M., & Guàrdia-Olmos, J. (2023). Spontaneous brain activity in healthy aging: An overview through fluctuations and regional homogeneity. Frontiers in Aging Neuroscience, 14. https://doi.org/10.3389/fnagi.2022.1002811
- Rivero, M., Vilaseca, R., Cantero, M.-J., Valls-Vidal, C., & Leiva, D. (2023). Relations between Positive Parenting Behavior during Play and Child Language Development at Early Ages. Children, 10(3), 505. https://doi.org/10.3390/children10030505
- Tanious, R., & Manolov, R. (2023). A practitioner's guide to conducting and analysing embedded randomized single-case experimental designs. Neuropsychological Rehabilitation, 33(4), 613–645. https://doi.org/10.1080/09602011.2022.2035774

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

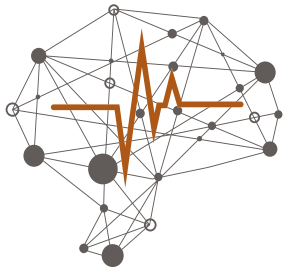
Members

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-Kadiri, Daniela Zanetti, Nadia Paraskevoudi, Emmanouela Kosteletou, Alejandro Mondéjar, Natàlia Gorina, Enrico Sozza, Yesenia Torres, Carla Salgado.

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
- **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. Judith Domínguez-Borràs
- **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
- **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



Cognitive and Behavioural Neuroscience

- **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
- **Eina predictiva del grau de neurodesenvolupament en nadons nascuts amb baix pes mitjançant intel·ligència artificial aplicada a registres d'EEG.** Fundació Bosch i Gimpera de la Universitat de Barcelona. F2I-PdC_2022-001. Carles Escera
- **Uncovering the human subcortical pathway for auditory threat detection (HumanSUBthreat).** Unió Europea. Judith Domínguez-Borràs

Selected publications

- ArenillasAlcón, S., Ribas Prats, T., Puertollano, M., Mondéjar Segovia, A., Gómez Roig, M. D., Costa Faidella, 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, 26(5). https://doi.org/10.1111/desc.13362
- Escera, C. (2023). Contributions of the subcortical auditory system to predictive coding and the neural encoding of speech. Current Opinion in Behavioral Sciences, 54, 101324. https://doi.org/10.1016/j.cobeha.2023.101324
- Font-Alaminos, M., Paraskevoudi, N., & SanMiguel, I. (2023). Actions do not clearly impact auditory memory. Frontiers in Human Neuroscience, 17. https://doi.org/10.3389/fnhum.2023.1124784
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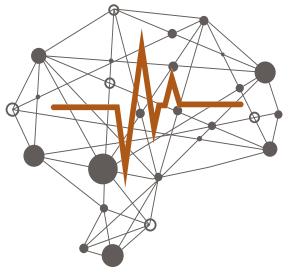

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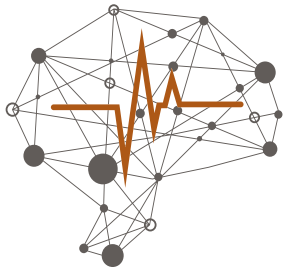
Thesis

- **Attentional selectivity and attentional control in highly math-anxious individuals.** Belén González Gómez. Supervisor: M. Isabel Núñez-Peña y Àngels Colomé.

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

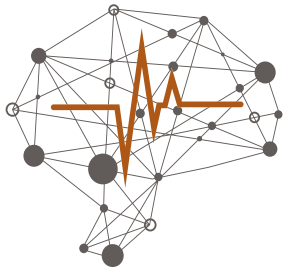
Maria Carmen Saldaña, Marta Ferrer, Adela Fuste, Jose Ruiz, Alejandro Beacco, Jaime Gallego, Ramon Oliva, Maria Belen Aguirre, Tania Jonhston, Sergio Macho, Francisco Macia, Joana Margarita Pla, Helena Vall, Ferran Vilalta, Carlos Cabreira, Irene Sanjuan, Alexis Andreu Gracia, Joan Ribas, Mavi Sanchez, Esen Küçüktütüncü, Michael Wiesing, Alex Pau Fuentes Raventós, Lisa Reguia Huguette Izzouzi, Raul Gallego Abellan, Georgios Tsampounaris.

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

- Alabèrnia-Segura, M., Feixas, G., & Gallardo-Pujol, D. (2023). Moral Identity Questionnaire (MIQ): Adaptation and Psychometric Properties in Spanish Population. Acción Psicológica, 20(1). https://doi.org/10.5944/ap.20.1.39151
- Martial, C., Cassol, H., Slater, M., Bourdin, P., Mensen, A., Oliva, R., Laureys, S., & Núñez, P. (2023). Electroencephalographic Signature of Out-of-Body Experiences Induced by Virtual



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- Mendoza-Medialdea, M. T., Meschberger-Annweiler, F.-A., Ascione, M., Rueda-Pina, A., Rabarbari, E., Porras-Garcia, B., Ferrer-Garcia, M., & Gutiérrez-Maldonado, J. (2023). Body Dissatisfaction and Body-Related Attentional Bias: Is There a Causal Relationship? Journal of Clinical Medicine, 12(17), 5659. https://doi.org/10.3390/jcm12175659
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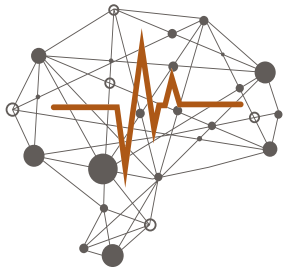

Cognitive
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Neuroscience

- Slater, M., Cabriera, C., Senel, G., Banakou, D., Beacco, A., Oliva, R., & Gallego, J. (2023). The sentiment of a virtual rock concert. Virtual Reality, 27(2), 651–675. https://doi.org/10.1007/s10055-022-00685-9
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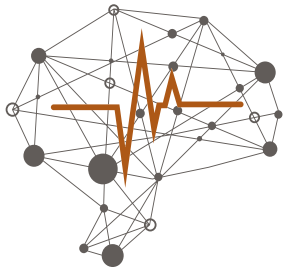
Knowledge and transfer innovation

- 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. Guillem Feixas

Vision and control of action



Cognitive
and Behavioural
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

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

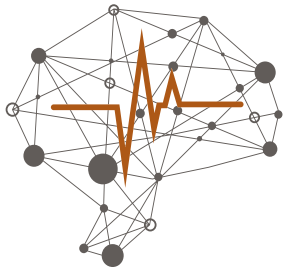
Angels Colome, Elisabet Tubau, Jaume Boned, Marta Natalia Torres, Pamela Villavicencio, Andrés Méndez, Cristina Rodríguez.

Highlighted projects

- **Vision and Control of Action (VISCA).** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR00061. Joan Lopez-Moliner
- **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
- **Papel de la sincronía ocular en la sincronía neuronal y en la mejora de las funciones cognitivas en pacientes con Alzheimer.** Ministerio de Ciencia e Innovación (MICINN). PID2022-139968OB-I00. Hans Super
- **De codificación predictiva a aprendizaje de patrones visuales y neuronales.** Ministerio de Ciencia e Innovación (MICINN). PID2022-142599NB-I00. Matthias Sven Keil
- **Efecto de la variabilidad en escenas visuales sobre la percepción y la acción en entornos complejos.** Ministerio de Ciencia e Innovación (MICINN). CNS2022-135808. Cristina de la Malla
- **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
- 1 confidential agreement

Selected publications

- Bast, N., Boxhoorn, S., Supér, H., Helfer, B., Polzer, L., Klein, C., Cholemkery, H., & Freitag, C. M. (2023). Atypical Arousal Regulation in Children With Autism but Not With Attention-Deficit/Hyperactivity Disorder as Indicated by Pupillometric Measures of Locus Coeruleus Activity. Biological Psychiatry: Cognitive Neuroscience and Neuroimaging, 8(1), 11–20. https://doi.org/10.1016/j.bpsc.2021.04.010



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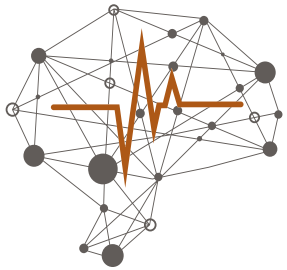
- de la Malla, C., & Goettker, A. (2023). The effect of impaired velocity signals on goal-directed eye and hand movements. Scientific Reports, 13(1), 13646. https://doi.org/10.1038/s41598-023-40394-0
- Hashemi, A., Leonovych, O., Jiménez, E. C., Sierra-Marcos, A., Romeo, A., Valenzuala, P. B., Puig, M. S., Moliner, J. L., Tubau, E., & Supèr, H. (2023). Classification of MCI patients using vergence eye movements and pupil responses obtained during a visual oddball test. Aging and Health Research, 3(1), 100121. https://doi.org/10.1016/j.ahr.2023.100121
- Romeo, A., & Supèr, H. (2023). Optimal twist angle for a graphene-like bilayer. Journal of Physics: Condensed Matter, 35(16), 165302. https://doi.org/10.1088/1361-648X/acb985
- Tubau, E., Colomé, À., & Rodríguez-Ferreiro, J. (2023). Previous beliefs affect Bayesian reasoning in conditions fostering gist comprehension. Memory & Cognition, 51(8), 1819–1835. https://doi.org/10.3758/s13421-023-01435-1

Knowledge and transfer innovation

- Braingaze. Hans Super

Language and Cognition



Cognitive
and Behavioural
Neuroscience

Principal investigators

MARI AGUILERA
Emotion regulation, Language disorder

ANTONIO A. ARTIGAS
Associative and perceptual learning, cognitive stimulus representations, salience modulation

JAVIER RODRÍGUEZ-FERREIRO
Reasoning, learning, unwarranted beliefs, cognitive biases

MÒNICA SANZ-TORRENT
Language acquisition, Developmental Language Disorder, Cognitive development, Eye movements

ITXASO BARBERIA
Reasoning, learning, unwarranted beliefs, cognitive biases

Members

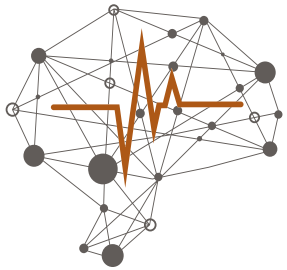
Elena Grau, Celia Gordón, Cristina Mumbardó Adam, Fernanda Pacheco, Esther Parra, Marta N. Torres, Elizabeth Gilboy, Oriol Verdaguer Ribas, Ainoa Barreiro.

Highlighted projects

- **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
- **Fundamento cognitivo de las creencias pseudocientíficas.** Ministerio de Ciencia, Innovación y Universidades. PID2019-106102GB-I00. Javier Rodriguez-Ferreiro
- **Oral language intervention program in preschool children for the prevention of reading difficulties.** Agencia Estatal de Investigación. PID2020-114690RB-I00. Llorenç Andreu i Mònica Sanz-Torrent
- **Hacia una explicación integradora de los efectos de preexposición.** Agencia Estatal de Investigación. PID2019-109233GB-I00. Antonio Álvarez Artigas
- **Grup de recerca Consolidat. Grup de Recerca en Cognició i Llenguatge (GRECIL).** AGAUR - Generalitat de Catalunya. SGR 01102. Mònica Sanz-Torrent
- **Ilusión causal y creencias pseudocientíficas.** Ministerio de Ciencia e Innovación (MICINN). PID2022-138016NB-I00. Itxaso Barberia y Javier Rodriguez-Ferreiro

Selected publications

- 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
- BuilLegaz, L., SuárezCoalla, P., SantamarinaRabanal, L., Martínez García, C., RodríguezFerreiro, J., & Cuetos, F. (2023). Spelling problems after early oral language difficulties. International Journal of Language & Communication Disorders, 58(3), 756–764. https://doi.org/10.1111/1460-6984.12819
- de Moraes Prata Gaspar, M. C., Soar, C., Aguilera, M., Gomez, M. C., Celorio-Sardà, R., Comas-Basté, O., Larrea-Killinger, C., & Vidal-Carou, M. C. (2023). Perceptions of Food among College Students in the Field of Food Science: A Food Sustainability Approach. Foods, 12(5), 917. https://doi.org/10.3390/foods12050917
- Martínez, N., Rodríguez-Ferreiro, J., Barberia, I., & Matute, H. (2023). A debiasing intervention to reduce the causality bias

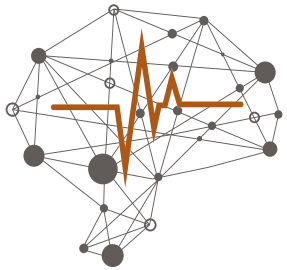


Cognitive
and Behavioural
Neuroscience

in undergraduates: the role of a bias induction phase. Current Psychology, 42(36), 32456–32468. https://doi.org/10.1007/s12144-022-04197-2

- 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
- Rodríguez-Ferreiro, J., Vadillo, M. A., & Barberia, I. (2023). Debiasing Causal Inferences: Over and Beyond Suboptimal Sampling. Teaching of Psychology, 50(3), 230–236. https://doi.org/10.1177/00986283211048394
- Saltor, J., Barberia, I., & RodríguezFerreiro, J. (2023). Thinking disposition, thinking style, and susceptibility to causal illusion predict fake news discriminability. Applied Cognitive Psychology, 37(2), 360–368. https://doi.org/10.1002/acp.4008
- Torres, M. N., Barberia, I., & Rodríguez-Ferreiro, J. (2023). A validation of the Pseudoscience Endorsement Scale and assessment of the cognitive correlates of pseudoscientific beliefs. Humanities and Social Sciences Communications, 10(1), 176. https://doi.org/10.1057/s41599-023-01681-3
- Tubau, E., Colomé, À., & Rodríguez-Ferreiro, J. (2023). Previous beliefs affect Bayesian reasoning in conditions fostering gist comprehension. Memory & Cognition, 51(8), 1819–1835. https://doi.org/10.3758/s13421-023-01435-1

Artificial Intelligence



Cognitive
and Behavioural
Neuroscience

Principal investigators

PETIA RADEVA
Machine learning, Computer Vision, Medical Imaging

IGNASI COS
Motor Control and Decision-Making

Members

Bhalaji Nagarajan, Simone Balocco, Oliver Diaz, Ricardo Marques,

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. Petia Radeva
- **Artificial Intelligence and Biomedical Applications (AIBA).** Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR). 2021SGR01094. Petia Radeva
- **Robo STEAM - Inclusive Technologies.** Education, Audiovisual and Culture Executive Agency (EACEA). 2022-1-BG01-KA220-VET-000089434. Petia Radeva
- **MUSAE: a human-centred factory for a future technological sustainable development driven by arts (MUSAE).** Unió Europea. 101070421. Petia Radeva
- **Una herramienta digital para la estimación de la cantidad de comida usando deep learning.** Ministerio de Ciencia e Innovación. PDC2022-133642-I00. Petia Radeva
- **Ajut per incentivar i consolidar la recerca d'excel·lència ja existent a les universitats públiques de Catalunya.** Fundació Institució Catalana de Recerca i Estudis Avançats (ICREA). Programa ICREA Academia 2022. Petia Radeva
- **Hacer que el aprendizaje profundo funcione en el mundo real: una perspectiva centrada en los datos.** Ministerio de Ciencia e Innovación (MICINN). PID2022-141566NB-I00. Petia Radeva.
- 4 confidential agreements

Selected publications

- Chatterjee, S., Saad, F., Sarasaen, C., Ghosh, S., Krug, V., Khatun, R., Mishra, R., Desai, N., Radeva, P., Rose, G., Stober, S., Speck, O., & Nürnberger, A. (2024). Exploration of Interpretability Techniques for Deep COVID-19 Classification Using Chest X-ray Images. Journal of Imaging, 10(2), 45. https://doi.org/10.3390/jimaging10020045
- Momeny, M., Neshat, A. A., Jahanbakhshi, A., Mahmoudi, M., Ampatzidis, Y., & Radeva, P. (2023). Grading and fraud detection of saffron via learning-to-augment incorporated Inception-v4 CNN. Food Control, 147, 109554. https://doi.org/10.1016/j.foodcont.2022.109554
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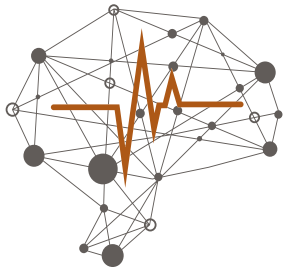

Cognitive
and Behavioural
Neuroscience

- Sendra-Balcells, C., Campello, V. M., Torrents-Barrena, J., Ahmed, Y. A., Elattar, M., Ohene-Botwe, B., Nyangulu, P., Stones, W., Ammar, M., Benamer, L. N., Kisembo, H. N., Sereke, S. G., Wanyonyi, S. Z., Temmerman, M., Gratacós, E., Bonet, E., Eixarch, E., Mikolaj, K., Tolsgaard, M. G., & Lekadir, K. (2023). Generalisability of fetal ultrasound deep learning models to low-resource imaging settings in five African countries. Scientific Reports, 13(1), 2728. https://doi.org/10.1038/s41598-023-29490-3

Knowledge and transfer innovation

- AIGecko Technologies. Petia Radeva.

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Images

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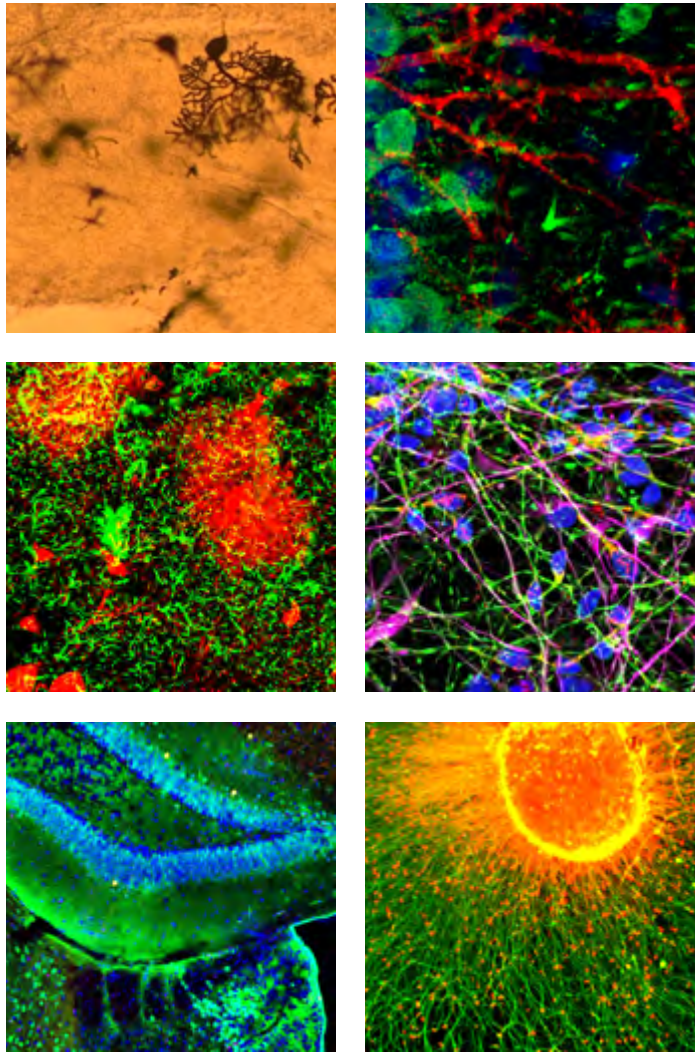

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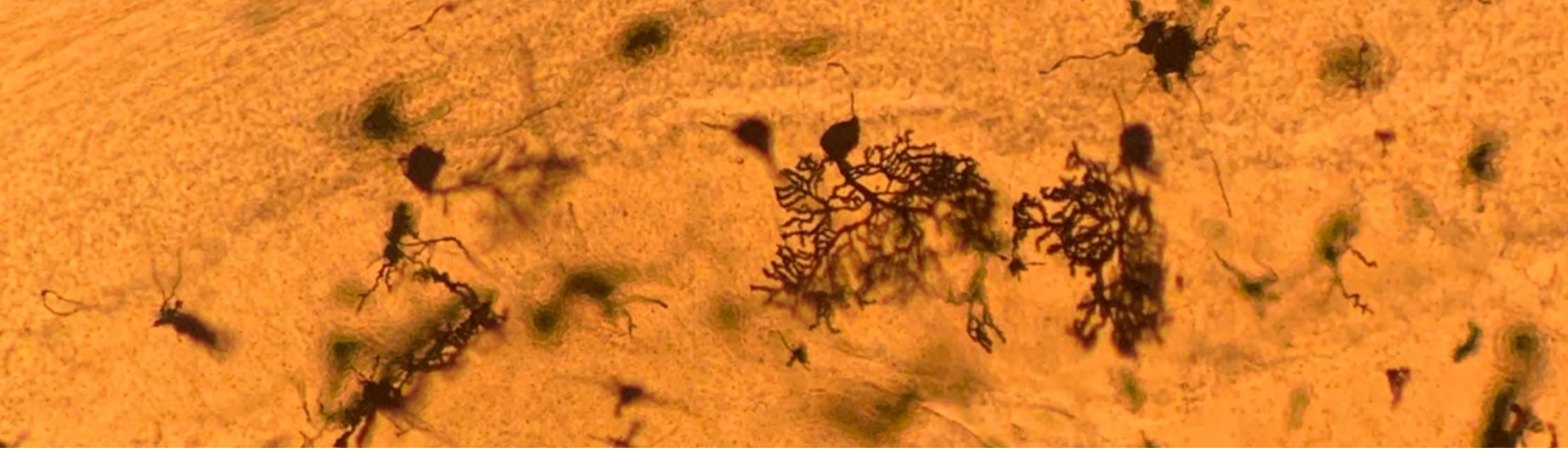
EXCELENCIA MARÍA DE MAEZTU



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