ehugroup

Achucarro

BASQUE CENTER FOR NEUROSCIENCE

scientia ad remedium

2025

Annual Report

Contents

Foreword

Dear reader,

The year 2025 marked the completion of our Strategic Research Plan. Gladly, we may say that we have accomplished all our major goals for this period. As a reflection of our success, total publication output has increased 7% with 70 papers published, including high-impact journals. Another significant achievement has been a substantial increase in funding obtained by our principal investigators (IPs), including another ERC Consolidator grant, enhancing the proportion of international sources of funding. In total, our budget has increased 91% (Total 18M€) in the period 2022-2025, compared to the previous four years. We now have 28 independent researchers integrated in 18 research groups and with a total of 141 staff, representing a 24% increase over the previous four years. Significantly, the majority of our PIs are at early stages of the careers, providing a promising future of continued scientific growth for the center at large.

Given that the size of our research teams is relatively small, we continued emphasizing the reinforcement and stabilization of our Core Facilities to overcome this limitation. We are looking into a future where a substantial support to our labs provided by these platforms will secure an advanced set of tools demanded in current neuroscience research, making our groups technically competent in key technologies. Along this line, the next Strategic plan incorporates an ambitious planning of consolidation of our Core Facilities into a single multi-modal platform.

Indeed, the recent expansion of our facilities allowed housing state-of-the art equipment that is constantly refurbished and updated. This led us to incorporate new transversal research lines and experimental models, implementing an in-house grid of intense collaborations.

The internal re-organization from independent, isolated research teams, into three Research Programmes (Neuro-glial interactions in brain diseases, Glial modulation of brain structure and function, and Gliotheranostics) incorporating all the research groups, that was set out four years ago is now fully completed, leading to more fluent and regulated interactions, that will hopefully result in larger projects including different labs.

Three key areas of increasing demand, societal impact, gender equity, and healthy working practices, permanently occupy our attention as we need to keep learning how to increase and improve all the many, at times subtle, nuances required. While the first two of them are now well integrated in our regular structure, a healthy working environment requires multiple skills and constant training of our personnel.

All in all, during this past year we have achieved all the milestones planned at this stage in our now completed 2022-25 Strategic Research Plan. In the coming years, we aim to consolidate these achievements by maintaining a stable workforce, securing sustained resources, and pursuing continuous improvement with unwavering ambition.

Ignacio Torres Alemán
Scientific Director

Elena Alberdi Alfonso
Assistant Scientific Director

ACHUCARRO is a Basque Excellence Research Centre (BERC), a distinction held by just nine organisations within the Basque Government's strategic research network.

Our mission is fueled by the Department of Science, Universities and Innovation vision to position the Basque Country at the forefront of international scientific innovation.

1. Strategy and Management

The launch of our 2022–2025 Strategic Plan marked a new chapter in our pursuit of excellence in neuroscience research and operations.

At ACHUCARRO, we are bridging the gap between molecular biology and live brain networks, by integrating multidisciplinary research across every biological scale, to transform our understanding of the nervous system and unlock new frontiers in both health and disease

The foundations that support our strategic view and future vision are:

- Recruit, Reintegrate and Retain talented research personnel, to perform excellent research and contribute to advanced post-graduate training.
- Further develop facilities within the Science Park of the EHU, at the University campus in Leioa.
- Strive to incorporate the relevant technologies to let the centre operate on the frontier of knowledge.
- To perform research projects centred in the study of glial cells to contribute to the discovery of new therapies for neurological diseases for the benefit and well-being of the Society.

In 2025 we completed this plan and completed the internal and external assessment process for the definition of the next one, for the period 2026-2029.

Scientific Plan 2022–2025

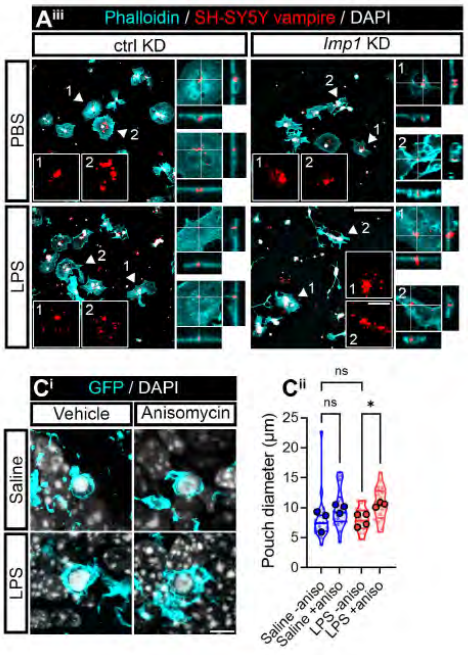
ACHUCARRO was defined, back in 2012, by a singular focus: the neuronal-glial biology of the healthy and pathological brain. To drive this mission forward, our 2022–2025 Scientific Plan implemented a bottom-up framework through three integrated research programmes. This structure was designed to foster a culture of internal collaboration that amplifies our scientific impact on the global stage

- Neuro-Glial interactions in brain diseases
- Glial modulation of brain structure and function
- Gliotheranostics

ACHUCARRO researchers revealed that the RNA-binding protein IMP1/ZBP1 directs essential microglial functions by managing local translation in cellular processes.

LOCAL PROTEIN SYNTHESIS IDENTIFIED AS KEY REGULATOR OF MICROGLIAL RESPONSE TO INFLAMMATION

This new study in fruit of the internal collaboration between the laboratories led by Jimena Baleriola and Amanda Sierra a contributed to uncover a critical molecular mechanism that allows microglia to rapidly adapt their behaviour during inflammation.



Researchers have demonstrated that **microglia do not solely rely on proteins transported from the cell body; instead, they utilize "local translation," a process where proteins are synthesized directly within peripheral microglial processes (PeMPs)**.

This mechanism is significantly enhanced when microglia are exposed to inflammatory triggers, such as bacterial lipopolysaccharides (LPS).

These findings provide a new mechanistic insight into how microglia maintain local protein homeostasis to support fundamental immune functions like migration and the clearance of debris in the inflamed brain.

RNA-binding protein IMP1/ZBP1 directs local translation in microglial processes to regulate motility and phagocytosis during inflammation

Imaz-Iruretagoyena, Josune; Blanco-Urrejola, Maite; Núñez-García, Irene; García-Toledo, Irene; Fernández-Beltrán, Luis C.; Márquez, Mar; Corrochano, Silvia; Sierra, Amanda; Baleriola, Jimena

PLOS Biology (Nov, 2025) DOI: 10.1371/journal.pbio.3003463

EQUALITY AND INCLUSION PLAN 2022-2025

ACHUCARRO launched the reflection towards our inaugural Equality Plan in 2017, working in partnership with external consultants specializing in organizational equity.

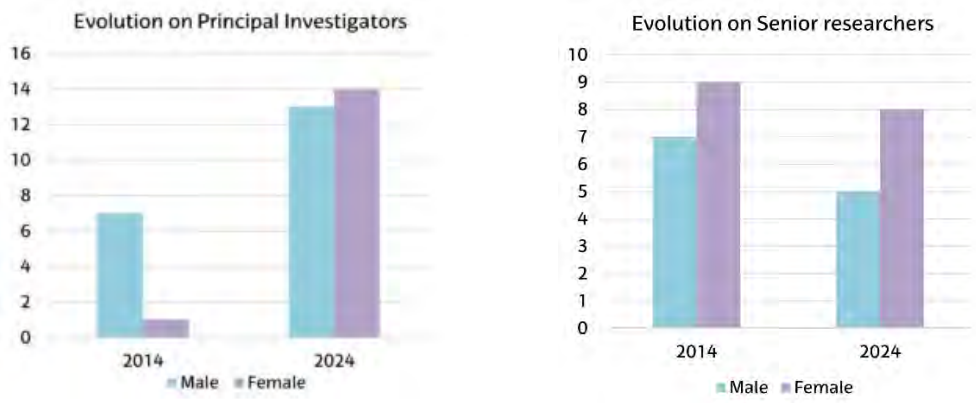
After completing that plan, in 2021, we conducted a rigorous evaluation of this initial plan to guide the design and implementation of our second iteration. These strategic efforts have produced measurable improvements, cultivating an institutional culture rooted in equity, equality, and diversity. Notably, we have observed a positive shift in the representation and gender balance of individuals in leadership roles.

Our Equality Committee (EC) serves as the central driver and evaluator of all initiatives within the plan. To ensure broad impact and efficacy, the EC maintains strict gender parity and includes representatives from across the entire organization, encompassing various professional roles and career stages.

The plan that concluded at the end of 2025 was based in these four pillars:

1. **Promoting equal opportunities in positions of responsibility.**
2. **Generate working environments and conditions that facilitate the co-responsible conciliation of personal, family, and professional life.**
3. **Incorporate a gender perspective in the policies, products, and operating dynamics.**
4. **Promote inclusive leadership styles.**

In terms of progress in the increase of visualisation and fostering female leadership, we are proud of these results:



Evolution of number of Principal by gender, from 2014 to 2024

https://www.achucarro.org/equality

BASQUE PACT FOR EQUALITY AND LIVES FREE FROM VIOLENCE AGAINST WOMEN

ACHUCARRO is one of the entities of the Basque science and technology system selected by Emakunde, the Basque Institute for Women, to be part of the working group, within the PACTO, to work on a paradigm shift, which aligns with the UN Sustainable Development Goals (SDO5).

The Science, Technology, and Innovation (STI) Group within the Emakunde Task Forces worked in two main areas: the equality plans applied to STI entitites and the integration of gender perspective into research and development of science and technology.

More information:
https://www.emakunde.euskadi.eus/pact-intro/webema01-contentemas/en/

Cultivating partnerships is not just about sharing resources; it's about multiplying possibilities. Together, we achieve more than we ever could alone, unlocking innovation, driving growth, and creating lasting impact.

2. Partnerships and Collaborations

Our collaboration strategy has a long-term vision based on the idea that collaborative synergy is essential to unravelling the complex challenges. Following that strategy, building a robust partnership network has been a priority that demands both dedication and vision. Therefore, we take a rigorous approach to identifying and assessing both individual and collective partners within the neuroscience sector and our local ecosystem. By prioritizing alignment in values and expertise, we cultivate mutually beneficial relationships designed to achieve "win-win" outcomes.

These alliances do more than just share resources—they accelerate the pace of discovery, bridge the gap between basic research and clinical application, and amplify the societal impact of our scientific endeavours.

Institutional Alliances

We formalised institutional partnerships with specific, written, long-term agreements, which cover the terms of the collaboration.

These are the active institutional agreements during this year:

BASQUE GOVERNMENT

- BERC agreement to support the strategic deployment in 2022–2025.

BASQUE SCIENCE, TECHNOLOGY, AND INNOVATION NETWORK

- Appointment at the BSTI network and recognition in the "*BERC - Basque Excellence Research Centre*" category

IKERBASQUE

- Framework Agreement for the appointment of research staff: Ikerbasque Research Professors, Associates and Fellows
- Agreement to support the development of the IKUR Strategy of the Basque Government
- Agreement to support the development of the *Neuronano* Strategy Action of the Basque Government

UNIVERSITY OF THE BASQUE COUNTRY (EHU)

- Specific agreement for the appointment of teaching and research and personnel
- Specific agreement of collaboration to appoint the Deputy Scientific Director

STRATEGIC ALLIANCES

Our strategic alliances are with those organisations or individuals that allow us to extend our capabilities or complement our services.

Bizkaia Talent

Established in 2005 with the support of the Provincial Council of Bizkaia, Bizkaia Talent is a non-profit organization that fosters and facilitates the attraction, connection, and retention of highly qualified professionals to the Basque Historic Territory of Bizkaia. Bizkaia Talent is a strategic partner and an ally of ACHUCARRO, which takes our name and objectives to the many international scientific events they attend, supporting our talent attraction process.

CIBER

The Center for Biomedical Research in Network is a research organization with its own legal entity, fostered by the Spanish Government (Instituto de Salud Carlos III) and constituted by research groups without physical contiguity, belonging to different state administrations and autonomous communities, from the public and private sectors, with research lines and objectives focused on a common specific area.

In our case, two groups collaborate in the field of neurodegenerative diseases, which are coordinated to achieve scientific objectives that could hardly be considered in a specific context.

INTERNATIONAL SCIENTIFIC ADVISORY COMMITTEE (ISAC)

Our International Scientific Advisory Committee (ISAC) is composed of world-renowned researchers representing the diverse frontiers of neuroscience. Their expert perspectives provide vital strategic and operational guidance, ensuring the continuous growth and excellence of ACHUCARRO.

We partially renewed this panel in 2024, in preparation for the assessment site visit that they did in the first third of 2025, to provide us with their advice as another input for the next Strategic Plan. We had a fruitful discussion over the days of the site visit, and the panel and the staff had the opportunity to gain a deeper understanding of the projects and ambitions of our laboratories.

The current members of the ISAC are:

Leda **Dimou**

Ulm University

Teresa **Gómez-Isla**

Harvard Medical School & Massachusetts General Hospital

Brahim **Nait Oumesmar**

Paris Brain Institute – ICM

Joao **Relvas**

Universidade do Porto

Pablo **Villoslada**

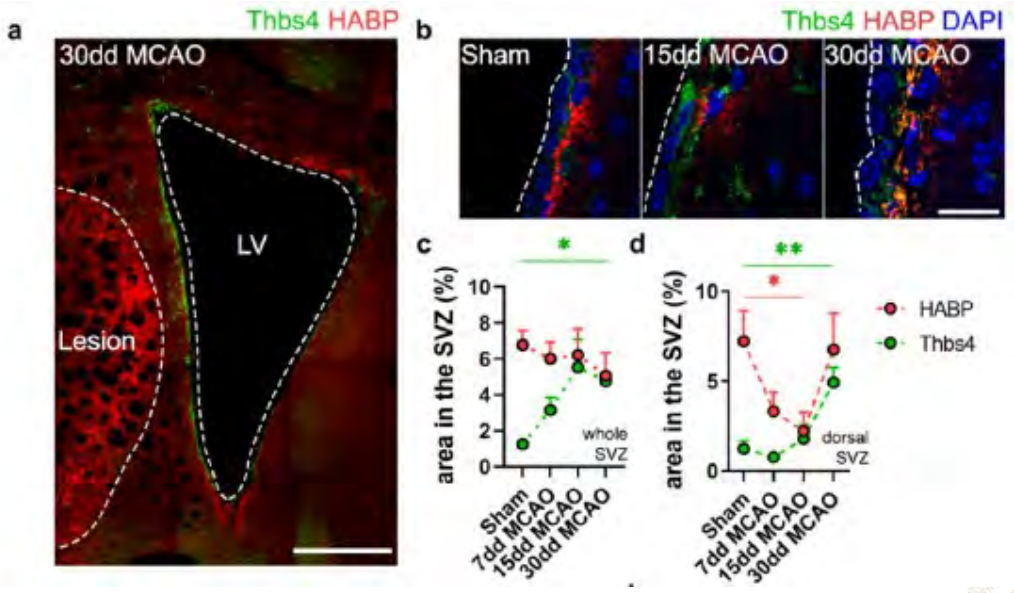
Hospital del Mar

Newborn astrocytes migrate from the brain's subventricular zone to the site of damage to help manage the formation of the glial scar.

NEW STUDY IDENTIFIES THE SOURCE OF REPAIR CELLS FOR BRAIN ISCHEMIC INJURY

This is another good example of internal and international collaborations to identify that a specific population of neural stem cells in the subventricular zone (SVZ)—the brain's primary "niche" for new cell production—is activated almost immediately after a stroke occurs.

Crucially, the study found that these specific astrocytes play a dual role: they both build and break down hyaluronan, a key component of the brain's "scaffolding" (the extracellular matrix). By modulating this environment, these cells help manage the stiffness and structure of the scar, potentially clearing the way for future tissue regeneration. These findings suggest that targeting these SVZ-derived astrocytes could lead to new pharmacological treatments to improve brain repair and recovery after a stroke.



Gliogenesis from the subventricular zone modulates the extracellular matrix at the glial scar after brain ischemia

Ardaya, Maria; Tiveron, Marie-Catherine; Cremer, Harold; Dehay, Benjamin; Pérez-Cerdá, Fernando; Matute, Carlos; Soria, Federico N.; Cavaliere, Fabio

eLife (Aug, 2025) DOI: 10.7554/eLife.96076.3

With a community spanning 13 nationalities, and 3 continents, we embrace equality, equity, and diversity as core values that drive our institutional excellence and culture.

3. People

We have proven our capacity to look attractive to international professionals, and to create a vibrant scientific community.

In 2025 we reached a certain level of stability after two years of increase and diversification in the composition of our staff.

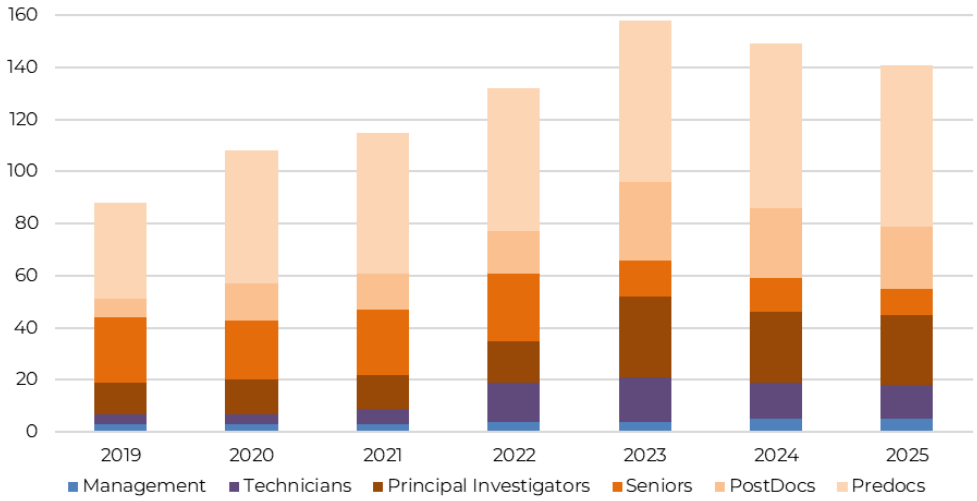


Figure 4. Evolution of personnel 2018-2025

Together with the new strategic alignments of the current administrators at the Basque Government, and the evolution in European funding for resilience, after the increase of, mainly, temporary postdoctoral personnel that we gained in two years ago, the volume of staff has returned to a more stable number.

APPOINTED STAFF (December 2025)

AGUADO SANTOS, Laura· ALBERDI ALFONSO, Elena María · ALCAÑIZ IGUAL, Neus · ALDUNTZIN EGIZURAIN, Unai · ALFONSO TRIGUERO, María · ÁLVAREZ TUEROS, Mikel · ANDRÉS BILBAO, María · ARDAYA FRANCO, María Isabel · ARRANZ MENDIGUREN, Amaia · ARREY ZARRABEITIA, Guillermo · ASTIZ CADENAS, Mariana · BALANTZATEGI FERNÁNDEZ DE ARROIABE, Uxue · BARAIBAR SIERRA, Andres Mateo · BENGOA VERGNIORY, Nora · BENGOETXEA BAUSELA, Xabier · BERNAL CHICO, Ana · BOENDER, Adriann Johannes · BONILLA DEL RÍO, Itziar · BOSCH JUAN, Marina · BOVEDA ALTUBE, Leire · BUENDÍA ABAITUA, Izaskun · CAPETILLO GONZÁLEZ DE ZARATE, Estibaliz · CARRETERO GUILLÉN, Alejandro · CASAS, Tomás Joaquín · CAVALIERE, Fabio · CEPRIÁN COSTOSO, María · CICERI, Dalila · CIPRIANI, Raffaela · CORTÉS MELER, Lorea · CUESTA PUENTE, Xabier · DÍAZ CUEVAS, Jesús · DOMERCQ GARCÍA, María · EGAÑA HUGUET, Jon · ELEZGARAI GABANTXO, Izaskun · ELORDUY GARCÍA, Iratxe · ENCINAS PÉREZ, Juan Manuel · ERCOLI ORTIZ, Stefano Giannello · ESCOBAR CASTAÑONDO, Laura · FEDOROV, Dmitry · FEIJOO BARRIGA, Miriam · FERNÁNDEZ BALLESTER, Mario · FERRARINI, Denise · FLORES ROMERO, Héctor · GALBIS GRAMAGE, Nuria · GALLEGO FLORES, María Tatiana · GARBIZU ALBISU, Maider · GARCÍA GASTAÑAGA, Laura · GARCÍA MORENO, Fernando · GÓMEZ URQUIJO, Sonia · GONZÁLEZ DOMÍNGUEZ, Marco · GOROSTIOLA, Nerea · GRANDES MORENO, Pedro Rolando · GREGORIO ZABALA, Lierni · GUERRICAGOITIA MARINA, María Inmaculada · HASAN, Mazahir Tahir · HERNÁNDEZ CORTÉS, María Isabel · IGEREGI ARTETXE, Izaskun · IMAZ IRURETAGOYENA, Josune · IÑIGUEZ BARRIO, Silvia · IZAGIRRE BARROETA, Jokin · JIMÉNEZ ÁLVAREZ, Sara · JIMÉNEZ RIDRUEJO, Isabel · KHAN, Muhammad Zahid · KORTABARRIA PÉREZ, Gorka · KUKLEY, Maria · KURT, Begüm · LARRAÑAGA SAN MIGUEL, Álvaro · LEGARDA GONZÁLEZ, Alba · LLAMOSAS MUÑOZGUREN, Nerea · LÓPEZ BARAJAS ANGUIANO, Rita · LÓPEZ MUGURUZA, Eneritz · LÓPEZ MURILLO, LUCÍA · LUENGAS ESCUZA, Irene · MALDONADO TEIXIDÓ, Joel · MARTÍNEZ PÉREZ, Celia · MARTÍNEZ PRECIADO, Maialen · MARTÍN FERRER, Ikerne · MARTÍN MUÑOZ, Abraham · MARTÍN SUÁREZ, Soraya · MATA SALGADO, Gilda Paloma · MATEOS, Diego Martín · MATO SANTOS, Susana · MENDIZABAL ZUBIAGA, Juan Luis · MIGUEL LÓPEZ, Xabier · MIMENZA SAIZ, Amaia · MIRATA, Fosca · MIRÓN ALCALÁ, Marta · MOCHA MUÑOZ, Naroa · MORO FERNÁNDEZ, María · NEWBOLD, Sylvia Adriana · OCERIN AMONDARAIN, Garazi · OCHOA BUENO, Blanca Isabel · OLANO BRINGAS, Jon · ORDEÑANA MANSO, Aitor · OSEJO OCAMPO, Juan David · OSPITAL, Maria Paula · OTERO GARCÍA, Ane · PALACIOS MENA, Laura · PALOMINO FERNÁNDEZ DE LARREA, Aitor · PEIRÓ MORENO, Carla · PÉREZ FEIJÓO, Jorge · PÉREZ GIANMARCO, Lucila Maite · PÉREZ PASCUAL, Erise · PIRIZ, Joaquín · PRADO PÉREZ, Lucía · PUENTE BUSTINZA, Nagore · RAMOS GONZÁLEZ, Paula · RAMOS URIARTE, Almudena · RAYO MORALES, Raquel · REGUERO ACEBAL, Leire · REYES VELASQUEZ, Pablo Alejandro · RICO BARRIO, Irantzu · RUBIO LÓPEZ, Esther · RUBIO LÓPEZ, Virginia · RUEDA ALAÑA, Eneritz · RUIZ BARREIRO, Leire · SAGARDUY BARRENA, Jaime · SAINZ PRADO, Andrea · SÁNCHEZ GÓMEZ, María Victoria · SANGRÓNIZ BELTRÁN, Lucía · SANTISTEBAN GARCÍA, Ane · SAOUD, Hana · SARRÍA AROSTEGUI, Rafael · SERRANO MURGIA, Maitane · SIERAA SAAVEDRA, Amanda · SORIA GÓMEZ, Edgar Jesús · SORIA LANNES, Federico Nicolas · SOUKUP, Sandra Fausia · TOMÉ VELASCO, Irene · TORRES ALEMÁN, Ignacio · TORRES MALDONADO, Paula · UGARTE ARAKISTAIN, Irune · URIBE IRUSTA, Aitziber · URRESTIZALA ARENAZA, Nerea · VARONA DE LA HERA, Diego · VILLEGAS ZAFRA, Patricia · ZEGARRA VALDIVIA, Jonathan Adrián · ZUGAZA GURRUCHAGA, Jose Luis · ZURITA ALONSO, Ainara

Dr. Alberdi Alfonso has provided intensive support to the Scientific Directorate over the past four years and is now taking on new responsibilities outside of ACHUCARRO

Elena Alberdi leaves her position as Deputy Scientific Director

During these four intense years of the strategic period now coming to an end, Elena's contributions have been essential to ACHUCARRO. Her deep experience and knowledge of the academic and research landscape in our region have greatly enriched the development and progress of our center.

While the management team will undoubtedly miss her, we take comfort in knowing that she will remain an active researcher within our community, even as she assumes new responsibilities at the Spanish State Research Agency (AEI) starting in 2026.

Thank you, Elena, for your dedication, commitment, and outstanding work. Eskerrik asko, bihotzez.

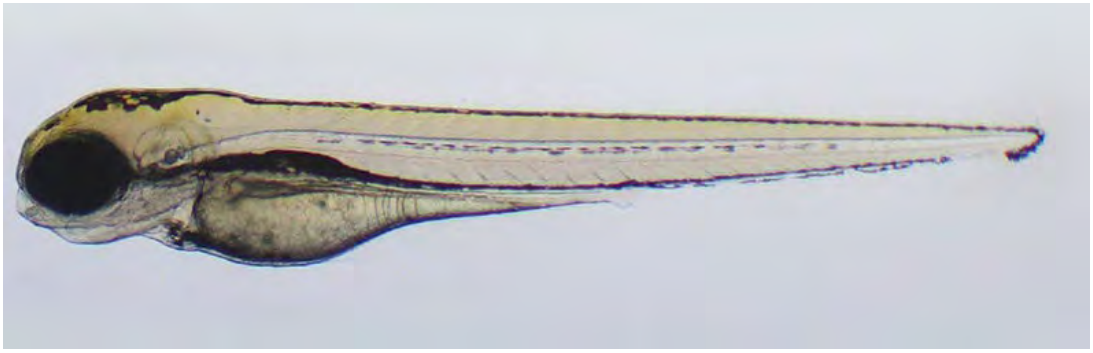
Following the decision of the Board of Trustees, as from January 1st, 2026, Dr. José Luis Zugaza Gurruchaga will take over the position of Deputy Scientific Director.

Identified a specific molecular trigger for early-stage brain signaling disruptions, revealing that Amyloid- β causes premature oligodendrocyte development through Protein Kinase C (PKC) activation.

AMYLOID-BETA ACCELERATES MYELIN FORMATION VIA PKC PATHWAY

Amyloid-β (Aβ)—a peptide central to Alzheimer's disease (AD)—disrupts the development of the central nervous system. While AD is typically associated with late-stage neurodegeneration, this study highlights how early exposure to Aβ can dysregulate the timing of myelination, the process of insulating nerve fibers for efficient signal transmission.

Using the transparent larvae of zebrafish as a model, researchers demonstrated that Aβ does not necessarily kill cells at early stages, but rather "speeds up" their development in a way that leads to structural abnormalities



The findings suggest that the white matter dysfunction seen in Alzheimer's patients may begin far earlier than previously thought, triggered by a specific signalling error. By pinpointing PKC as the "switch" that A β flips to cause these early changes, the research identifies a potential therapeutic target. Protecting the timing and integrity of myelination could offer a new strategy for intervening in the progression of neurodegenerative diseases before irreversible damage occurs

Amyloid-β Dysregulates Oligodendroglial Lineage Cell Dynamics and Myelination via PKC in the Zebrafish Spinal Cord
Balantzategi, U.; Gaminde-Blasco, A.; Kearns, C.A.; Bayón-Cordero, L.; Sánchez-Gómez, M.V.; Zugaza, J.L.; Appel, B.; Alberdi, E.
GLIA (Mar, 2025) DOI: 10.1002/glia.70015

We authored 70 new scientific publications in 2025.
84% of them in the first quartiles of their research fields
89% of the publications are Open Access

4. Research

Programme 1: Neuro-Glial interactions in brain diseases

Coordinator: Abraham MARTÍN MUÑOZ

Glial cells, including astrocytes, microglia, and oligodendrocytes, work in coordination with neurons to support the structural and functional integrity of the nervous system.

The members of this program are experts in different areas of cellular biology and neuroscience, and we set the goal of creating a project in which all members collaborate to understand neural-glial interactions both in health and disease.

Modulating these interactions could offer new avenues for treating or slowing the progression of various brain disorders, such as neurodegenerative diseases.

Elena Alberdi

Nora Bengoa-Vergniory

Estibaliz Capetillo

Abraham Martín Muñoz

Vicky Sánchez Gómez

Jose Luis Zugaza

PROGRAMME 2: GLIAL MODULATION OF BRAIN STRUCTURE AND FUNCTION

Coordinator: Edgar SORIA-GÓMEZ

This programme was designed to bring together investigators studying brain function at different levels.

Under the premise that function follows structure, synapses and networks are investigated morphologically, anatomically, and functionally. With an integrative mindset, glial cells and neurons are considered together.

The study of the glio-neuronal dynamic interaction is of special interest in neurological and neurodegenerative disorders in which the role of glia, via neuroinflammation for instance, is an essential modulator of neuronal survival and activity.


Juan Manuel Encinas


María Domercq


Fernando García-Moreno


Pedro Grandes


Mazahir T. Hasan


Maria Kukley


Nerea Llamosas


Soraya Martín-Suárez


Joaquin Piriz


Edgar Soria-Gómez


Sandra Soukup


Ignacio Torres-Alemán

PROGRAMME 3: GLIOTHERANOSTICS

Coordinator: Federico N. SORIA LANNES

The programme is focused on understanding the properties and capabilities of glial cells in physiological conditions to then exploit them in brain pathologies.

Our research combines our expertise in astrocyte, oligodendrocyte and microglial development, their interaction with other elements of the brain parenchyma (matrix, neurons), and their phagocytic and regenerative potential to identify novel therapeutical targets using mouse models, iPSCs, and xenotransplants.


Amaia Arranz


Mariana Astiz


Izaskun Buendia


Fabio Cavaliere


Héctor Flores-Romero


Susana Mato

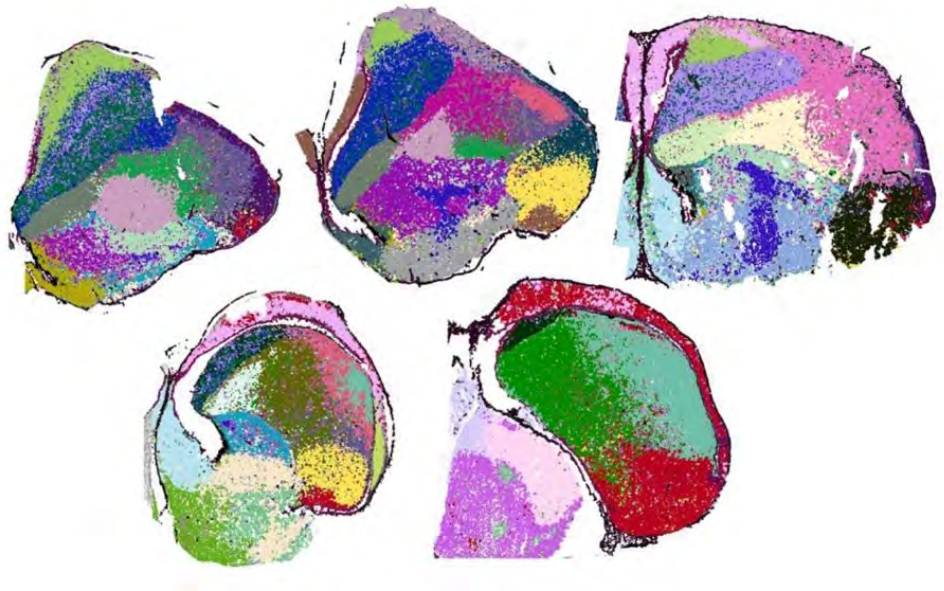

Amanda Sierra


Federico N. Soria

Two studies revealed that birds, reptiles, and mammals developed complex brain circuits independently, despite sharing a common ancestor. These findings challenge the traditional view of brain evolution and demonstrate that, while comparable brain functions exist among these groups, embryonic formation mechanisms and cell types have followed divergent evolutionary trajectories

BIRDS DEVELOPED COMPLEX BRAINS INDEPENDENTLY FROM MAMMALS

A growing body of evidence is reshaping how glial cells are viewed in the context of neurodegenerative diseases. No longer seen as passive support cells, oligodendrocytes are emerging as active contributors to central nervous system pathology.



Research using spatial transcriptomics revealed that sensory neurons in birds and mammals developed through convergent evolution rather than shared ancestry. While birds have preserved ancient inhibitory neurons common to most vertebrates, their excitatory neurons in the pallium have evolved unique genetic profiles. A new cell type atlas confirms that birds, mammals, and reptiles share only a few conserved structures, such as the hippocampus and claustrum. Advanced mathematical modeling and single-cell analysis show that most neural circuits for complex processing are not homologous across these species.

Ultimately, these findings demonstrate that different evolutionary paths led to the independent creation of essential, yet genetically distinct, brain circuits.

Evolutionary convergence of sensory circuits in the pallium of amniotes
Rueda-Alaña, Eneritz; Senovilla-Ganzo, Rodrigo; [...] De Pittà, Maurizio; García-Moreno, Fernando
Science (Feb, 2025) DOI: 10.1126/science.adp3411

Publications

1. Neuroglia in neurodegeneration: Alzheimer, Parkinson, and Huntington disease
   Lim, Dmitry; Matute, Carlos; Cavaliere, Fabio; Verkhratsky, Alexei
   Handbook of Clinical Neurology (Jan, 2025)
   DOI: 10.1016/B978-0-443-19102-2.00012-0
2. Neuroglia in neurodegeneration: Alzheimer, Parkinson, and Huntington disease
   Lim, Dmitry; Matute, Carlos; Cavaliere, Fabio; Verkhratsky, Alexei
   Handbook of Clinical Neurology (In press)
   DOI: 10.1016/B978-0-443-19102-2.00012-0
3. Crosstalk between mitochondria–ER contact sites and the apoptotic machinery as a novel health meter
   Larrañaga-SanMiguel, Alvaro; Bengoa-Vergniory, Nora; Flores-Romero, Hector
   Trends in Cell Biology (Jan, 2025)
   DOI: 10.1016/j.tcb.2024.08.007
4. The signaling landscape of insulin-like growth factor 1
   Khan, M.Z.; Zugaza, J.L.; Torres Aleman, I.
   Journal of Biological Chemistry (Jan, 2025)
   DOI: 10.1016/j.jbc.2024.108047
5. Systematic Review of Brief Cognitive Screening Tools for Identifying Dementia and Mild Cognitive Impairment in Illiterate and Low-Educated Populations
   Zegarra-Valdivia, Jonathan Adrian; Chino-Vilca, Brenda Nadia; Tituana, Kuripacha Alcamari; Zapata-Restrepo, Lina Maria; Unaucho Pilalumbo, Maria M.; de Jesus Lopez Norori, Milton Gerardo; Manrique, Carmen Paredes; Custodio, Nilton
   Alzheimer's & Dementia (Jan, 2025)
   DOI: 10.1002/alz.092576
6. Cortical high-frequency oscillations (≈ 110 Hz) in cats are state-dependent and enhanced by a subanesthetic dose of ketamine
   Castro-Zaballa, Santiago; González, Joaquín; Cavelli, Matías; Mateos, Diego; Pascovich, Claudia; Tort, Adriano; Hunt, Mark Jeremy; Torterolo, Pablo
   Behavioural Brain Research (Jan, 2025)
   DOI: 10.1016/j.bbr.2024.115231
7. Perspective on equal and cross-frequency neural coupling: Integration and segregation of the function of brain networks
   Mateos, Diego M.; Perez Velazquez, Jose Luis
   Physical Review E (Jan, 2025)
   DOI: 10.1103/PhysRevE.111.014408
8. Modulation of Mitochondria–Endoplasmic Reticulum Contacts (MERCs) by Small Molecules as a New Strategy for Restoring Lipid Metabolism in an Amyotrophic Lateral Sclerosis Model
   Etxebeste-Mitxeltorena, Mikel; Flores-Romero, Hector; Ramos-Inza, Sandra; Masiá, Esther; Nenchova, Maria; Montesinos, Jorge; Martinez-Gonzalez, Loreto; Porras, Gracia; Orzáez, Mar; Vicent, María J.; Gil, Carmen; Area-Gomez, Estela; Garcia-Saez, Ana J.; Martinez, Ana
   Journal of Medicinal Chemistry (Jan, 2025)
   DOI: 10.1021/acs.jmedchem.4c01368
9. Microglial lipid phosphatase SHIP1 limits complement-mediated synaptic pruning in the healthy developing hippocampus
   Matera, Alessandro; Compagnion, Anne-Claire; [...] Kerr, William G.; Paolicelli, Rosa C.
   Immunity (Jan, 2025)
   DOI: 10.1016/j.immuni.2024.11.003
10. Functional differentiation of human dental pulp stem cells into neuron-like cells exhibiting electrophysiological activity
    Pardo-Rodríguez, B.; Baraibar, A. M.; Manero-Roig, I.; Luzuriaga, J.; Salvador-Moya, J.; Polo, Y.; Basanta-Torres, R.; Unda, F.; Mato, S.; Ibarretxe, Gaskon; Pineda, Jose Ramon
    Stem Cell Research & Therapy (Jan, 2025)
    DOI: 10.1186/s13287-025-04134-7

11. Astrocyte-secreted factors modulate synaptic protein synthesis revealed by puromycin labelling of isolated synaptosomes
de la Cruz-Gambra, Aida; Baleriola, Jimena
Frontiers in Molecular Neuroscience (Jan, 2025)
DOI: 10.3389/fnmol.2025.1427036
12. A bottom-up approach identifies the antipsychotic and antineoplastic trifluoperazine and the ribose derivative deoxytubercidin as novel microglial phagocytosis inhibitors
Rodriguez-Iglesias, N.; Paris, I.; Valero, J.; Cañas-Zabala, L.; Carretero, A.; Hatje, K.; Zhang, J.D.; Patsch, C.; Britschgi, M.; Gutbier, S.; Sierra, A.
GLIA (Feb, 2025)
DOI: 10.1002/glia.24637
13. Oligodendrocytes and myelin in aging and disease
Sainz, Andrea; Rojas, Rocío; Ruiz, Asier; Matute, Carlos
Ageing and longevity (Feb, 2025)
DOI: 10.47855/jal9020-2025-1-6
14. Dementia and Mild Cognitive Impairment Identification in Illiterate and Low-Educated People: Systematic Review About the Use of Brief Cognitive Screening Tools
Zegarra-Valdivia, Jonathan Adrián; Chino, Brenda; Tituana, Kuripacha; Zapata-Restrepo, Lina; Unaucho, María Martha; Lopez-Norori, Milton; Paredes-Manrique, Carmen; Custodio, Nilton
Behavioral Sciences (Feb, 2025)
DOI: 10.3390/bs15020207
15. Evolutionary convergence of sensory circuits in the pallium of amniotes
Rueda-Alaña, Eneritz; Senovilla-Ganzo, Rodrigo; [...] De Pittà, Maurizio; García-Moreno, Fernando
Science (Feb, 2025)
DOI: 10.1126/science.adp3411
16. Developmental origins and evolution of pallial cell types and structures in birds
Zaremba, Bastienne; Fallahshahroudi, Amir; Schneider, Céline; Schmidt, Julia; Sarropoulos, Ioannis; Leushkin, Evgeny; Berki, Bianka; Van Poucke, Enya; Jensen, Per; Senovilla-Ganzo, Rodrigo; Hervas-Sotomayor, Francisca; Trost, Nils; Lamanna, Francesco; Sepp, Mari; García-Moreno, Fernando; Kaessmann, Henrik
Science (Feb, 2025)
DOI: 10.1126/science.adp5182
17. In Vivo Assessment of Cortical Astrocyte Network Dysfunction During Autoimmune Demyelination: Correlation With Disease Severity
Moreno-García, A.; Serrat, R.; Julio-Kalajzic, F.; Bernal-Chico, A.; Baraibar, A. M.; Matute, C.; Marsicano, G.; Mato, S.
Journal of Neurochemistry (Feb, 2025)
DOI: 10.1111/jnc.16305
18. Pseudopus apodus Soft Tissue Anatomy Based on Comparison of Classical Dissection and Multi-Detector Computed Tomography
García-Real, María Isabel; Fernández-Valle, Encarnación; Jiménez, Sara; Ruiz-Fernández, María José; Castejón-Ferrer, David; Montesinos-Barceló, Andrés; Ardiaca-García, María; Moreno, Nerea; González-Soriano, Juncal
Animals (Feb, 2025)
DOI: 10.3390/ani15050615
19. Astrocyte-neuron signaling in aging
Noeker, Jacob; Nanclares, Carmen; Araque, Alfonso; Baraibar, Andrés
Ageing and longevity (Feb, 2025)
DOI: 10.47855/jal9020-2025-2-5
20. Validation of the Cognitive-Emotional Perspective Taking test in patients with neurodegeneration
Zegarra-Valdivia, Jonathan Adrián; Shany-Ur, Tal; Rijpma, Myrthe Gwen; Callahan, Patrick; Poorzand, Pardis; Grossman, Scott; McEachen, Bailey; Kramer, Joel H; Miller, Bruce L; Rankin, Katherine P
Journal of Alzheimer's Disease (Mar, 2025)
DOI: 10.1177/13872877251317683
21. Early Identification of Autism Using Cry Analysis: A Systematic Review and Meta-analysis of Retrospective and Prospective Studies
Pusil, Sandra; Laguna, Ana; Chino, Brenda; Zegarra, Jonathan Adrián; Orlandi, Silvia
Journal of Autism and Developmental Disorders (Mar, 2025)
DOI: 10.1007/s10803-025-06757-4

22. Exploring the neural basis of creativity: EEG analysis of power spectrum and functional connectivity during creative tasks in school-aged children
Krumm, Gabriela; Arán Filippetti, Vanessa; Catanzariti, Magaly; Mateos, Diego M.
Frontiers in Computational Neuroscience (Mar, 2025)
DOI: 10.3389/fncom.2025.1548620
23. Del Río Hortega's insights into oligodendrocytes: recent advances in subtype characterization and functional roles in axonal support and disease
López-Muguruza, Eneritz; Peiró-Moreno, Carla; Pérez-Cerdá, Fernando; Matute, Carlos; Ruiz, Asier
Frontiers in Neuroanatomy (Mar, 2025)
DOI: 10.3389/fnana.2025.1557214
24. Amyloid-β Dysregulates Oligodendroglial Lineage Cell Dynamics and Myelination via PKC in the Zebrafish Spinal Cord
Balantzategi, U.; Gaminde-Blasco, A.; Kearns, C.A.; Bayón-Cordero, L.; Sánchez-Gómez, M.V.; Zugaza, J.L.; Appel, B.; Alberdi, E.
GLIA (Mar, 2025)
DOI: 10.1002/glia.70015
25. Prevalence and risk factors of Mild Cognitive Impairment and Dementia in Northern Peru
Zegarra-Valdivia, Jonathan Adrián; Pérez-Fernández, Leandro; [...] Castro-Suarez, Sheila; Custodio, Nilton
Frontiers in Public Health (Mar, 2025)
DOI: 10.3389/fpubh.2025.1567073
26. Microglia regulate myelin clearance and cholesterol metabolism after demyelination via interferon regulatory factor 5
Montilla, Alejandro; Zabala, Alazne; Calvo, Ibai; Bosch-Juan, Marina; Tomé-Velasco, Irene; Mata, Paloma; Koster, Mirjam; Sierra, Amanda; Kooistra, Susanne M.; Soria, Federico N.; Eggen, Bart J. L.; Fresnedo, Olatz; Fernández, José Andrés; Tepavcevic, Vanja; Matute, Carlos; Domercq, María
Cellular and Molecular Life Sciences (Mar, 2025)
DOI: 10.1007/s00018-025-05648-2
27. Insulin-like Growth Factor 1 Impact on Alzheimer's Disease: Role in Inflammation, Stress, and Cognition
Zegarra-Valdivia, Jonathan; Arana-Nombera, Harold; Perez-Fernandez, Leandro; del Rocío Casimiro, Milagros; Gallegos-Manayay, Viviana; del Rosario Oliva-Piscoya, María; Alamo-Medina, Reyna; Abanto-Saldaña, Eduardo; Cruz-Ordinola, María Celinda; Paredes-Manrique, Carmen; Chino-Vilca, Brenda
Current Issues in Molecular Biology (Mar, 2025)
DOI: 10.3390/cimb47040233
28. Cognitive and Adaptive Functioning of CTNNB1 Syndrome Patients: A Comparison With Autism Spectrum Disorder and Cerebral Palsy
Pallarès-Sastre, Mercè; Amayra, Imanol; Pulido, Rafael; Nunes-Xavier, Caroline E.; Bañuelos, Sonia; Cavaliere, Fabio; García, Maitane
Journal of Intellectual Disability Research (Mar, 2025)
DOI: 10.1111/jir.13235
29. Understanding the Importance of Blood-Brain Barrier Alterations in Brain Arteriovenous Malformations and Implications for Treatment: A Dynamic Contrast-Enhanced-MRI–Based Prospective Study
Mosteiro, Alejandra; Pedrosa, Leire; Amaro, Sergio; Menéndez-Girón, Sebastián; Reyes, Luis; de Riva, Nicolás; Misis, Maite; Blasco, Jordi; Vert, Carla; Dominguez, Carlos J.; Enseñat, Joaquim; Martín, Abraham; Rodriguez-Hernández, Ana; Torné, Ramon
Neurosurgery (Apr, 2025)
DOI: 10.1227/neu.0000000000003159
30. The effect of traumatic brain injury on learning and memory: A synaptic focus
Eyolfson, Eric; Suesser, Kirsten R. B.; Henry, Holly; Bonilla-Del Río, Itziar; Grandes, Pedro; Mychasiuk, Richelle; Christie, Brian R.
The Neuroscientist (Apr, 2025)
DOI: 10.1177/10738584241275583
31. Optimized SARS-CoV-2 spike protein detection via coupling coefficient-driven fast fourier transform analysis in a peptide-functionalized fiber optic biosensor
Arrizabalaga, Oskar; Andres, Alain Castaño; Zugaza, Jose L.; Zubia, Joseba Sensors and Actuators B: Chemical (Apr, 2025)
DOI: 10.1016/j.snb.2025.137226

32. Oleoylethanolamide effects on stress-induced ethanol consumption: A lipid at the crossroads between stress, reward and neuroinflammation
Montagud-Romero, Sandra; González-Portilla, Macarena; Mellado, Susana; Grandes, Pedro; de Fonseca, Fernando Rodríguez; Pascual, María; Rodríguez-Arias, Marta
Progress in Neuro-Psychopharmacology and Biological Psychiatry (Apr, 2025)
DOI: 10.1016/j.pnpbp.2025.111365
33. Purinergic receptor antagonism reduces interictal discharges and rescues cognitive function in a mouse model of temporal lobe epilepsy
Espinosa, Nelson; Martín-Suárez, Soraya; Lara-Vasquez, Ariel; Montero, Trinidad; Muro-García, Teresa; Fernandez, German; Encinas-Pérez, Juan Manuel; Fuentealba, Pablo
Frontiers in Neuroscience (Apr, 2025)
DOI: 10.3389/fnins.2025.1513135
34. Novel CTNNB1 Gene Variants in Spanish CTNNB1 Syndrome Patients: Clinical and Psychological Manifestations
Pallarès-Sastre, Mercè; Amayra, Imanol; Pulido, Rafael; Nunes-Xavier, Caroline E.; Bañuelos, Sonia; Cavaliere, Fabio; García, Maitane
Journal of Autism and Developmental Disorders (Apr, 2025)
DOI: 10.1007/s10803-025-06829-5
35. Off-the-grid regularisation for Poisson inverse problems
Lazzaretti, Marta; Estatico, Claudio; Melero, Alejandro; Calatroni, Luca
Computational Optimization and Applications (May, 2025)
DOI: 10.1007/s10589-025-00688-7
36. Epigenetic priming of neural progenitors by Notch enhances Sonic hedgehog signaling and establishes gliogenic competence
Tran, Luuli N.; Shinde, Ashwini; Schuster, Kristen H.; Sabaawy, Aiman; Dale, Emily; Welch, Madalynn J.; Isner, Trevor J.; Nunez, Sylvia A.; García-Moreno, Fernando; Sagerström, Charles G.; Appel, Bruce H.; Franco, Santos J.
Genes & Development (May, 2025)
DOI: 10.1101/gad.352555.124
37. Chronic treatment with adenosine A1 receptor antagonist promotes neurogenesis and improves outcome after cerebral ischemia
Ardaya, Maria; Benito-Muñoz, Monica; Rubio-López, Esther; Garbizu, Maider; Aguado, Laura; Mocha-Muñoz, Naroa; Iglesias, Leyre; Aldutzin, Unai; Matute, Carlos; Soria, Federico N; Gómez-Vallejo, Vanessa; García-Etxarri, Aitzol; Llop, Jordi; Cavaliere, Fabio; Martín, Abraham
Journal of Cerebral Blood Flow & Metabolism (May, 2025)
DOI: 10.1177/0271678X251345294
38. Neuroimaging and immunofluorescence of the Pseudopus apodus brain: unraveling its structural complexity
Jiménez, S.; Morona, R.; Ruiz-Fernández, M. J.; Fernández-Valle, E.; Castejón, D.; García-Real, M. I.; González-Soriano, J.; Moreno, N.
Brain Structure and Function (May, 2025)
DOI: 10.1007/s00429-025-02940-6
39. Omega-3 Fatty Acids Mitigate Long-Lasting Disruption of the Endocannabinoid System in the Adult Mouse Hippocampus Following Adolescent Binge Drinking
Serrano, Maitane; Saumell-Esnaola, Miquel; Ocerin, Garazi; García del Caño, Gontzal; Soria-Gómez, Edgar; Mimenza, Amaia; Puente, Nagore; Bonilla-Del Río, Itziar; Ramos-Uriarte, Almudena; Reguero, Leire; Christie, Brian R.; Rodríguez de Fonseca, Fernando; Rodríguez-Arias, Marta; Gerrikagoitia, Inmaculada; Grandes, Pedro
International Journal of Molecular Sciences (Jun, 2025)
DOI: 10.3390/ijms26125507
40. Beyond the brain: early autonomic dysfunction in Alzheimer's disease
Nanclares, Carmen; Colmena, Inés; Muñoz-Montero, Alicia; Baraibar, Andrés M.; de Pascual, Ricardo; Wojnicz, Aneta; Ruiz-Nuño, Ana; García, Antonio G.; Gironda-Martínez, Adrián; Gandía, Luis Acta
Neuropathologica Communications (Jun, 2025)
DOI: 10.1186/s40478-025-02042-8
41. CITA GO-ON study. A community based multidomain lifestyle intervention to prevent cognitive decline. Protocol design and recruitment process
Tainta, Mikel; Ecay-Torres, Mirian; [...] Mar, Javier; Martinez-Lage, Pablo
Frontiers in Aging Neuroscience (Jun, 2025)
DOI: 10.3389/fnagi.2025.1539711

42. Astrocytic Glucose Sensing Drives Synaptic Depression under Metabolic Stress
Baraibar, Andrés M.; Ardanaz, Carlos G.; Mato, Susana; Kofuji, Paulo; Araque, Alfonso; Solas, Maite
Aging and disease (Jun, 2025)
DOI: 10.14336/AD.2025.0507
43. Blood-Brain Barrier Disruption Predicts Poor Outcome in Subarachnoid Hemorrhage: A Dynamic Contrast–Enhanced MRI Study
Llull, Laura; Santana, Daniel; Mosteiro, Alejandra; Pedrosa, Leire; Laredo, Carlos; Zattera, Luigi; Hurtado, Paola; Werner, Mariano; Martín, Abraham; Torné, Ramón; Planas, Anna M.; Chamorro, Ángel; Amaro, Sergi
Stroke (Jun, 2025)
DOI: 10.1161/STROKEAHA.125.051455
44. Building Immunocompetent Cerebral Organoids From a Developmental Perspective
Cuesta-Puente, Xabier; Gonzalez-Dominguez, Marco; Pereira-Iglesias, Marta; Perez-Arriazu, Nerea; Villegas-Zafra, Patricia; Ramos-Gonzalez, Paula; Cavaliere, Fabio; Bengoa-Vergniory, Nora; Sierra, Amanda
Glia (Jul, 2025)
DOI: 10.1002/glia.70062
45. Anxiety and perceived social support as moderators of cognitive and emotional well-being in populations affected by COVID-19
Zegarra-Valdivia, Jonathan; Chino-Vilca, Brenda; Pérez-Fernández, Leandro; Casimiro-Arana, Milagros; Arana-Nombera, Harold; Gallegos-Manayay, Viviana Nayelli; Oliva-Piscoya, María del Rosario; Alamo-Medina, Reyna; Abanto-Saldaña, Eduardo; Vásquez-Zuñe, Nobuko; Pérez, Lisseth Detquizan; Gutierrez-Flores, Diana; Tantarico, Leslie Lozada; Hernández, Naydelin; Cruz-Ordinola, María Celinda; Paredes-Manrique, Carmen
Frontiers in Public Health (Jul, 2025)
DOI: 10.3389/fpubh.2025.1562894
46. Not just for bonding: Nucleus accumbens oxytocin receptors facilitate huddling with strangers and feeding in male spiny mice
Fricker, Brandon A.; Boender, Arjen J.; Young, Larry J.; Kelly, Aubrey M.
Psychoneuroendocrinology (Aug, 2025)
DOI: 10.1016/j.psyneuen.2025.107496
47. Biphasic changes in hippocampal granule cells after traumatic brain injury
Danielewicz, Joanna; Llamosas, Nerea; Durá, Irene; de Souza, Danillo Barros; Rodrigues, Serafim; Encinas-Pérez, Juan Manuel; Mateos, Diego Martin
Experimental Neurology (Aug, 2025)
DOI: 10.1016/j.expneurol.2025.115281
48. Disruption of hnRNP A2-mediated RNA dynamics by amyloid-β drives MBP increase in Alzheimer's disease
Gaminde-Blasco, Adhara; Senovilla-Ganzo, Rodrigo; Balantzategi, Uxue; Martinez-Preciado, Maialen; Capetillo-Zarate, Estibaliz; García-Moreno, Fernando; Matute, Carlos; Baleriola, Jimena; Alberdi, Elena
Cellular and Molecular Life Sciences (Aug, 2025)
DOI: 10.1007/s00018-025-05823-5
49. Surrogate Molecular Biomarkers for Poststroke Cognitive Impairment: A Narrative Review
Gorostiola-Oyarzabal, Nerea; Joya, Ana; Freijo, Mari Mar; Martín, Abraham; Mancini, Simona
Stroke (Aug, 2025)
DOI: 10.1161/STROKEAHA.124.050507
50. Potentiation of mitochondrial function by mitoDREADD-Gs reverses pharmacological and neurodegenerative cognitive impairment in mice
Pagano Zottola, Antonio C.; Martín-Jiménez, Rebeca; [...] Bellocchio, Luigi; Hebert-Chatelain, Etienne
Nature Neuroscience (Aug, 2025)
DOI: 10.1038/s41593-025-02032-y
51. Detection of EEG dynamic complex patterns in disorders of consciousness
Della Bella, Gabriel A.; Zang, Di; Gui, Peng; Mateos, Diego M.; Sitt, Jacobo D.; Bekinschtein, Tristan A.; Manasova, Dragana; Sarton, Benjamine; Ferre, Fabrice; Silva, Stein; Lamberti, Pedro W.; Wu, Xuehai; Mao, Ying; Wang, Liping; Barttfeld, Pablo
Communications Biology (Aug, 2025)
DOI: 10.1038/s42003-025-08666-9

52. Gliogenesis from the subventricular zone modulates the extracellular matrix at the glial scar after brain ischemia
Ardaya, Maria; Tiveron, Marie-Catherine; Cremer, Harold; Dehay, Benjamin; Pérez-Cerdá, Fernando; Matute, Carlos; Soria, Federico N.; Cavaliere, Fabio
eLife (Aug, 2025)
DOI: 10.7554/eLife.96076.3
53. Stepwise approach to alzheimer's disease diagnosis in primary care using cognitive screening, risk factors, neuroimaging and plasma biomarkers
Altuna, Miren; García-Sebastián, Maite; Cipriani, Raffaela; Capetillo-Zarate, Estibaliz; Alberdi, Elena; Estanga, Ainara; Ecay-Torres, Mirian; Iriondo, Ane; Saldias, Jon; Cañada, Marta; López, Carolina; Arriba, Maria; Tainta, Mikel; Martínez-Lage, Pablo
Scientific Reports (Aug, 2025)
DOI: 10.1038/s41598-025-17394-3
54. When Heroes Fall: Reduced Expression of Heat-Resistant Obscure Proteins in Ischemic Stroke
Dorofeeva, Anna; Kobzeva, Ksenia; Soldatov, Vladislav; Bushueva, Olga
NeuroMolecular Medicine (Sep, 2025)
DOI: 10.1007/s12017-025-08885-7
55. Longitudinal imaging evaluation of the inflammatory role of purinergic A2A receptors during subacute and chronic ischemic stroke
Garbizu, Maider; Mocha-Muñoz, Naroa; [...] Llop, Jordi; Martín, Abraham
Journal of Cerebral Blood Flow & Metabolism (Sep, 2025)
DOI: 10.1177/0271678X251370835
56. Clozapine induces perineuronal net remodeling in a developmental mouse model exhibiting schizophrenia-relevant phenotypes
García-Cerro, Susana; Gómez-Garrido, Ana; Soria, Federico N.; Loucera, Carlos; Crespo-Facorro, Benedicto
Neuropsychopharmacology (Sep, 2025)
DOI: 10.1038/s41386-025-02210-3
57. Large-scale visualization of α-synuclein oligomers in Parkinson's disease brain tissue
Andrews, Rebecca; Fu, Bin; [...] Gandhi, Sonia; Lee, Steven F.
Nature Biomedical Engineering (Oct, 2025)
DOI: 10.1038/s41551-025-01496-4
58. Genotype-phenotype characterization and functional reconstitution of pathogenic β-catenin variants from CTNNB1 syndrome patients
Nunes-Xavier, Caroline E.; Pallarès-Sastre, Mercè; Rodríguez-Ramos, Ana; Bañuelos, Sonia; Cortajarena, Irune; Cavaliere, Fabio; Ruiz-Espinoza, Cynthia; Llano-Rivas, Isabel; García, Maitane; Amayra, Imanol; Pulido, Rafael
PLOS Genetics (Oct, 2025)
DOI: 10.1371/journal.pgen.1011907
59. Influence of Lifestyle on Brain Sensitivity to Circulating Insulin-like Growth Factor 1
Zegarra-Valdivia, Jonathan; Khan, M. Zahid; Putzolu, Aurora; Cipriani, Raffaela; Pignatelli, Jaime; Torres Aleman, Ignacio International
Journal of Molecular Sciences (Oct, 2025)
DOI: 10.3390/ijms262010008
60. Positive allosteric modulators of purinergic P2X4 receptors: design, synthesis and therapeutic potential of "click" ligands for multiple sclerosis
Mata, Paloma; Sagartzazu-Aizpurua, Maialen; Berehova, Nataliia; Miranda, José Ignacio; Montilla, Alejandro; Bosch-Juan, Marina; Sánchez-Gómez, Maria Victoria; Matute, Carlos; Pérez-Samartín, Alberto; Aizpurua, Jesus M.; Domercq, Maria
European Journal of Medicinal Chemistry (Oct, 2025)
DOI: 10.1016/j.ejmech.2025.117862
61. SARS-CoV-2-induced damage to rat cortical neuronal networks ex vivo is mediated by the pro-inflammatory activation of the cGAS-STING pathway
Martinez-Orellana, Pamela; Manzati, Matteo; Pozzi, Diletta; Xiao, Yingying; Di Clemente, Alessio; Mearelli, Marika; Kalebić, Chiara; Perrera, Valentina; Ferrarini, Denise; Carletti, Tea; Falcone, Carmen; Giugliano, Michele; Marcello, Alessandro
Journal of NeuroVirology (Oct, 2025)
DOI: 10.1007/s13365-025-01283-6

62. CRISPR-mediated knockdown of oxytocin receptor in extended amygdala reduces stress-induced social avoidance in female California mice
Cea Salazar, Valentina I.; Boender, Arjen J.; Seelke, Adele M. H.; Gaard, Liam; Mederos, Sabrina L.; Rogers, Sophia; Gutierrez, Xiomara Z.; Bales, Karen L.; Young, Larry J.; Trainor, Brian C.
Hormones and Behavior (Nov, 2025)
DOI: 10.1016/j.yhbeh.2025.105845
63. RNA-binding protein IMP1/ZBP1 directs local translation in microglial processes to regulate motility and phagocytosis during inflammation
Imaz-Iruretagoyena, Josune; Blanco-Urrejola, Maite; Núñez-García, Irene; García-Toledo, Irene; Fernández-Beltrán, Luis C.; Márquez, Mar; Corrochano, Silvia; Sierra, Amanda; Baleriola, Jimena
PLOS Biology (Nov, 2025)
DOI: 10.1371/journal.pbio.3003463
64. Astrocytes as Therapeutic Targets in Neurodegenerative Disorders
Salas, Isabel H.; Alfonso-Triguero, Maria; Díaz Castro, Blanca; Elazar, Nimrod; Escartin, Carole; Akl, Camilo Faust; Hill, Steven A.; Quintana, Francisco J.; Arranz, Amaia M.
The Journal of Neuroscience: The Official Journal of the Society for Neuroscience (Nov, 2025)
DOI: 10.1523/JNEUROSCI.1379-25.2025
65. Study of changes in brain dynamics during sleep cycles in dogs under effect of trazodone
Catanzariti, Magaly; Mondino, Alejandra; Torterolo, Pablo; Aimar, Hugo; Olby, Natasha J.; Mateos, Diego M.
PLOS ONE (Nov, 2025)
DOI: 10.1371/journal.pone.0335159
66. An astrocytic ensemble at vHip-NAc synapses modulates cognitive impairments induced by chronic tetrahydrocannabinol exposure
Martín-Monteagudo, Cristina; Sánchez Romero, Javier; Adams, Julia M.; Puente, Nagore; Grandes, Pedro; Marsicano, Giovanni; Covelo, Ana; Khakh, Baljit S.; Navarrete, Marta
Nature Communications (Dec, 2025)
DOI: 10.1038/s41467-025-67166-w
67. Vesicular Rps6 Released by Astrocytes in an Experimental Model of AD Regulates Local Translation and Enhances Synaptic Integrity in Neurones
Gamarra, María; Cruz-Gambra, Aida de la; Blanco-Urrejola, Maite; González, Esperanza; Azkargorta, Mikel; Elortza, Felix; Falcón-Pérez, Juan Manuel; Baleriola, Jimena
Journal of Extracellular Vesicles (Dec, 2025)
DOI: 10.1002/jev2.70216
68. Effects of omega-3 fatty acids on CB1 cannabinoid receptor localization in the hippocampal CA1 region following alcohol withdrawal in adolescent male mice
Grandes, Pedro; Serrano, Maitane; Lekunberri, Leire; Ocerin, Garazi; Saumell-Esnaola, Miquel; Caño, Gontzal García del; Puente, Nagore; Río, Itziar Bonilla-Del
Adicciones (Dec, 2025)
DOI: 10.20882/adicciones.2408
69. A dwdr45 knock-out drosophila model to decipher the role of autophagy in BPAN
Celle, Marion; Aniorte, Sahra; Issa, Abdul-Raouf; Falabregue, Marion; Jin, Haixiu; Sanchez-Mirasierra, Irene; Ding, Shuzhe; Soukup, Sandra-Fausia; Seugnet, Laurent; Liao, Lujian; Lesca, Gaetan; Walter, Ludivine; Mollereau, Bertrand
Human Molecular Genetics (Dec, 2025)
DOI: 10.1093/hmg/ddaf198
70. Connectivity of the adult human brain with sequential neurogenesis of circuits and transcriptomics signatures
Diez, Ibai; García-Moreno, Fernando; Carral-Sainz, Nayara; Stramaglia, Sebastiano; Nieto-Reyes, Alicia; D'Amato, Mauro; Cortes, Jesús M.; Bonifazi, Paolo
Nature Communications (Dec, 2025)
DOI: 10.1038/s41467-025-67785-3

Population aging in developed countries, driven by increasing life expectancy, poses significant social, scientific, and economic challenges. The ITTHACA (ITT: Healthy Aging and Care Autonomy) project, funded by the Basque Government strategic initiatives

ITTHACA project consortium to promote healthy aging in the Basque Country

This collaborative initiative involved six research institutions in the Basque Country: ACHUCARRO, AZTI, Biobizkaia HRI, CITA-Alzheimer, Mondragon University and Tecnalia and is funded by the Elkartek programme.

ITTHACA is based on a multimodal cognitive decline prevention study called CITA GO-ON, which adapts a Finnish model to the Basque cultural, healthcare, and social context and includes five healthy lifestyle measures: exercise, mental stimulation, social activities, a heart-healthy diet, and risk factor control.

"Entornos influyentes hacia un envejecimiento saludable: del macro al micro"
Ayudas al diseño de proyectos tractores transversales colaborativos de investigación y desarrollo 2023
Eusko Jaurlaritza / Gobierno Vasco

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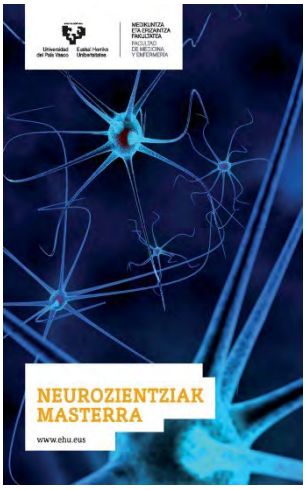
To drive innovation and meet the world's most pressing challenges, scientific research relies on open knowledge sharing as a foundation for sustainable, long-term impact.

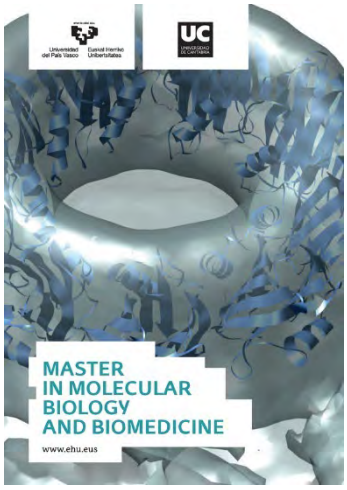
5. Knowledge Transfer

POSTGRADUATE EDUCATION

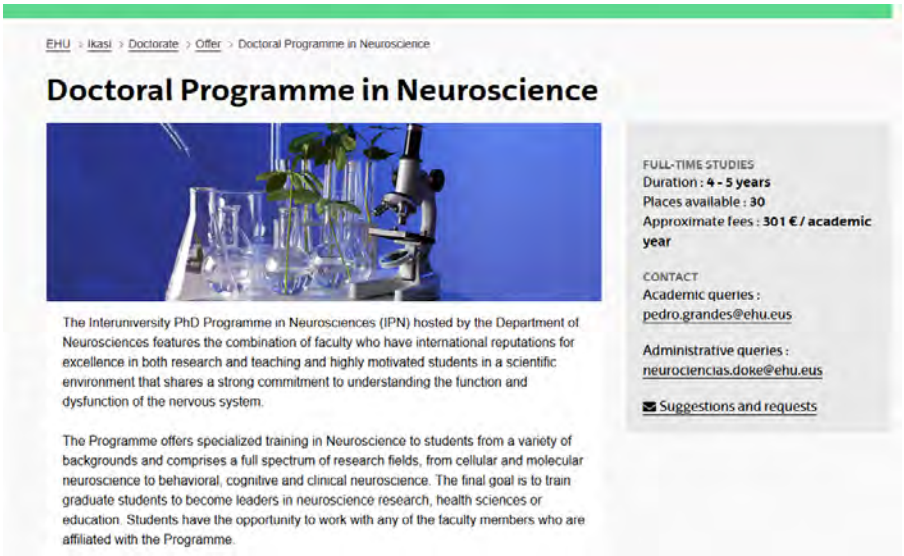
The researchers at ACHUCARRO collaborate with three local Masters' programmes coordinated by the University of the Basque Country (EHU):

- Neuroscience
- Molecular Biology and Biomedicine
- Pharmacology, Development, Assessment, and Rational Use of Medicines





We also collaborate with the EHU's Doctoral Programme in Neuroscience.



EHU › Ikasi › Doctorate › Offer › Doctoral Programme in Neuroscience

Doctoral Programme in Neuroscience

The Interuniversity PhD Programme in Neurosciences (IPN) hosted by the Department of Neurosciences features the combination of faculty who have international reputations for excellence in both research and teaching and highly motivated students in a scientific environment that shares a strong commitment to understanding the function and dysfunction of the nervous system.

The Programme offers specialized training in Neuroscience to students from a variety of backgrounds and comprises a full spectrum of research fields, from cellular and molecular neuroscience to behavioral, cognitive and clinical neuroscience. The final goal is to train graduate students to become leaders in neuroscience research, health sciences or education. Students have the opportunity to work with any of the faculty members who are affiliated with the Programme.

FULL-TIME STUDIES
Duration : **4 - 5 years**
Places available : **30**
Approximate fees : **301 € / academic year**

CONTACT
Academic queries :
pedro.grandes@ehu.eus

Administrative queries :
neurociencias.doke@ehu.eus

Suggestions and requests

Congratulations
Zorionak Aida, Ane, Carla, Ester, Joan, Leire, María, Marta, Paloma, Rodrigo, Teresa !

11 PhD theses completed in 2025

- Dr. Maria Alfonso Triguero
  Using humanized models to study the role of human astrocytes in Alzheimer´s disease
- Dr. Teresa Colomer Molla
  Astrocyte metabolic reprogramming and neuroinflammation in multiple sclerosis: modulation by CB1 receptors
- Dr. Joan Cruz Sesé
  Astrocyte Dysfunction in Alzheimer's Disease: From APOE Genetic Risk to Calcium Signaling
- Dr. Aida de la Cruz Gambra
  Contribution of astrocyte-derived extracellular vesicles to neuronal local translation and synaptic function in Alzheimer's disease
- Dr. Leire Lekunberri Odriozola
  Nerabezaroko gehiegizko alkohol kontsumoak sagu eme helduaren endokannabinoide sistemak modulatzen dituen garuneko plastikotasunean eta memorian dituen eraginak
- Dr. Gilda Paloma Mata Salgado
  P2X4 Purinergic Receptor- Based Therapeutic Strategies for Experimental Multiple Sclerosis
- Dr. Carla Peiró Moreno
  Biological effects of myelin internalization in the oligodendroglial
- Dr. Marta Pereira Iglesias
  Microglia development: from proliferative progenitors to functional phagocytes
- Dr. Ester Sánchez Martín
  Cannabinoid CB1 receptors in oligodendrocyte lineage cells: regulation of energy metabolism and relevance to multiple sclerosis
- Dr. Ane Santisteban García
  Interacción metabólica entre el glucógeno y la o-glcnacilación de galectina 1: un nuevo paradigma en la regulación glial de la enfermedad de alzheimer.
- Dr. Rodrigo Senovilla Ganzo
  The brain bauplan sheds light on evo-devo constraints

ACHUCARRO SEMINARS

JANUARY

24 • Characterization of cerebral arteriovenous malformation and the secondary injury after surgical resection in rats by multimodal imaging
Laura Aguado Santos
Laboratory of Neuroimaging and Biomarkers of Inflammation, ACHUCARRO

24 • Unravelling the restoration of glycogen metabolism and cellular function in Glycogen Storage disease type V
Ane Santisteban García
Laboratory of GTPases and Neurosignalling, ACHUCARRO

31 • Active Electrode Array devices for monitoring neural activity
Luca Berdondini
Fondazione Istituto Italiano di Tecnologia [IIT] (Genova, Italy)

FEBRUARY

07 • Essential Astrocytic GLUT1-IR crosstalk in Alzheimer's disease
Maite Solas Zubiaurre
Universidad de Navarra (Iruña-Pamplona)

21 • Epileptiform activity induces sex-dependent behavioral changes
Pablo Reyes Velásquez
Laboratories of Cellular Basis of Behavior and Disease, and Neurogenesis, Neuroinflammation and Network Dynamics, ACHUCARRO

28 • Protein Biomarkers by qPCR in One Microliter of Any Sample Type
Cobiomic Bioscience

MARCH

07 • Exploring neuroprotective Mechanisms of Cognitive Preservation in Alzheimer's: Resilience vs Resistance
Ibai Díez Palacio
BioBizkaia HRI (Barakaldo) & Massachusetts General Hospital (USA)

14 • BiaPy: Accessible deep learning for bioimages
Ignacio Arganda Carreras
UPV/EHU & DIPC & Biofisika Institute & Ikerbasque

27 • New insights into Cerebral Amyloid Angiopathy: Biomarkers and potential therapeutic approaches
Mar Hernández-Guillamon
Vall d'Hebron Research Institute (VHIR), Barcelona

APRIL

04
- The Role of Insulin-like Growth Factor-I (IGF-I) in Modulating Behavior and Lifestyle Habits
  Jonathan Zegarra Valdivia
  Laboratory of Neurobiology of Insulin Peptides, ACHUCARRO

11
- Astrocyte alterations in Alzheimer's disease
  Isabel Salas
  Salk Institute (USA)

MAY

06
- Novel Insights into the Neurobiological Actions of GHSR: Ghrelin, LEAP2, and Beyond
  Mario Perelló
  Uppsala Universitet (Sweden)

09
- From the NMDA receptor paradox to a new pharmacological principle for the treatment of neurodegenerative diseases
  Hilmar Bading
  Universität Heidelberg (Deutschland)

13
- Marsupials illuminate the functional development of cortical maps
  Rodrigo Suárez
  University of Queensland (Australia)

15
- LUMINEX: Technology, Applications and Portfolio. Insights into multiplexed gene expression quantification with QuantiGene
  Emilio Sawaya
  ThermoFisher

23
- Decoding Neural Computation Across Scales: High-Resolution Neuroelectronic Platforms for Multimodal Circuit Analysis
  Hayder Amin
  DZNE Dresden (Deutschland)

30
- Virus delivered, brain circuit targetable, tightly-controlled inducible gene expression system in the mammalian brain
  Gorka Kortabarria Pérez
  Laboratories of Brain Circuits Therapeutics & Neurogenesis, Neuroinflammation and Network Dynamics, ACHUCARRO

JUNE

09
- Flow Cytometry
  Jose Ligos
  Cytek Biosciences

12
- Microglial tessellation: role of spatial cues and neuronal activity on microglial colonization and maturation
  Joel Maldonado Teixidó
  Laboratory of Glial Cell Biology in Health and Disease, ACHUCARRO

12 • Unravelling the ontogeny of the mouse master clock
Denise Ferrarini
Laboratory of Circadian Physiology of Neurons and Glia, ACHUCARRO

20 • Molecular mechanisms governing projection-neuron-specific myelination in the cortex
Nuria Domínguez Iturza
Harvard University (Boston, USA)

20 • Neuronal dynamics induced by rapid learning reshape visual perception in the human brain
Marcelo Armendariz Gil
Harvard University (Boston, USA)

JULY

04 • Single-neuron Projectomes in Mouse and Macaque Brains
Jun Yan
Institute of Neuroscience, Chinese Academy of Sciences (China)

SEPTEMBER

15 • Neuropeptide involvement in rat models of alcohol and opioid dependence
Brendan Tunstall
The University of Tennessee Health Science Center (USA)

19 • Development and disease at single-cell resolution
Malte Spielmann
Universität zu Lübeck (Germany)

26 • Impact of chemogenetic activation of oligodendrocytes in emotional behaviour
Stefano Calovi
Laboratory of Glia and Matrix Biology, ACHUCARRO

OCTOBER

24 • Astrocytes Release 2-Arachidonoylglycerol to Modulate Brain Function and Behavior
Abel Eraso-Pichot
Neurocentre Magendie - INSERM (Bordeaux, FR)

31 • Impact of perinatal circadian disturbance on later life health and sleep
Inês Chaves
Erasmus MC (The Netherlands)

NOVEMBER

14
- Flexible learning and memory through 2-compartment pyramidal neurons
  Matthew Larkum
  Humboldt-Universität zu Berlin (Germany)

21
- In vivo modulation of REST/NRSF as a therapeutic target for Parkinson's Disease
  Begüm Kurt
  Laboratory of Aggregation and Glial Response, ACHUCARRO

28
- Targeting OPC proliferation in a mouse model of Spinal Cord Injury
  Lucila Pérez Gianmarco
  Laboratory of Neuronal and Glial Physiology, ACHUCARRO

28
- Imaging the temporal dynamics of blood-brain barrier dysfunction after ischemic stroke in rats
  Naroa Mocha Muñoz
  Laboratory of Neuroimaging and Biomarkers of Inflammation, ACHUCARRO

DECEMBER

12
- Neurochemical Cross-Talk: How Glutamate, Dopamine, and Opioids Drive Ketamine's Actions
  Jordi Bonaventura
  Universitat de Barcelona

19
- Achucarro Winter Symposium 2025
  Scientific exchange & Career support meeting
  Curated by Postdoctoral researchers

Our objectives include promoting scientific knowledge and fostering a culture rooted in facts and critical thinking. We are personally and collectively committed to contributing to a well-informed society

Dissemination and advocacy

WOMEN IN SCIENCE

Our mission shows a clear commitment on outreach, talent development, and fostering scientific literacy through inclusive year-round programming.

Central to this endeavour is our work on the celebration of February 11th and the visibility of women in science; since 2023, we collaborate with 'Emakumeak Zientzian,' the Basque Country's premier initiative for equality in science and technology.

https://emakumeakzientzian.eus/

BE ZIENTZIA

This science fair will be held for the second time at the Ensanche Building (Bilbao) on Tuesday, October 28th and Wednesday, October 29th, throughout the morning.

Four BERC centers in Bizkaia (ACHUCARRO; BC3, BCAM and BCMaterials) joined forces this year to bring science closer to a younger audience (more than 200 primary school students) with the BE ZIENTZIA festival.

PINT OF SCIENCE

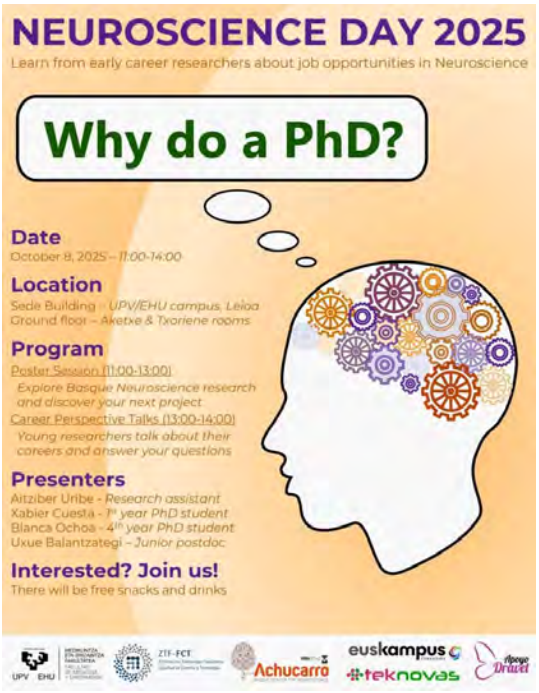
Thousands of researchers across more than 500 cities share and discuss their findings with people in their local pub, bar, cafe or public space.

ACHUCARRO collaborated with the Pint of Science festival, both through sponsorship and with the talk by IKUR postdoctoral researcher Dr. María Ceprián Costoso, who talked about *when the brain won't shut up*.

NEUROSCIENCE DAY

Neuroscience Day is an initiative of the academic and research community working on neurosciences at campus of Leioa of the EHU.

This event is organised and supported by the Faculty of Medicine and Nursing, the Faculty of Science and Technology, and ACHUCARRO, strives to showcase the research in done if neuroscience at the campus of EHU in Leioa, and to strengthen the links between the different institutions, and attract junior and senior researchers to this field.



COMMUNITY OUTREACH

Our work investigating brain function, both in health and disease, and the changes that occur in aging, allow us to gain insight into the state of human knowledge on various topics.

Furthermore, as a research institution that receives public funding, we are aware of the obligation to reach out to different social groups to communicate this knowledge.

Dissemination, patient's advocacy, engagement, public awareness, patient and public involvement (PPI), health education and promotion are some of the many names for these social responsibility endeavour that we maintain over the time.

We strive to maintain close relationships with relevant actors in this ecosystem in our environment.

The EHU Science Park in Leioa hosts the headquarters of ACHUCARRO

6. Infrastructure and Equipment

On one hand, our proximity to Bilbao and its status as a communications hub—and on the other, our location on the university campus—provide an ideal environment for fulfilling our mission.

Being situated on campus offers direct access to the EHU's general research facilities (SGIker), including advanced microscopy, genomics, and proteomics. Furthermore, the potential for partnerships with neighbouring R&D agents allows us to develop joint investment strategies. This collaboration ensures we can complement existing infrastructure and enhance the specialized scientific resources of each research field.

The premises of ACHUCARRO currently suppose 3.000 m^2 within the Sede building.

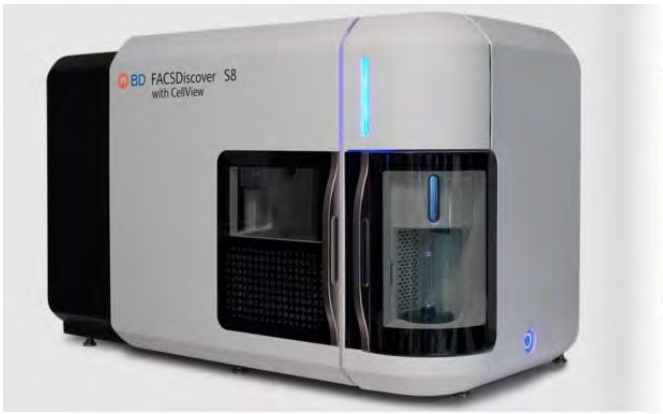
https://www.achucarro.org/facilities

Over 10 years ago, we established a cell analysis and sorting service at ACHUCARRO, which has since helped internal and external research groups, as well as companies, to develop this technique and incorporate it into their research projects.

We added a new FACS instrument to our cell analysis service

At the of 2025 and supported by two public competitive grants—one from the Spanish State Research Agency and the other from the Basque Government's Department of Science, Universities and Innovation—we have been able to acquire a new instrument that updates and strengthens our capabilities in this area.

It is a BD FACS Discover S8, equipped with five lasers, which will allow us to perform more complex experiments more efficiently.



This new equipment, which complements the cell separation and analysis capabilities that already existed at ACHUCARRO and on the Leioa campus, will be able to offer improved capabilities that contribute to a better experimental development of our research, and that of those researchers who come to use it.

https://www.achucarro.org/facilities/cell-analytics/

The Basque Government sets scientific and management objectives for research organisations with the BERC accreditation.

7. Main performance indicators

The following indicators reflect the evolution on the performance of ACHUCARRO, with this panel agreed by the Basque Government and ACHUCARRO for the current strategic period.

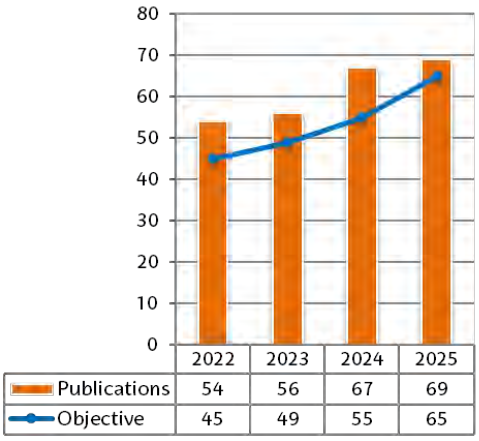
The following indicators strive to show the development of our organization, according to some external (partners and funders) and internally defined parameters.

Our overall assessment is very positive. Some indicators have reflected the effects of the global pandemic (in the years 2022 and 2021), and others clearly reflect the degree of maturity and consolidation of ACHUCARRO.

PUBLICATIONS

Total number of indexed publications

Sources: Scopus & Web of Science

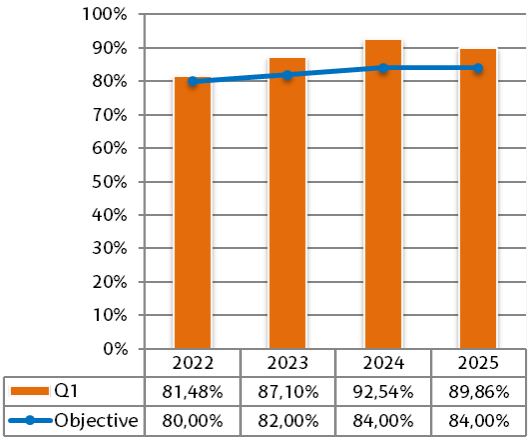


	2022	2023	2024	2025
Publications	54	56	67	69
Objective	45	49	55	65

IMPACT AND CITATION

% of publications in quartile 1 of their research areas

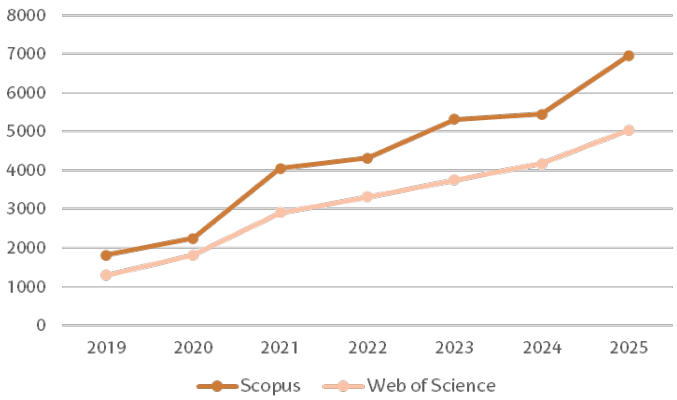
Source:
Scimago Journal Ranking



	2022	2023	2024	2025
Q1	81,48%	87,10%	92,54%	89,86%
Objective	80,00%	82,00%	84,00%	84,00%

Total citations

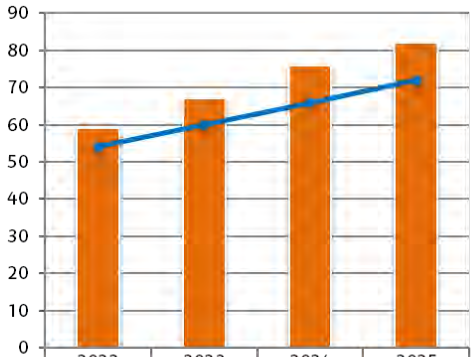
Source:
Scopus & Web of Science



This total amount produce a mean of 9 citations per document

h-index of ACHUCARRO

Source:
Scopus



	2022	2023	2024	2025
h index	59	67	76	82
Objective	54	60	66	72

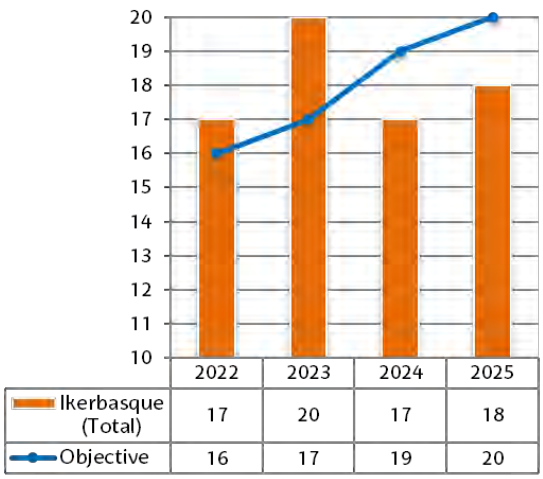
Scopus and Web of Science produce similar numbers for the h-index indicator, while Google Scholar reflects 114 for the same indicator and a total of 70412 cites.

https://www.achucarro.org/open-science/

TALENT ATTRACTION AND DEVELOPMENT

Total number of Ikerbasque Researchers (Professors, Associated and Fellows)

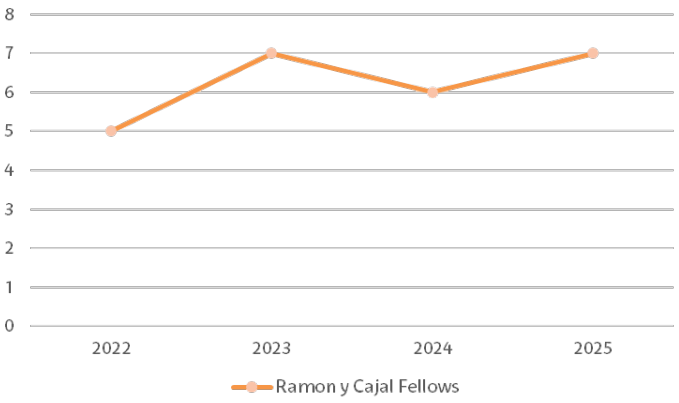
Source: Internal



	2022	2023	2024	2025
Ikerbasque (Total)	17	20	17	18
Objective	16	17	19	20

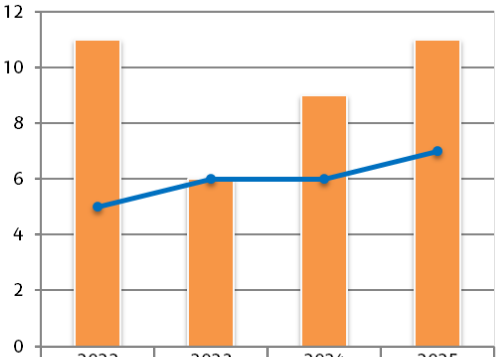
Total number of Ramón y Cajal Fellows

Source: Internal



Completed PhD Thesis

Source: Internal

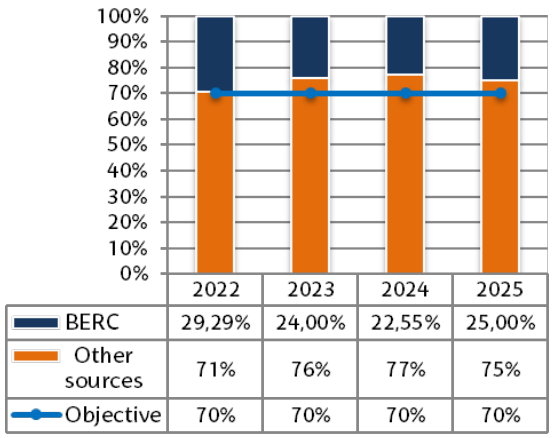


	2022	2023	2024	2025
PhD thesis	11	6	9	11
Objective	5	6	6	7

FUNDING AND SUSTAINABILITY

% of funding different from BERC

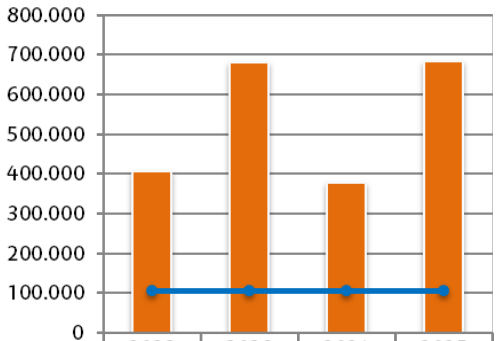
Source: Internal



	2022	2023	2024	2025
BERC	29,29%	24,00%	22,55%	25,00%
Other sources	71%	76%	77%	75%
Objective	70%	70%	70%	70%

Private funding (EUR)

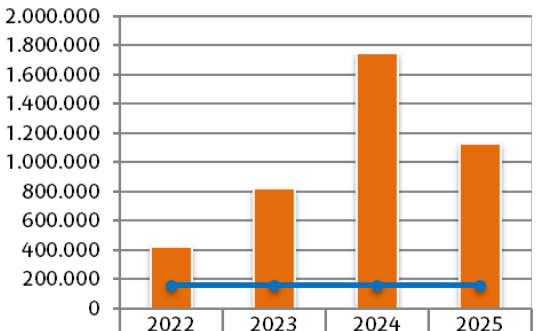
Source: Internal



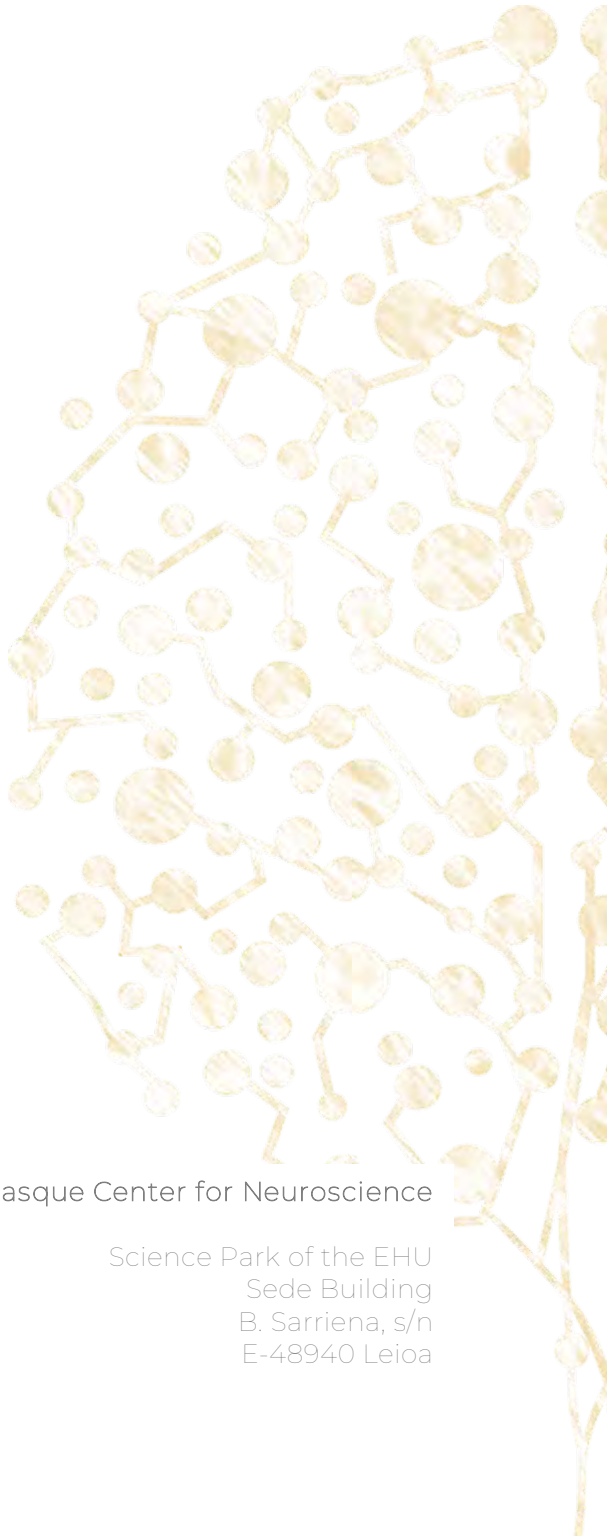
	2022	2023	2024	2025
Private funding	407.367	680.700	378.014	682.242
Objective	105.000	105.000	105.000	105.000

International funding (EUR)

Source: Internal



	2022	2023	2024	2025
International funding	421.459	817.000	1.744.214	1.126.340
Objective	155.000	155.000	155.000	155.000



Achucarro Basque Center for Neuroscience

Science Park of the EHU
Sede Building
B. Sarriena, s/n
E-48940 Leioa